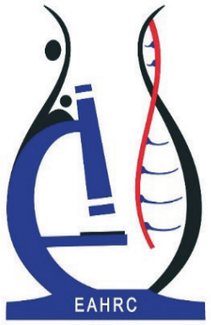
PREVENTION OF NON- COMMUNICABLE DISEASES IN EAST AFRICA

BOOK OF ABSTRACTS



EAST AFRICAN HEALTH RESEARCH COMMISSION

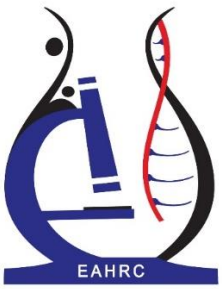
Research for Health and Prosperity

BOOK OF ABSTRACTS

PREVENTION OF NON-COMMUNICABLE DISEASES IN EAST AFRICA

EAST AFRICAN HEALTH RESEARCH COMMISSION

2023



BOOK OF ABSTRACTS

PREVENTION OF NON-COMMUNICABLE DISEASES IN EAST AFRICA

EAST AFRICAN HEALTH RESEARCH COMMISSION

2023

INTRODUCTION

Non-Communicable Diseases (NCDs) are diseases that are not spread through infections or through other people, but are typically caused by unhealthy behaviors. They are the leading cause of death worldwide and present a huge threat to health and development, particularly in low- and middle-income countries. Worldwide, developed and developing countries are facing the double burden of communicable and NCDs. However, developing countries including EAC Partner States are more exposed and more vulnerable due to a multitude of factors, including geographic, demographic and socio-economic factors. Among NCDs, the four top killers that together account for more than 80% of all premature NCDs mortalities include cardiovascular diseases, cancers, respiratory diseases and diabetes.

There has been a surge in the burden of NCDs in sub-Saharan Africa over the past two decades, driven by increasing incidence of cardiovascular risk factors such as unhealthy diets, reduced physical activity, hypertension, obesity, diabetes. Many NCDs can be prevented by reducing common risk factors such as tobacco use, harmful alcohol use, physical inactivity and eating unhealthy diets. Many other important conditions are also considered NCDs, including injuries and mental health disorders.

The EAHRC promotes, coordinates, and implements technical cooperation activities directed to the prevention and control of NCDs, related risk factors, that are sound and appropriate for the culture and society. The EAHRC raises political and public awareness and understanding of the burden of the NCDs and related risk factors. Multi-stakeholder strategic and collaborative efforts aimed at strengthening Partner States' capacity to promote and protect health through public policies, programs, and services. This will reduce risks and NCDs burden in order to improve the physical, mental, and social well being of the EAC citizens.

The 9th EAHSC aims at sharing lessons learnt from the COVID-19 pandemic and proposing strategies to prevent and control Communicable and NCDs. EAHRC commend the concerted effort of the EAC secretariat in putting place the Regional Health Sector Emergency on COVID-19 Response Plan that is designed to support and help to coordinate the regional preparedness and response of disease outbreaks.

Together with evidence from current research that will be presented by experts during the 9th EAHSC to be held from 27th to 29th September 2023, the book of abstracts will serve as an excellent resource to support discussion during the plenary and parallel sessions dedicated to NCDs preventions and control in the EAC region. The conference aims to provide recommendations and strategies for the prevention and control of NCDs. This will be one of the initiatives to address this growing global burden of NCDs.

I wish you a fruitful reading and discussions.

Dr Novat Twangubumwe, MD, MSc
Acting Executive Secretary
East African Health Research Commission

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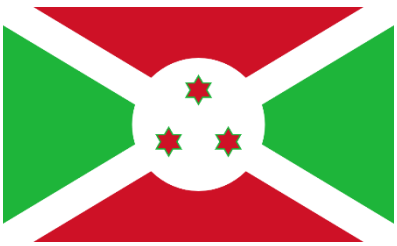
Burundi



1. **Evaluation of the quality of life of adult patients with chronic kidney failure on hemodialysis in Burundi**

Nyandwi, J[*1,2,3], Manirakiza, M[1], Nduwayo, D[1], Kobako, RB[1]

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ABSTRACT

INTRODUCTION: Chronic kidney failure has serious consequences on the functioning and activities of daily life of the patient. In spite of the suppletion treatment, it is often felt as a social and professional handicap. The aim of the study is to evaluate the quality of life of adult patients undergoing chronic hemodialysis in Burundi.

METHODS: This is a cross-sectional, descriptive and analytical study conducted from December 2021 to January 2022 in 5 hemodialysis centers in Burundi. All patients aged 18 years and older, on hemodialysis for at least 3 months with a stable clinical condition were included. Quality of life was measured using the specific questionnaire "Kidney Disease Quality of Life (KDQOL-SF)" combining the Short Form Health Survey (SF-36) that explores the physical and psychological components and a specific module adapted to renal pathology. Responses to the KDQOL-SF questions are scored from 0 to 100. The global mean score (GMS) was obtained by averaging the scores. For the SF-36 GMS, the cutoff value chosen above which quality of life is considered impaired was 66.7 as proposed by Lean. To standardize the initial SF-36 mean per dimension scores, a mean of 50 and a standard deviation of 10 were chosen in accordance with the USA 98 study. The protocol was approved by the ethics committee of the Faculty of Medicine of the University of Burundi.

RESULTS: Sixty-six patients participated in our survey. The mean age was 49.27 12.13 years. Men were 53 (80.3%) and 62 patients (93.9%) had health coverage. The comorbidities found were dominated by diabetes associated with arterial hypertension (54.54%) and arterial hypertension alone (30.30%), and all patients had anemia. Regarding the SF-36, the overall mean score was 47.14 19.73, the score for the "physical health" dimension was 45.29 21.41, and that for the "psychological health" dimension was 48.99 23.10. For the KDQOLSF the overall mean score was 54.36 15.62. The dimensions that negatively influenced the KDQOL score were the burden of kidney disease (36.6424.33) and occupational status (21.9635.22) while those that positively influenced were encouragement by the dialysis team (80.1125.66), quality of social interactions (79.5818.11) and patient satisfaction (73.9814.65). Quality of life was impaired in 83.33% of hemodialysis patients. Factors associated with impaired quality of life were age 49 years, low level of education, lack of prior health coverage, seniority in hemodialysis, central line dialysis, anemia and having a non-stable occupation.

CONCLUSIONS: The quality of life of the patients in our study was impaired. The management of hemodialysis patients must be multidisciplinary and significantly supported by the health care system to positively change.

2. Management of cancer disease in Burundi, a health challenge

Justin Bagorane[1], Gustave Negamiyimana[1], Juvénal Kwizera[2], Manon Morillon[4], Ntukamazina Déo[3], Mohamed El Fadli[1], Jaafar Bennouna [4], Rhizlane Belbaraka[1]

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ABSTRACT

Cancer is a major public health problem that affects every country in the world. Some countries, most often developed, have made significant diagnostic and therapeutic advances over the years, transforming cancer into a long-term chronic disease and sometimes permitting a cure, even at the metastatic stage. Other countries are lagging behind and the challenge posed by cancer remains as relevant as ever. Burundi is one of these countries as well as several others in the African region. For many years, the care of cancer patients in Burundi has been exported to foreign countries (Rwanda, Kenya, South Africa, Morocco, France, India…) in search of quality care. This is particularly possible for the more affluent, with a total cost much higher than a local dispensation. For this reason, the strengthening of the local health system, the establishment of dedicated infrastructure, the promotion of training and research in cancer as well as the strengthening of the information and education policy could help meet the challenge posed by cancer in Burundi.

3. Exploring cost drivers to improve disease management: the case of type 2 diabetes at a tertiary hospital in Burundi, Africa

Benitha Hezagirwa[1*], Arthorn Riewpaiboon[2], and Farsai Chanjaruporn[2*]

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ABSTRACT

BACKGROUND: In Burundi, the International Diabetes Federation estimated the prevalence of diabetes mellitus (DM) as high as 2.4% in adults aged between 20 and 79 years old. Thus, the healthcare expenditure for the treatment of diabetic patients is considerably high.

OBJECTIVE: This study explores the economic burden of type 2 DM and its cost drivers at a tertiary hospital in 2018. It included adult type 2 DM patients who received treatment from a tertiary hospital (Hospital Prince Regent Charles) in 2018. In this study, 81 patients were included.

METHODS: Data on illness treatment and complications were collected through patient interviews and by reviewing patients' medical and financial records. A stepwise multiple linear regression model was used to explore factors affecting the cost of type 2 diabetes mellitus.

RESULTS: The average total cost per patient per year was estimated at $2621.06. The fitted cost model had an adjusted R^2 of 0.427, which explained up to 43% of the variation in the total cost. The results suggest primary cost drivers such as treatment regimen, duration of the disease, payment method, and number of complications.

CONCLUSION: The findings confirm the profound economic burden of type 2 DM and the need to improve patient care and prevent disease progression. The establishment of a special clinic for patients with diabetes is recommended, as is financial support for underprivileged patients. A specific focus on cost drivers could help establish appropriate disease management programs to control the costs for type 2 diabetes patients.

KEYWORDS: Burundi, cost driver, economic burden, type 2 diabetes mellitus, disease management

4. Risk Factor Hypertension Prediction Model

Vercus Ntirandekura[1], Jeremie Ndikumagenge[1]

Journal of Applied Mathematics and Physics 2023 **DOI:** 10.4236/jamp.2023.112025

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ABSTRACT

According to the 2020 Ministry of Health reports, the public health sector is facing an acute shortage of logistical resources and qualified competent human resources, as evidenced by the doctor-to-hospital ratio in relation to population. Aside from these structural and cyclical issues, the above ratios are even lower in rural areas with low incomes. Underdevelopment is a major impediment to establishing a normal public health situation, though the Burundian government is working hard to ensure that it is at an acceptable level. Furthermore, some Burundian traditions, customs, and practices are undermining efforts to build an international-standard public health facility. Indeed, the mental state of a people (tradition, culture, and practices) has a significant impact on the fluctuation of risk factors in public health.

It is determined by the socioeconomic development and sociocultural behavior of the population. This demonstrates that hypertension is a public health concern in Burundi. Unfortunately, the vast majority of people are completely unaware of the risks that high blood pressure poses to public health. High blood pressure, on the other hand, has always been a key physiological measure in medical examinations, serving as one of the most important biological markers in clinical evaluation. As a result, cardiovascular diseases caused by high blood pressure have a significant impact on mortality worldwide, particularly in Burundi. Predicting high blood pressure based on risk factors can help to reduce complications associated with this disease, which is known as a silent killer. The digital era provides a variety of tools for studying, analyzing, managing, and monitoring the risk factors that contribute to and degenerate high blood pressure. The primary goal of this work is to create a decision-making tool based on the outcomes of high blood pressure epidemic and/or pandemic predictions from sanitarian districts.

The current paper work employs a prediction support tool created using linear regression methods from machine learning, one of the fields of artificial intelligence. It is especially useful for optimizing the cost function. The latter allows the predicted values to be determined and defined using the gradient descent algorithm.

Keywords: Artificial Intelligence, Machine Learning, Prediction, Gradient Descent, Hypertension, Cardiovascular Disease

5. A leap to non-communicable diseases epidemic in Burundi: overall trends of the disproportionate burden

David Niyukuri[1,2*], Joseph Nyandwi[1,3], Olivier Kamatari[1], Canesius Uwizeyimana[4], Chamy Mikaza[5], Mediatrice Barengayabo[1]

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ABSTRACT

In developing countries, Noncommunicable diseases (NCDs) are increasing relentlessly. A recent review in East African Community countries showed that much need to be done to improve in prevention of risk factors, monitoring, surveillance, governance, and evaluation of health systems to tackle NCDs. In Burundi, there is no study which has been conducted to give an overview on status of NCDs and their risks factors.

We conducted a review on estimations of some NCDs statistics and pooled the data of NCDs and associated risk factors, together with data available on cancer for Burundi. A descriptive analysis was performed, and statistical test was conducted to check distribution differences of the NCDs burden between male and female populations. We built linear model for diabetes and hypertension with same predictors (blood pressure, body-mass index, and cholesterol).

Overall, data pooled in different studies showed that almost all the NCDs and associated risk factors have an increasing trend in Burundi among male and female populations. Adult men and women are at high risk of developing diabetes and hypertension. Although both female and male populations have an increasing trend of obesity, women, girls between 5 and 10 years, and adolescent girls are carrying the highest burden compared to their male counterpart with same age categories. The data showed that obesity has been sharply increasing among children and adolescents in the last two decades. Cancer is also increasing with a lot of new types being diagnosed.

We conclude that, NCDs are of a lot of concerns in male and female populations in Burundi. The prevalence of obesity among younger children and adolescent is alarming. There is a need of actions to be done in order to be able to prevent and manage NCDs, but interventions targeting children, adolescents, and women should be put in place urgently.

6. Hypertension and associated factors in HIV-infected patients receiving antiretroviral treatment in Burundi: a cross-sectional study

Déo Harimenshi[1*], Théodore Niyongabo[2], Pierre-Marie Preux[1], VictorAboyans[1,3] & Ileana Desormais[1,4]

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ABSTRACT

Currently, the life expectancy of people living with the human immunodeficiency virus (HIV) and the general population are similar. Hypertension is a major public health issue in Africa and is largely underdiagnosed. Most HIV-infected individuals, especially those on Anti-Retroviral Therapy (ART) have hypertension. Our project aims to determine the prevalence of hypertension and associated factors amongst HIV-infected adults treated by ART in Burundi. A cross-sectional study was conducted among HIV-infected subjects over the age of 20, managed in five healthcare centers for people living with HIV (PLWH). The World Health Organization STEPWISE survey and anthropometric measurements were employed.

Blood pressure was measured according to the ESC 2018 recommendations. 1 250 HIV-infected patients aged between 35.4 and 50.2 years were included (18.4% men). The prevalence of hypertension was 17.4% (95% CI 13.2–22.1). Approximately 47.25% of HIV patients with hypertension were previously undiagnosed. Other factors were associated with HTN, such as being overweight (OR 2.88; 95% CI 1.46–5.62), obesity (OR 2.65; 95% CI 1.27–5.55), longer duration of HIV infection: ≥ 10 years (OR 1.04; 95% CI 1.14–3.20), diabetes (OR 2.1; 95% CI 1.37–3.32) and age (OR 1.13; 95% CI 1.09–1.14). Despite their young age, almost 20% of HIV-ART treated patients had hypertension, 50% of these were undiagnosed. Blood pressure monitoring is crucial in these patients, especially those identified as high-risk, with prompt life and disability-saving interventions.

7. In vitro and in vivo Evaluation of the Toxicity Roots of Leptadenia hastata (PER) Decne. Cytotoxicity on Caco2 and HepG2 Cells, Acute and Subacute Toxicity on Wistar Rats

Fatoumata Bah[1*], Pascale Marie Aimée Dozolme[2], Mama Sy Diallo[3], Ramadhan Nyandwi[4], Mohamadou Lamine Daffé[1], Aminata Touré[1], Absa Lam[1], Mathilde Cabral[1], MatarSeck5, Serge Maria Moukha[2] and Mamadou Fall[1]

J Toxicol Risk Assess 2022. doi.org/10.23937/2572- 4061.1510045

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ABSTRACT

BACKGROUND: Nowadays, the use of medicinal plants, for treatment of several pathologies, continues to gain grounds throughout the world. Leptadeniahastata, like other medicinal plants, issued as therapeutic agent for several pathological conditions including diabetes mellitus, diarrhea, and prostatitis, among other, however, limited data on its toxicity are available. This study aims to evaluate the safety of the L. hastata root extract by in vitro and in vivo tests.

METHODS: Cytotoxicity and possible apoptosis on Caco2 and HepG2 cells were assessed by MTT, Neutral Red, LDH activity and DNA fragmentation assays. The in vivo study was carried out

in albino Wistar rats by administering the methanolic extract of L. hastata by gavages, followed by determination of the Lethal Dose 50 (LD50), and the No Observable Adverse Effect Level (NOAEL) to get an idea of its acute and subacute toxicity.

RESULTS: The current study showed a low cytotoxicity effect with an IC50 greater than 200 µg/mL regardless of cell type and without apoptosis. The acute toxicity of L. hastata's roots is practically low since the LD50 is greater than 2000 mg/kg. However, the results showed a sub-acute toxicity that manifested itself in deaths and disorders of the digestive system, particularly of the stomach. Although mortality of animals was recorded from the first week as well as inflammation and mutilation of the limbs. Biological and histological changes in the liver and kidneys were also observed. The histological changes detected in the liver were mainly necrotic areas, but also hepatic degeneration, microangiopathy lesions and neutrophil infiltrate. In the kidney, minimal tubular vacuolation and glomerular retraction were observed. The stomach showed only epithelial scaling. The NOAEL was estimated to be 100 mg/ kg for our study.

CONCLUSION: Even though medicinal plants are generally considered to be safe; however, malpractice in its use could be harmful to health; as effects observed could be attributed to the action of L. hastata roots' extracts.

Keywords: Leptadenia Hastata, Roots, Cytotoxicity, Apoptosis, Acute and subacute toxicity

8. Prevalence and predictive risk factors of hypertension in patients hospitalized in Kamenge Military hospital and Kamenge University teaching hospital in 2019: A fixed effect modelling study in Burundi

Arnaud Iradukunda[1*], Emmanuel Nene Odjidja[2], Stephane Karl Ndayishima[3], Egide Ngendakumana[4], Gabin Pacifique Ndayishimiye[5], Darlene Sinarinzi[6], Cheilla Izere[7], Nestor Ntakaburimvo[8], Arlene Akimana[9]

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ABSTRACT

INTRODUCTION: Hypertension is a major threat to public health globally. Especially in sub-Saharan African countries, this coexists with high burden of other infectious diseases, creating a complex public health situation which is difficult to address. Tackling this will require targeted public health intervention based on evidence that well defines the at risk population. In this study, using retrospective data from two referral hospitals in Burundi, we model the risk factors of hypertension in Burundi.

MATERIALS AND METHODS: Retrospective data of a sample of 353 randomly selected from a population of 4,380 patients admitted in 2019 in two referral hospitals in Burundi: Military and University teaching hospital of Kamenge. The predictive risk factors were carried out by fixed effect logistic regression. Model performance was assessed with Area under Curve (AUC) method. Model was internally validated using bootstrapping method with 2000 replications. Both data processing and data analysis were done using R software.

RESULTS: Overall, 16.7% of the patients were found to be hypertensive. This study didn't show any significant difference of hypertension's prevalence among women (16%) and men (17.7%). After adjustment of the model for cofounding covariates, associated risk factors found were advanced age (40–59 years) and above 60 years, high education level, chronic kidney failure, high body mass index, familial history of hypertension. In absence of these highlighted risk factors, the risk of hypertension occurrence was about 2 per 1000 persons. This probability is more than 90% in patients with more than three risk factors.

CONCLUSION: The relatively high prevalence and associated risk factors of hypertension in Burundi raises a call for concern especially in this context where there exists an equally high burden of infectious diseases, other chronic diseases including chronic malnutrition. Targeting interventions based on these identified risk factors will allow judicious channel of resources and effective public health planning.

9. Evaluation of effectiveness, acceptability and safety of thermal ablation in the treatment of cervical neoplasia in Burundi

Catherine Sauvaget, Sylvestre Bazikamwe, Eric Lucas, Athanase Ndayikengurukiye, Salvator Harerimana, Prebo Barango

International Journal of Cancer 2022 **https://doi.org/10.1002/ijc.34117**

ABSTRACT

This longitudinal study aimed at evaluating the effectiveness, acceptability and safety of the thermal ablation procedure (TA) in the treatment of cervical neoplasia. Women referred to the Gynecology ward for symptoms or for opportunistic screening were assessed by visual inspection

with acetic acid (VIA) and colposcopy. Those with lesions eligible to ablation were counselled and treated by TA.

They were inquired about the level of pain during the procedure, and their level of satisfaction. Patients were followed up at 6 weeks for any complication and reassessed by VIA and colposcopy at 12 months for any persistent or recurrent lesion and for any adverse event. A total of 86 women with a positive VIA test were included in the study. The mean age was 46 years (28-61 years). Most of the women did not complain about any adverse event during treatment; one-third presented mild pain or cramp. At the 6-week visit, watery discharge was the main adverse event reported. All women were highly satisfied with TA and most of them would recommend it. At the 12-month visit, 82 women were examined (95% follow-up rate), and the overall cure rate was 96% (low-grade lesions: 98%; high-grade lesions: 94%). Three women presented low- and high-grade lesions that were treated by TA. No major adverse event or hospitalization after the treatment was reported.

In conclusion, TA was an effective procedure with a high cure rate at the 1-year follow-up visit. It was acceptable and safe, with only minor short-term side-effects reported and with a high satisfaction rate among the patients.

10. Assessment of Knowledge, Attitudes, and Practices of Health Personnel with Regard to Hypertension During Pregnancy in Hospitals of Bujumbura

Eugene Ndirahisha[1], Joseph Nyandwi[2], Sebastien Manirakiza[3], Patrice Barasukana[4], Hermenegilde Nahayo[1] and Elysee Baransaka[1]

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ABSTRACT

OBJECTIVE: To assess knowledge, attitudes, and practices of health personnel in Bujumbura hospitals with regard to hypertension during pregnancy.

METHODOLOGY: This study has been conducted on health personnel of gynecology and obstetrics department of three national referral hospitals in Bujumbura. It is a descriptive cross-sectional study to assess knowledge, attitudes, and practices. Data were collected by a questionnaire and analyzed by Epi Info 7.2.

RESULTS: In a total of ninety-seven health workers participated in our study and 78.3% were paramedics with 53.6% of nurses and 24.7% of midwives. Medical doctors represented 21.6% of the participants. The sex ratio was 1.4 in favor of women. The professional experience was more

than 5 years for 64.9% of participants. Concerning knowledge about hypertension; 74.2% of participants correctly defined hypertension during pregnancy. Despite this, only 48.4% respected conditions about its measurement. concerning attitude toward hypertension; 94.8% of participants informed their patients about the risks linked to hypertension in pregnancy before any therapeutic strategy. The antihypertensive drugs contraindicated during pregnancy were known by 54.6% of participants. To prevent preeclampsia, low doses of aspirin and calcium were prescribed by 42.2% of participants.

CONCLUSION: Hypertension during pregnancy is a worrying situation for health personnel, which still has many theoretical and practical gaps.

Keywords: Health personnel, hypertension, pregnancy, Bujumbura

11. The Problem of Stroke Management in Bujumbura Hospital

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ABSTRACT:

AIM: To determine the problems that prevent the proper management of strokes in Bujumbura.

METHODOLOGY: This was a prospective and descriptive cross-sectional study that lasted eight months from 19 March to 18 November 2020. All patients hospitalized for suspected stroke at the Kamenge Teaching Hospital (KTH) and the Kamenge Military Hospital (KMH) were included.

RESULTS: We collected 95 patients with suspected stroke. The median age was 65 years and 53.68% were female. Hypertension was the most common risk factor at 41.05% and 12.63% of strokes were recurrent. Only 31.58% of patients had consulted before 4 hours 30 minutes from the first signs and 4.49% had already had a brain scan before this time. 23.88% of patients had started anti-platelet aggregation medication on the first day of hospitalization and 8.54% had already started rehabilitation on the second day of admission. 25.00% of the patients who were able to express themselves were aware of the stroke. The NIHSS score was used in 46.32% of patients and the RANKIN score was never used. Complications associated with stroke were dominated by inhalation pneumonitis in 13.68% of patients. The mortality rate was 17.90%.

CONCLUSION: Stroke management in Bujumbura is hampered by a lack of information for patients, a delay in decision making in the management of stroke, and the poor use of patient assessment tools. A training and awareness campaign is needed. Key words: stroke, problems, management

12. Pulmonary embolism in Bujumbura

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ABSTRACT

RELEVANCE. Pulmonary embolism constitutes a diagnostic and therapeutic emergency. In Africa, data are still difficult to obtain. Thus, the objectives of this work is to describe epidemiological, clinical, therapeutic aspects and short-term outcomes of pulmonary embolism confirmed by thoracic angioscan at Kira hospital in Bujumbura, the biggest city of Burundi with population about 375 000.

PATIENTS AND METHODS. This was a descriptive study of 18 patients who had a pulmonary embolism confirmed by thoracic angioscan in Bujumbura from January 1st, 2015 to December 31st, 2018. We included in our study any patient with pulmonary embolism consenting to participate and processing personal data after some clarified explanations in accordance with the World Medical Association's Declaration of Helsinki. For each registered patient, we collected socio-demographic, past history of cardiac disease and factors risk, clinical, echocardiographic and scannographic findings with Wells' score. Variables were presented as means and percentages.

RESULTS AND DISCUSSION. The average age was 53.5 ± 12.3 years with a sex ratio of 1.25 in favor of women. The modal class was the 50 to 59 age group (33.3%). The clinical probability pre-test by simplified Wells score was high in 66.6% and medium in 33.3% of cases. A history of venous thromboembolic disease was the most common risk factor. Dyspnea was the most reason of consultation with 94.4% of cases. One patient died (5.6%) during hospitalization. Six months after discharge from the hospital, we recorded 3 cases (16.7%) of death, 6 cases (33.3%) of pulmonary heart, 3 cases (16.7%) of recurrent pulmonary embolism and one case of vitamin K antagonist overdose with minor bleeding.

CONCLUSION. Pulmonary embolism is common in relatively young population with a predominance of females and chronic no communicable diseases as risk factors. Examination of a patient with an angioscanner is a sensitive and specific clinical study of pulmonary embolism. The outcome is favorable under appropriate treatment in short term.

Keywords: pulmonary embolism, thoracic embolism, angioscan, Bujumbura, Burundi, Africa

13. Epidemiological and sociodemographic analysis of pulmonary tuberculosis/HIV co-infection in Bujumbura hospital. Retrospective and descriptive study of 84 cases.

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ABSTRACT

OBJECTIVE: To establish the epidemiological and socio-demographic aspects of pulmonary tuberculosis in HIV immunocompromised subjects.

PATIENTS AND METHODS: This are a retrospective and descriptive study conducted from January 1, 2017 to December 31, 2017 in the internal medicine department of the Prince Regent Charles Hospital (HPRC) in Bujumbura town hall. The study population consisted of HIV immunocompromised patients with pulmonary tuberculosis who were hospitalized at HPRC during the study period.

RESULTS: During the study period, a total of 12029 patients were enrolled, of whom 84 cases had TB/HIV co-infection, a frequency of 0.7%. The mean age was 43.13 years with extremes ranging from 16 to 72 years. The most common age group was 15-49 years (66.67%) with a M/F sex ratio of 1.1. Among the 84 patients, marriage was found in 52 cases (61.90%). Patients with a profession were in the majority with 55.94%. The majority of our patients resided in Bujumbura town hall representing 78.57% of cases.

CONCLUSION: HIV infection is the main cause of the increase in the incidence of pulmonary tuberculosis in the world. The latter remains the most frequent and the first opportunistic infection in immunocompromised patients, qualifying them as a cursed couple. Both sexes are equally affected, with a slight male predominance. Both epidemics affect the 15-49-year-old age group, the most sexually and economically active.

Keywords: HIV; pulmonary tuberculosis; co-infection; Bujumbura

14. Hospital thromboprophylaxy in country with low income: Case of the university hospital center of Kamenge, Bujumbura, Burundi

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ABSTRACT

BACKGROUND: Venous thromboembolic disease is a real public health problem worldwide because of its high incidence and frequent fatal complications. In a country with limited resources, there is a lack of technical and material resources with low purchasing power.

AIM: To determine the epidemiological and clinical aspects of venous thromboembolic disease in Burundian hospitals among patients undergoing prophylaxis.

PATIENTS AND METHODS: This was a prospective descriptive study conducted at Kamenge university hospital from September 2019 to December 2019. Was included any patient hospitalized in the internal medicine, surgery and gyneco-obstetrics departments.

RESULTS: A total of 352 patients had been hospitalized in the three departments and 66 of them had benefited from thromboprophylaxis, i.e. 18.7% of cases. Among the factors of thrombosis, bed rest for more than 3 days predominated with 96% of cases. Enoxaparin topped the list of low molecular weight heparins prescribed. No physical means were used as thromboprophylaxis.

CONCLUSION: Thromboprophylaxis is underused in our hospitals. In order to reduce the negative impact of thromboembolic disease, health personnel must be trained in its management and the population must be made aware of it.

Keywords: thromboprophylaxis; anticoagulant; hospital setting

15. Integration of non-communicable disease and HIV/AIDS management: a review of healthcare policies and plans in East Africa

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ABSTRACT

BACKGROUND: Low-income and middle-income countries are struggling to manage growing numbers of patients with chronic non-communicable diseases (NCDs), while services for patients with HIV infection are well established. There have been calls for integration of HIV and NCD services to increase efficiency and improve coverage of NCD care, although evidence of effectiveness remains unclear. In this review, we assess the extent to which National HIV and NCD policies in East Africa reflect the calls for HIV-NCD service integration.

METHODS: Between April 2018 and December 2020, we searched for policies, strategies and guidelines associated with HIV and NCDs programs in Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda. Documents were searched manually for plans for integration of HIV and NCD services. Data were analyzed qualitatively using document analysis.

RESULTS: Thirty-one documents were screened, and 13 contained action plans for HIV and NCDs service integration. Integrated delivery of HIV and NCD care is recommended in high level health policies and treatment guidelines in four countries in the East African region; Kenya, Rwanda, Tanzania and Uganda, mostly relating to integrating NCD care into HIV programs. The increasing burden of NCDs, as well as a move towards person-centered differentiated delivery of services for people living with HIV, is a factor in the recent adoption of integrated HIV and NCD service delivery plans. Both South Sudan and Burundi report a focus on building their healthcare infrastructure and improving coverage and quality of healthcare provision, with no reported plans for HIV and NCD care integration.

CONCLUSION: Despite the limited evidence of effectiveness, some East African countries have already taken steps towards HIV and NCD service integration. Close monitoring and evaluation of the integrated HIV and NCD programs is necessary to provide insight into the associated benefits and risks, and to inform future service developments.

16. Cardiovascular risk factors in rural areas: case of the Mabayi health district hospital in Burundi

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ABSTRACT.

RELEVANCE. Noncommunicable diseases are a serious public health problem due to their high incidence and mortality rate. Globally, noncommunicable diseases cause 41 million deaths every year, accounting for 71% of the total number of deaths. Cardiovascular diseases, accounting for

44% of all noncommunicable diseases, are the leading causes of death. Early identification of the main risk factors for cardiovascular diseases and treatment of associated diseases are a prerequisite for maintaining the health of the population. Objective: To identify the main risk factors for cardiovascular disease in patients living in rural areas of the mountainous region and attending the Mabayi District Hospital in Burundi.

PATIENTS AND METHODS. An open-label retrospective study conducted at the Mabayi District Hospital in Burundi from January 2014 to December 2017. The study included patients whose medical examination revealed at least one risk factor for cardiovascular diseases. The study was approved by the ethics committee of the Kamenge University Hospital and the Faculty of Medicine of the University of Burundi. Data analysis was carried out using Microsoft Word 2007 and Epi-Info TM 7.2.1.0 software.

RESULTS AND DISCUSSION. Among the 20 297 examined patients, the average age was 50 ± 16.7 years, the extreme values were 14 and 101 years. Male patients accounted for 51.1%. 903 patients (4.5%) had at least one risk factor. The main risk factors were high blood pressure (52.6%), diabetes (42.0%) and alcohol abuse (27.4%).

CONCLUSION. Residents of rural areas of the mountainous region of Burundi have a high frequency of risk factors for cardiovascular diseases, which must be taken into account when organizing medical and preventive measures to prevent cardiovascular diseases.

Keywords: cardiovascular, prevalence, risk factor, rural areas, Burundi

17. HIV clinical stages and lower extremity arterial disease among HIV infected outpatients in Burundi

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ABSTARCT

Chronic disease of people living with human immunodeficiency virus (HIV) infection are now approaching those of the general population. Previous, in vitro studies shown that HIV causes arterial injuries resulting in inflammation and atherosclerosis but direct relationship between HIV infection clinical stages and lower extremity arterial disease (LEAD) remain controversial. No

study assessed, with an accurate method, both the prevalence of LEAD and the influence of HIV severity on LEAD in HIV outpatients in Central Africa. A cross-sectional study was conducted among 300 HIV-infected outpatients, aged≥ 40 years in Bujumbura, Burundi.

All patients underwent ankle-brachial index (ABI) measurement and LEAD was diagnosed by ABI≤ 0.9. The prevalence of LEAD was 17.3% (CI 95% 13.2– 22.1). The mean age was 49.6 ± 7.1 years. On multivariable analysis, factors associated with LEAD were hypertension (OR= 2.42; 95% CI 1.10–5.80), and stage IV HIV clinical infection (OR= 4.92, 95% CI 1.19–20.36). This is the first study performed on a large HIV population in Central Africa, reporting high LEAD prevalence.

It underlines the influence of HIV infection on peripheral atherosclerosis at latest clinical stages and the need for LEAD screening in HIV-infected patients.

18. Predictive Risk Factors of Hypertension in Sub-Saharan Africa: A Fixed Effect Modelling Study in Burundi

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ABSTRACT

BACKGROUND: Hypertension, signaled by persistently high systolic and diastolic blood pressure is a major threat to public health globally. Especially in sub-Saharan African countries, this coexists with high burden of other infectious diseases, creating a complex public health situation which is difficult to address. Tackling this will require targeted public health intervention based on evidence that well defines the at risk population. In this study, using retrospective data from two referral hospitals in Burundi, we model the risk factors associated with hypertension in Burundi

METHODS: Retrospective data of a sample of 353 randomly selected from a population of 4,380 patients admitted in 2019 in two referral hospitals in Burundi: Military and University teaching hospital of Kamenge. The predictive risk factors were carried out by fixed effect logistic regression. Model performance was assessed by Area under Curve (AUC). Model was internally validated via bootstrapping with 2000 replications. All analysis was conducted in R.

RESULTS: Overall, 16.7% of the patients were found to be hypertensive. After adjustment of the model for cofounding covariates, associated risk factors found were advanced age (40 years) AOR: 6.03, 95% CI: 1.86- 17.19) and above 60 years, (AOR: 12.76, 95% CI: 3.30 – 14.26).

Patients comorbid with chronic kidney failure were 4.95 times more (95% CI: 1.83-15.82) to be hypertensive and among those with family history of hypertension, the adjusted risk were twice. Compared to non-smokers, smokers were 2.87 times more likely to develop hypertension (95% CI: 0.87 – 9.15). The highest probabilities are observed to patients who are at the same time smokers, overweight, with chronic kidney failure, family history with hypertension with secondary or university as highest educational level. The model had an excellent predictive performance (AUC), accurately predicting 88.71% (95% CI: 84.17%-92.5%) of all observations

CONCLUSION: The relatively high prevalence and associated risk factors of hypertension in Burundi raises a call for concern especially in this context where there exists an equally high burden of infectious diseases, other chronic diseases including chronic malnutrition. Targeting interventions based on these identified risk factors will allow judicious channel of resources and effective public health planning.

19. Burundi Cancer Care Needs: A Call to Action

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The Oncologist, 2020, https://doi.org/10.1634/theoncologist.2020-0410

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ABSTRACT

Burundi is a landlocked country in the East Central Africa region. Beyond a long civil war strife, cancer care remains overlooked, in terms of both infrastructure and human resources needs, and it shows from estimated global incidence and mortality figures. Through a focused literature search, this study highlights the main cancer care needs in this country, with the aim to gather global oncology support to Burundi.

IMPLICATIONS FOR PRACTICE: There is little knowledge about the state of oncology in Burundi. This article, based on a literature search, depicts an image of the current state of cancer care in Burundi and aims to compel global health enthusiasts to join in curbing the death toll of cancers in Burundi.

Keywords: Burundi, Oncology, Needs, Low- and middle-income countries

20. Knowledge and practices of general practitioners at district hospitals towards cervical cancer prevention in Burundi, 2015: a cross-sectional study

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ABSTRACT

BACKGROUND: Well-organized screening and treatment programs are effective to prevent Invasive Cervical Cancer (ICC) in LMICs. To achieve this, the World Health Organization (WHO) recommends the involvement of existing health personnel in casu doctors, nurses, midwives in ICC prevention. A necessary precondition is that health personnel have appropriate knowledge about ICC. Therefore, to inform policy makers and training institutions in Burundi, we documented the knowledge and practices of general practitioners (GPs) at district hospital level towards ICC control.

METHODS: A descriptive cross-sectional survey was conducted from February to April, 2015 among all GPs working in government district hospitals. A structured questionnaire and a scoring system were used to assess knowledge and practices of GPs.

RESULTS: The participation rate was 58.2%. Majority of GPs (76.3%) had appropriate knowledge (score > 70%) on cervical cancer disease; but some risk factors were less well known as smoking and the 2 most important oncogenic HPV. Only 8.4% of the participants had appropriate knowledge on ICC prevention: 55% of the participants were aware that HPV vaccination exists and 48.1% knew cryotherapy as a treatment method for CIN. Further, 15.3% was aware of VIA as a screening method. The majority of the participants (87%) never or rarely propose screening tests to their clients. Only 2 participants (1.5%) have already performed VIA/VILI. Wrong thoughts were also reported: 39.7% thought that CIN could be treated with radiotherapy; 3.1% thought that X-ray is a screening method.

CONCLUSION: In this comprehensive assessment, we observed that Burundian GPs have a very low knowledge level about ICC prevention, screening and treatment. Suboptimal practices and wrong thoughts related to ICC screening and treatments have also been documented. We therefore recommend an adequate pre- and in-service training of GPs and most probably nurses on ICC control before setting up any public health intervention on ICC control.

Keywords: Knowledge, Practices, General practitioners, Cervical cancer prevention

21. Knowledge, Attitudes and Practices with regard to Hypertension among Rural Health Providers of Bubanza Health Province

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ABSTRACT

OBJECTIVES: To assess the knowledge, attitudes, and practices of health providers in rural Burundi towards hypertensive patients.

METHODS: This was a descriptive cross-sectional study conducted from December 2014 to May 2015. It involved 157 health providers from the Bubanza health province. They were divided into three groups; 14 physicians (8.9%), 62 nurses (39.4%) and 81 nursing assistants (51.5%). Delivery in a health facility was essential for the inclusion of the respondent in the study. A semi-directive interview was conducted using a pre-established questionnaire. Data entry and processing were done with Excel 2016. The proportion was used to assess respondents' knowledge, attitudes, and practices regarding HTA.

RESULTS: The mean age was 32.9 ± 6.1 years with a sex ratio F/M 3.2. The correct definition of hypertension was known by 64.2% of doctors, 35.4% of nurses and by 30.8% of nursing auxiliaries. Eleven physicians (78.5%), twenty-eight nurses (45.1%) and forty nursing assistants consistently took blood pressure in all adults who came for consultation. Thirty percent of all providers were aware of the initial HTA management guidelines. The target blood pressure level was not known by 21.7% of providers including 2 doctors (14.5%), 9 nursing auxiliaries (14.5%) and 23 (28, 4%) nurses. Treatment duration was known by 43.3% of providers; 11 doctors (78.6%), 30 nurses (37%) and 27 nursing assistants (43.5%). One hundred and thirty-four (85.3%) providers provided information on hypertension to their patients and 155 (98.7%) did not assess risk factors.

CONCLUSION: The gaps in hypertension are found in all providers but are pronounced among the least qualified. The lack of information from patients makes it difficult to comply with treatment.

22. Study of Knowledge, Attitudes, and Practices of Civil Servants of Gitega Town with Regard Arterial Hypertension

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ABSTRACT

OBJECTIVES: To assess knowledge, attitudes, and practices of civil servants working in Gitega town with regard to HTA

METHODS: A cross-sectional study of a cohort of civil servants working in different public departments of the town of Gitega. It was conducted from March to May 2017 on 165 respondents who accepted and signed the informed consent form. A pre-established questionnaire was used in the data collection. The data capture and processing were done with Excel 2016. The results were analyzed by calculating the proportion of participants according to HTA knowledge, attitudes, and practices

RESULTS: The mean age was 38.5 ± 11 years with a sex ratio of 1.84 in favor of men. Sixty-eight respondents (41.21%) had a parental history of hypertension and 13 (7.88%) had a history of hypertension. One hundred and fifty-eight respondents (96%) already had information about hypertension. Ninety (54.55%) knew the normal values of blood pressure. The most known risk factors were excess of salt (75.76%), alcohol consumption (72.73%), obesity (53.33%), and smoking (41.82%). The target organs listed in descending order were heart (89.09%), brain (61.82%) and vessels (58.18%). Sixty-nine respondents thought that HTA was a curable condition and 157 (89.09%) proved the need for its prevention. 50.30% of participants knew their blood pressure. Of the 13 patients with HTA, 8 (61.53%) regularly took antihypertensive medication, 9 (69.23%) were regular checkers, and 12 practiced physical activity as a control or preventive practice.

CONCLUSION: HTA gaps are observed among civil servants in semi-urban areas of Burundi. Awareness campaigns about HTA of the entire population are necessary.

23. Local terms and understandings of mental health problems in Burundi

Pacifique Irankunda, Laurie Heatherington and Jessica Fitts

Transcultural Psychiatry. 2017; doi:10.1177/1363461516689004

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ABSTRACT

A pilot study and two intensive studies were conducted to document the local vocabularies used by Burundians to describe mental health problems and their understandings about the causes. The pilot study in which 14 different large groups of community members awaiting appointments at a village health clinic were engaged in open-ended discussions of the local terminology and causal beliefs about mental health problems—suggested three key syndromes: *akabonge* (a set of depression-like symptoms), *guhahamuka* (a set of trauma-related symptoms), and *ibisigo* (a set of psychosis-like symptoms). In Study 1 ($N = 542$), individual interviews or surveys presented participants with the names of these syndromes and asked what they considered to be the symptoms and causes of them. Study 2 ($N = 143$) cross-validated these terms with a different sample (also in individual interviews/surveys), by presenting the symptom clusters and asking what each would be called and about their causes. Findings of both studies validated this set of

terms and yielded a rich body of data about causal beliefs. The influence of education level and gender on familiarity with these terms was also assessed. Implications for the development of mental health services and directions for future research are discussed.

24. Mental health treatment outcome expectancies in Burundi

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Transcultural Psychiatry. 2017; doi:10.1177/1363461516652302

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ABSTRACT

Best practices in global mental health stress the importance of understanding local values and beliefs. Research demonstrates that expectancies about the effectiveness of a given treatment significantly predicts outcome, beyond the treatment effect itself. To help inform the development of mental health interventions in Burundi, we studied expectancies about the effectiveness of four treatments: spiritual healing, traditional healing, medication, and selected evidence-based psychosocial treatments widely used in the US. Treatment expectancies were assessed for each of three key syndromes identified by previous research: *akabonge* (a set of depression-like symptoms), *guhahamuka* (a set of trauma-related symptoms), and *ibisigo* (a set of psychosis-like symptoms). In individual interviews or written surveys in French or Kirundi with patients ($N = 198$) awaiting treatment at the clinic, we described each disorder and the treatments in everyday language, asking standard efficacy expectations questions about each ("Would it work?" "Why or why not?").

Findings indicated uniformly high expectancies about the efficacy of spiritual treatment, relatively high expectancies for western evidence-based treatments (especially cognitive behavior therapy [CBT] for depression-like symptoms), lower expectancies for medicine, and especially low expectancies for traditional healing (except for traditional healing for psychosis-like symptoms). There were significant effects of gender but not of education level. Qualitative analyses of explanations provide insight into the basis of people's beliefs, their explanations about why a given treatment would or would not work varied by type of disorder, and reflected beliefs about underlying causes. Implications for program development and future research are discussed.

25. Colorectal Cancer: Epidemiological, Clinical and Histopathological Aspects in Burundi

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ABSTRACT

Colorectal cancer is a major cause of morbidity and mortality throughout the world. There is no study about colorectal cancer in our country.

The aim of the study was to assess epidemiological, clinical, therapeutic and histological aspects of colorectal cancer over a 10-year period (1999-2008) in Kamenge university hospital, Bujumbura, Burundi, by a descriptive retrospective study.

A total of 37 cases of colorectal cancer, 22 males (59.5%) and 15 females (40.5%), mean age 50.8 years, were retrieved over the period of the study. The colorectal cancer was revealed by a rectal bleeding in 21 patients (56.8%) and an occlusive syndrome in 5 patients (13.5%). All patients underwent surgery. According to Dukes' stages: 27% were A, 27% B, 19% C and 27% stage D. Histopathologically, 18 cases (46.7%) were differentiated adenocarcinoma, 14 cases (37.8%) undifferentiated adenocarcinoma, 2 cases of lymphoma and 2 cases of leiomyosarcoma. All patients underwent surgery. The hospitalization stay was a mean of 27 days. The prognosis was poor with a mortality rate of 13.5% in the hospital.

In conclusion, colorectal cancer deserves awareness as a public health problem in our country.

Keywords: Colon Cancer, Adenocarcinoma, Rectal Cancer, Colorectal Cancer

26. Esophageal Cancer: Epidemiological, Clinical and Histopathological Aspects over a 24-Years Period at Kamenge University Hospital, Bujumbura, Burundi

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Open Journal of Gastroenterology 2016 **DOI:** 10.4236/ojgas.2016.64014

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ABSTRACT

AIM: There were no data about esophageal cancer in Burundi. The aim of the study was to highlight the epidemiological, clinical and histopathological aspects of the esophageal cancer.

METHOD: A retrospective study over a 24-years period (from January 1988 to December 2011) was carried out at Kamenge university hospital, including patients with esophageal cancer. The cases were selected on basis of the histological evidence of the cancer.

RESULTS: A total of 34 cases were retrieved and included for analysis. Among them, 24 patients (70.5%) were males. The esophageal cancer constituted 8.6% of digestive cancers over the

period of the study. The average age was 50.9 years. It was revealed by dysphagia in 32 patients (94.1%) and was concomitantly metastatic in 12 patients. The squamous cell carcinoma was 30 cases (88.2%). 27 patients underwent a curative resection, but the outcome and prognosis were poor. In-hospital mortality and morbidity rates were respectively 8.8% and 17.7%.

CONCLUSION: The present study showed evidence that the esophageal cancer in our country had the same characteristics and distribution as well as in developing countries. It had a poor prognosis and efforts had to be done in the early cancer detection.

Keywords: Esophageal Cancer, Squamous Cell Carcinoma, Adenocarcinoma, Digestive Cancer

27. Community perceptions of mental distress in a post-conflict setting: A qualitative study in Burundi

Itziar Familiar, Sonali Sharma, Herman Ndayisaba, Norbert Munyentwari, Seleus Sibomana & Judith K. Bass

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ABSTRACT

There is scant documentation of the mental health characteristics of low-income communities recovering from armed conflict. To prepare for quantitative health surveys and health service planning in Burundi, we implemented a qualitative study to explore concepts related to mental distress and coping among adults. Mental distress was defined as problems related to feelings, thinking, behavior and physical stress. Using free listing and key informant interviews with a range of community members, we triangulated data to identify salient issues.

Thirty-eight free list respondents and 23 key informants were interviewed in 5 rural communities in Burundi using 2 interview guides from the WHO Toolkit for Mental Health Assessment in Humanitarian Settings. Based on these interviews, we identified four locally defined idioms/terms relating to mental distress: ihahamuka (anxiety spectrum illnesses), ukutiyemera (a mix of depression and anxiety-like syndrome), akabonge (depression/grief-like syndrome) and kwamana ubwoba burengeje (anxiety-like syndrome). Mental distress terms were perceived as important problems impacting community development. Affected individuals sought help from several sources within the community, including community leaders and traditional healers. We discuss how local expressions of distress can be used to tailor health research and service integration from the bottom up.

Keywords: mental health, distress, qualitative, developing country, post-conflict

28. Community health education network for the prevention of cardiovascular diseases and diabetes in Burundi: establishment and initial results.

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ABSTRACT

The increasing prevalence of cardiovascular diseases presents a major emerging public health issue in developing countries with limited resources. The development and implementation of prevention activities and interventions for people at risk is essential, in particular, given the fragility of Burundi's health system in the post-conflict period.

A structured prevention programme targeting at-risk individuals was set up as part of a community health network in Bujumbura capital city in 2007. A free screening test for cardiovascular disease risk, based on clinical criteria and capillary glycemia typing, was conducted in 10 health structures and non-governmental organizations as well as three patients' associations.

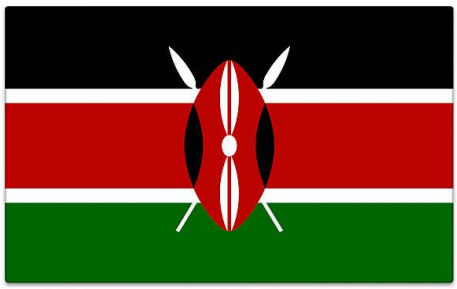
Between June 2007 and December 2008, 377 group sessions for 1318 individuals at-risk and 2457 cycles of activities (a cycle consisting of one to three sessions per person around three thematic areas) were carried out by 19 nurses and peer educators that had received joint training from both a diabetes specialist and an ethnosociologist. Group learning settings enable the at-risk individuals to make a personalized choice and clarify their action(s). An interim evaluation of the educational follow-up conducted with 292 people that had completed the education cycle and benefited from a second education assessment demonstrated a favorable evolution in modifiable risk factors.

Based on the rapid uptake of this method in the Burundi context and on the engagement of peer educators working alongside health professionals, this study suggests a great potential for the development of similar interventions in other countries.

76 citations

(Sorted by Partner State)

Kenya



1. An update on one-dose HPV vaccine studies, immunobridging and humoral immune responses

Waheed DE[1], Burdier FR[2], Eklund C[2], Baussano I[3], Mariz FC[3], TÃblick L[4], Mugo N[5], Watson-Jones D[6] , Stanley M7 , Baay M8 , Vorsters A[8]

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ABSTRACT

The 12th HPV Prevention and Control meeting was held on June 2-3, 2022, in Antwerp, Belgium. This technical meeting focused on several topics. This report summarises the discussions and lessons learned on two topics: an update on one-dose HPV vaccination studies and humoral immune responses upon HPV vaccination. Long-term follow-up studies from Costa Rica (eleven years) and India (ten years) report stable levels of antibodies after a single HPV vaccination. High vaccine effectiveness against incident persistent HPV 16/18 infection was seen in India (95.4%, 85.0-99.9) ten years postvaccination and in Kenya (97.5%, 81.7-99.7) eighteen months postvaccination, an important observation in a setting with a higher HPV prevalence. The potential impact of HPV vaccination using a one-dose schedule in India was modelled and showed that implementation of one-dose schedule can contribute towards achieving WHO Cervical Cancer elimination goals. These data support the WHO SAGE recommendations for adopting a one-dose schedule for females aged 9-20Â years. Immunobridging studies were discussed during the meeting. General agreement was reached that when thoughtfully applied, they can support and accelerate the expanded use of HPV vaccine with new vaccine schedules, age cohorts, or vaccine formulations. Internationally standardised measurements of HPV immune responses important for the progress of HPV vaccinology field. Humoral immune responses upon HPV vaccination plateau at 24 months regardless of number of doses, therefore, data should be analysed after at least 24 months of follow-up to bridge studies accurately.

Key words: Vaccination; Vaccines

2. Delayed breast cancer presentation, diagnosis, and treatment in Kenya.

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ABSTRACT

PURPOSE: In this mixed-methods study, we evaluated the factors that contribute to delayed breast cancer (BC) diagnosis and treatment at a Kenyan hospital.

METHODS: Individuals with a diagnosis of BC, either as a referral or index patient, were recruited to participate in this study through convenience sampling. Data were collected on socio-demographics, health history, and cancer history, diagnosis, and treatment of patients at Kenyatta National Hospital (KNH). For the quantitative analyses, the relationship between sociodemographic and health history factors with stage at diagnosis, number of visits before diagnosis, time to diagnosis, and time to initial intervention, stratified by time to onset of symptoms, were examined using regression analyses. For the qualitative analysis, in-depth interviews of every fifth patient were completed to assess reasons for delayed diagnosis and treatment.

RESULTS: The final analytic sample comprised of 378 female BC patients with an average age of 50. These females were generally of lower SES: 49.2% attained no or only primary-level education, 57.4% were unemployed, and the majority (74.6%) had a monthly household income of<5000 Kenyan shillings (equivalent =41 USD). The median time from BC symptom onset to presentation at KNH was 13 (IQR 3-36) weeks, from presentation to diagnosis was 17.5 (IQR 7-36.5) weeks, and from diagnosis to receipt of the initial intervention was 6 (IQR3-13) weeks. Female BC patients who were never/unmarried, less educated, less affluent, users of hormonal contraception, and had 1-3 children were more likely to experience diagnosis and treatment delays. Qualitative data showed that financial constraints, lack of patient BC awareness, and healthcare practitioner misdiagnosis and strikes delayed patient diagnosis and treatment.

CONCLUSIONS: BC patients experience long healthcare system delays before diagnosis and treatment. Educating communities and providers about BC and expediting referrals may minimize such delays and subsequently BC mortality rates in Kenya.

Key words: Breast Neoplasms

3. Implementation and scale-up of a single-visit, screen-and-treat approach with thermal ablation for sustainable cervical cancer prevention services: a protocol for a stepped-wedge cluster randomized trial in Kenya.

Shin MB[1], Oluoch LM[2], Barnabas RV[3], Baynes C[4] , Fridah H[4] , Heitner J[4] , Kerubo MB[5] , Ngure K[5] , Pinder LF[6] , Thomas KK[5] , Mugo NR[5] , Gimbel S[6]

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ABSTRACT

BACKGROUND: An important cervical cancer prevention strategy in low- and middle-income countries (LMICs) has been single-visit screen-and-treat (SV-SAT) approach, using visual inspection with acetic acid (VIA) and ablative treatment with cryotherapy to manage precancerous lesions. While SV-SAT with VIA and cryotherapy have established efficacy, its population level coverage and impact on reducing cervical cancer burden remains low. In Kenya, the estimated cervical cancer screening uptake among women aged 30-49 is 16% and up to 70% of screen-positive women do not receive treatment. Thermal ablation for treatment of precancerous lesions of the cervix is recommended by the World Health Organization and has the potential to overcome logistical challenges associated with cryotherapy and facilitate implementation of SV-SAT approach and increase treatment rates of screen-positive women. In this 5-year prospective, stepped-wedge randomized trial, we plan to implement and evaluate the SV-SAT approach using VIA and thermal ablation in ten reproductive health clinics in central Kenya.

METHODS: The study aims to develop and evaluate implementation strategies to inform the national scale-up of SV-SAT approach with VIA and thermal ablation through three aims: (1) develop locally tailored implementation strategies using multi-level participatory method with key stakeholders (patient, provider, system-level), (2) implement SV-SAT approach with VIA and thermal ablation and evaluate clinical and implementation outcomes, and (3) assess the budget impact of SV-SAT approach with VIA and thermal ablation compared to single-visit, screen-and-treat method using cryotherapy.

DISCUSSION: Our findings will inform national scale-up of the SV-SAT approach with VIA and thermal ablation. We anticipate that this intervention, along with tailored implementation strategies

will enhance the adoption and sustainability of cervical cancer screening and treatment compared to the standard of care using cryotherapy. TRIAL REGISTRATION: NCT05472311.

Keywords: Female, Uterine Cervical Neoplasms/diagnosis/prevention & control; Early Detection of Cancer/methods;

4. Exploring the factors contributing to low vaccination uptake for nationally recommended routine childhood and adolescent vaccines in Kenya.

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ABSTRACT
BACKGROUND: Vaccination remains the most effective means of reducing the burden of infectious disease among children. It is estimated to prevent between two to three million child deaths annually. However, despite being a successful intervention, basic vaccination coverage remains below the target. About 20Â million infants are either under or not fully vaccinated, most of whom are in Sub-Saharan Africa region. In Kenya, the coverage is even lower at 83% than the global average of 86%. The objective of this study is to explore the factors that contribute to low demand or vaccine hesitancy for childhood and adolescent vaccines in Kenya.

METHODS: The study used qualitative research design. Key Informant Interviews (KII) was used to obtain information from national and county-level key stakeholders. In-depth Interviews (IDI) was done to collect opinions of caregivers of children 0-23 months and adolescent girls eligible for immunization, and Human papillomavirus (HPV) vaccine respectively. The data was collected at the national level and counties such as Kilifi, Turkana, Nairobi and Kitui. The data was analyzed using thematic content approach. A total of 41 national and county-level immunization officials and caregivers formed the sample.

RESULTS: Insufficient knowledge about vaccines, vaccine supply issues, frequent healthcare worker's industrial action, poverty, religious beliefs, inadequate vaccination campaigns, distance to vaccination centers, were identified as factors driving low demand or vaccine hesitancy against

routine childhood immunization. While factors driving low uptake of the newly introduced HPV vaccine were reported to include misinformation about the vaccine, rumors that the vaccine is a form of female contraception, the suspicion that the vaccine is free and available only to girls, poor knowledge of cervical cancer and benefits of HPV vaccine.

CONCLUSIONS: Rural community sensitization on both routine childhood immunization and HPV vaccine should be key activities post COVID-19 pandemic. Likewise, the use of mainstream and social media outreaches, and vaccine champions could help reduce vaccine hesitancy. The findings are invaluable for informing design of context-specific interventions by national and county-level immunization stakeholders. Further studies on the relationship between attitude towards new vaccines and connection to vaccine hesitancy is necessary.

Keywords; vaccination uptake childhood adolescent vaccines

5. High prevalence of vaccine-preventable anal human papillomavirus infections is associated with HIV infection among gay, bisexual, and men who have sex with men in Nairobi, Kenya.

Myo Minn Oo[1], Samantha Moore[2], Suzanne Gibbons[3], Wendy Adhiambo[4], Peter Muthoga[4], Naomi Siele[4], Maureen Akolo[4], Henok Gebrebrhan[1], Aida Sivro[3 5 6], Blake T Ball[1 3], Robert R Lorway[2], Alberto Severini[1 3], Joshua Kimani[1 4], Lyle R McKinnon[1 4 6]

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ABSTRACT

BACKGROUND: Human papillomavirus (HPV) infection is associated with anal cancers and is more prevalent in gay, bisexual, and men who have sex with men (gbMSM), partly due to their vulnerability to HIV infection. Baseline HPV genotype distributions and risk factors can inform the design of next-generation HPV vaccines to prevent anal cancer.

METHODS: A cross-sectional study was conducted among gbMSM receiving care at a HIV/STI clinic in Nairobi, Kenya. Anal swabs were genotyped using a Luminex microsphere array. Multiple logistic regression methods were used to identify risk factors for four HPV outcomes (any HPV, any HR-HPV, and 4- and 9-valent vaccine-preventable HPVs).

RESULTS: Among 115 gbMSM, 51 (44.3%) were HIV-infected. Overall HPV prevalence was 51.3%; 84.3% among gbMSM living with HIV and 24.6% among gbMSM without HIV (p<0.001). One-third (32.2%) had HR-HPV and the most prevalent vaccine-preventable HR-HPV genotypes were 16, 35, 45, and 58. HPV-18 was uncommon. The 9-valent Gardasil vaccine would have prevented 61.0% of HPV types observed in this population. In multivariate analyses, HIV status was the only significant risk factor for any HPV (adjusted odds ratio [aOR]:23.0, 95% confidence interval [95% CI]: 7.3-86.0, p<0.001) and for HR-HPV (aOR: 8.9, 95% CI: 2.8-36.0, p<0.001). Similar findings were obtained for vaccine-preventable HPVs. Being married to a woman significantly increased the odds of having HR-HPV infections (aOR: 8.1, 95% CI: 1.6-52.0, p<0.016).

CONCLUSIONS: GbMSM living with HIV in Kenya are at higher risk of anal HPV infections including genotypes that are preventable with available vaccines. Our findings support the need for a targeted HPV vaccination campaign in this population.

Keywords: male; vaccine-preventable human papillomavirus gay, bisexual, and men who have sex with men

6. Diverse policy maker perspectives on the mental health of pregnant and parenting adolescent girls in Kenya: Considerations for comprehensive, adolescent-centered policies and programs.

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ABSTRACT
The pregnancy rate in Kenya among adolescent girls is among the highest in the world. Adolescent girls experience increased risk of anxiety and depression during pregnancy and postpartum which can result in poor health outcomes for both mother and baby, and negatively influence their life course. Mental health is often given low priority in health policy planning, particularly in Sub-Saharan Africa (SSA). There is an urgent need to address the treatment gap and provide timely mental health promotion and preventative services, there is a need to focus on the shifting demographic of SSA-the young people. To understand perspectives on policymakers on the mental health prevention and promotion needs of pregnant and parenting

adolescent girls, we carried out a series of interviews as part of UNICEF funded helping pregnant and parenting adolescents thrive project in Kenya. We interviewed 13 diverse health and social policy makers in Kenya to understand their perspectives on the mental health experiences of pregnant and parenting adolescent girls and their ideas for optimizing mental health promotion. Six principal themes emerged including the mental health situation for adolescent girls, risk factors for poor mental health and barriers to accessing services for adolescent girls, health seeking behavior effect on maternal and child health outcomes, mental health promotion, protective factors for good mental health, and policy level issues. Examination of existing policies is required to determine how they can fully and effectively be implemented to support the mental health of pregnant and parenting adolescent girls.

Keywords: mental health adolescent girls

7. "If they had a place to live, they would be taking medication": a qualitative study identifying strategies for engaging street-connected young people in the HIV prevention-care continuum in Kenya.

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ABSTRACT

INTRODUCTION: Street-connected young people (SCY) experience structural and social barriers to engaging in the HIV prevention-care continuum. We sought to elicit recommendations for interventions that may improve SCY's engagement along the HIV prevention-care continuum from healthcare providers, policymakers, community members and SCY in Kenya.

METHODS: This qualitative study was conducted in Uasin Gishu, Trans Nzoia, Bungoma, Nakuru and Kitale counties in Kenya between May 2017 and September 2018 to explore and describe the public perceptions of, and proposed and existing responses to, the phenomenon of SCY. This secondary analysis focuses on a subset of data interviews that investigated SCY's healthcare needs in relation to HIV prevention and care. We conducted 41 in-depth interviews and seven focus group discussions with 100 participants, of which 43 were SCY. In total, 48 participants were women and 52 men.

RESULTS: Our analysis resulted in four major themes corresponding to stages in the HIV prevention-care continuum for key populations. We identified the need for an array of strategies to engage SCY in HIV prevention and testing services that are patient-centred and responsive to the diversity of their circumstances. The use of pre-exposure prophylaxis was a biomedical prevention strategy that SCY and healthcare providers alike stressed the need to raise awareness around and access to for SCY. Several healthcare providers suggested peer-based approaches for engaging SCY throughout the continuum. However, SCY heavily debated the appropriateness of using peer-based methods. Structural interventions, such as the provision of food and housing, were suggested as strategies to improve antiretroviral therapy adherence.

CONCLUSIONS: This study identified contextually relevant interventions that should be adapted and piloted for use with SCY. Education and sensitization of SCY and healthcare providers alike were identified as possible strategies, along with affordable housing and anti-poverty strategies as cash transfers and provision of food. Peer-based interventions are a clear option but require SCY-specific adaptation to be implemented effectively.

Keywords: Male; Humans; Female; Adolescent; HIV Infections/drug therapy/prevention & control

8. Personality traits and substance use among college students in Eldoret, Kenya.
Kinyanjui DW[1] and Sum AM[2]

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ABSTRACT
BACKGROUND: There is documented evidence of the increase of alcohol and substance use among college students globally. Increased morbidity and associated maladaptive socio-occupational outcomes of the habit with early dependence and mortality have also been reported. Majority of the substance use related studies conducted in low- and middle- income countries mainly look at health- related risk behaviour control mechanisms that focus on the social environment domain, with few or almost none focusing on those embedded within the person (self- control). This study focuses on the relationship between substance use and personality traits (in the self-control domain), among college students in a low- middle- income country.

METHODS: Design. A cross- sectional descriptive study that used the self- administered WHO Model Core and the Big Five Inventory Questionnaires to collect information among students in Colleges and Universities in Eldoret town, Kenya. Setting. Four (1- university campus; 3- non-university) tertiary learning institutions were randomly selected for inclusion. Subjects. Four hundred students, 100 from each of the 4 institutions; selected through a stratified multi-stage random sampling, who gave consent to participate in the study. Associations between various variables, personality traits and substance use were tested using bivariate analysis, while the

strength/ predictors of association with substance use was ascertained through multiple logistic regression analyses. A finding of p<0.05 was considered statistically significant.

RESULTS: The median age was 21 years (Q1, Q3; 20, 23), approximately half 203 (50.8%) were male, with majority 335 (83.8%) from an urban residence and only 28 (7%) gainfully employed. The lifetime prevalence of substance use was 41.5%, while that of alcohol use was 36%. For both, a higher mean neuroticism score [substance use- (AOR 1.05, 95%CI; 1, 1.10: p = 0.013); alcohol use- (AOR 1.04, 95%CI; 0.99, 1.09: p = 0.032)] showed increased odds of lifetime use, while a higher mean agreeableness score [substance use- (AOR 0.99, 95%CI; 0.95, 1.02: p = 0.008); alcohol use- (AOR 0.99, 95%CI; 0.95, 1.02: p = 0.032)] showed decreased odds of lifetime use. A higher mean age (AOR 1.08, 95% CI; 0.99, 1,18: p = 0.02) of the students also showed an 8% increase in odds of lifetime alcohol use. The lifetime prevalence of cigarette use was 8.3%. Higher mean neuroticism (AOR 1.06, 95%CI; 0.98, 1.16: p = 0.041) and openness to experience (AOR 1.13, 95%CI; 1.04, 1.25: p = 0.004) scores showed increased odds of lifetime cigarette smoking, whereas being unemployed (AOR 0.23, 95%CI; 0.09, 0.64: p<0.001) had a decreased odd. Other substances reported included cannabis 28 (7%), sedatives 21 (5.2%), amphetamines 20 (Catha edulis) (5%), tranquilizers 19 (4.8%), inhalants 18 (4.5%), cocaine 14 (3.5%), with heroin and opium at 10 (2.5%) each. Among the 13 participants who reported injecting drugs, 10 were female and only 3 were male; this finding was statistically significant (p = 0.042).

CONCLUSIONS: The prevalence of substance use among college and university students in Eldoret is high and associated with high neuroticism and low agreeableness personality traits. We provide directions for future research that will examine and contribute to a deeper understanding of personality traits in terms of evidence- based approach to treatment.

Keywords: Humans; Female; Male; Young Adult

9. Perspectives on reasons for suicidal behaviour and recommendations for suicide prevention in Kenya: qualitative study.

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https://www.cambridge.org/core/journals/bjpsych-open/article/perspectives-on-reasons-for-suicidal-behaviour-and-recommendations-for-suicide-prevention-in-kenya-qualitative-study/D90D7351683653A4D834CDDD6134E6CB

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ABSTRACT
BACKGROUND: Little is known about the reasons for suicidal behaviour in Africa, and communities' perception of suicide prevention. A contextualised understanding of these reasons is important in guiding the implementation of potential suicide prevention interventions in specific settings. AIMS: To understand ideas, experiences and opinions on reasons contributing to suicidal behaviour in the Coast region of Kenya, and provide recommendations for suicide prevention.

METHOD: We conducted a qualitative study with various groups of key informants residing in the Coast region of Kenya, using in-depth interviews. Audio-recorded interviews were transcribed and translated from the local language before thematic inductive content analysis.

RESULTS: From the 25 in-depth interviews, we identified four key themes as reasons given for suicidal behaviour: interpersonal and relationship problems, financial and economic difficulties, mental health conditions and religious and cultural influences. These reasons were observed to be interrelated with each other and well-aligned to the suggested recommendations for suicide prevention. We found six key recommendations from our thematic content analysis: (a) increasing access to counselling and social support, (b) improving mental health awareness and skills training, (c) restriction of suicide means, (d) decriminalisation of suicide, (e) economic and education empowerment and (f) encouraging religion and spirituality.

CONCLUSIONS: The reasons for suicidal behaviour are comparable with high-income countries, but suggested prevention strategies are more contextualised to our setting. A multifaceted approach in preventing suicide in (coastal) Kenya is warranted based on the varied reasons suggested. Community-based interventions will likely improve and increase access to suicide prevention in this study area.

Keywords: Kenya; Suicide behaviour

10. Attributes of parenting identities and food practices among parents in Nairobi, Kenya.

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ABSTRACT
Dramatic changes in daily life are leading to increased rates of obesity and non-communicable diseases (NCD) in Kenya, including among children. Parenting plays a vital role in helping children

establish healthy eating habits to prevent obesity and NCDs. The objective of this study was to describe parenting identity and how attributes of parenting influence food parenting practices in an urban Kenyan context. A qualitative study design was employed with 18 participants recruited using quota sampling to include parents who were born in (nÂ =Â 8) or migrated to Nairobi in the last five years (nÂ =Â 10). In-depth qualitative interviews were conducted by an experienced ethnographic interviewer that inquired about parenting identity and food parenting practices. Transcripts were analyzed using thematic coding in a multi-step and emergent process. Parents described their parenting identities as an integration of tradition and personal experiences during their upbringing with the modern realities of daily life. Their own experiences with discipline, modern urban lifestyles, and social pressures were dominant influences on their identities. Parenting identities included four distinct but related attributes: good disciplinarian, trustworthy, protective, and balanced provider and nurturer. Food parenting practices were described as expressions of parenting identity and included the goals: children becoming better eaters; nourishing through food; impart joy; and bonding. The study findings illustrate the influence of modern urban lifestyles on food parenting identities and practices. Understanding emerging identities and practices in rapidly changing low- and middle-income countries (LMIC) contexts is essential for health promoting policies and programs.

Keywords: Child; Humans

11. Factors influencing cervical cancer screening among pregnant women in Nairobi, Kenya.

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ABSTRACT

To characterize cervical cancer screening knowledge, beliefs, behaviors, and sociodemographic factors among women aged 25-45 years who access and utilize prenatal care services in Nairobi, Kenya. A descriptive cross-sectional design using a convenience sample of pregnant women receiving prenatal health services at a public and a private hospital in Nairobi, Kenya. Constructs from the Health Belief Model (HBM) guided the design, interpretation of the results, and recommendations. Data were analyzed using SPSS version 24. Bivariate analyses were conducted to examine associations between variables. There was a significant association (p=0.001) between knowledge and screening behaviors. There was no association (p=0.066) between cervical cancer beliefs (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy) and screening behaviors. Knowledge and beliefs influence cervical cancer screening behavior. Low cervical cancer screening uptake substantiates the need for tailoring culturally specific health behavior change communication to address misconceptions about cervical cancer screening in Kenya.

Keywords: Health belief model; prenatal care; cervical cancer; screening; Nairobi

12. A cross-sectional study of the prevalence, barriers, and facilitators of cervical cancer screening in family planning clinics in Mombasa County, Kenya.

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ABSTRACT

BACKGROUND: Cervical cancer is the most common cancer in sub-Saharan Africa. With appropriate screening and treatment, cervical cancer can be prevented. In Kenya, cervical cancer screening is recommended for all women of reproductive age who visit a health facility. In particular, the Kenyan Ministry of Health has tasked family planning clinics and HIV clinics with implementing cervical cancer screening as part of the overall cervical cancer screening strategy. A cross-sectional survey was conducted to understand cervical cancer screening practices and explore clinic-level barriers and facilitators to screening in family planning clinics (FP) in Mombasa County, Kenya.

METHODS: Structured interviews were conducted with randomly sampled FP clinic managers to collect information about clinic size, location, type, management support, infrastructure, screening practices, and availability of screening commodities. Data were abstracted from FP registers for a 15-month period from October 1, 2017 until December 31, 2018 to understand cervical cancer screening prevalence. Generalized linear models were used to calculate prevalence ratios (PR) and identify clinic-level correlates of reporting any cervical cancer screening.

RESULTS: A total of 70 clinics were sampled, 54% (38) were urban and 27% (19) were public facilities. The median number of staff in a clinic was 4 (interquartile range [IQR] 2-6) with a median of 1 provider trained to perform screening (IQR 0-3). Fifty-four percent (38/70) of clinic managers reported that their clinics performed cervical cancer screening. Of these, only 87% (33) and 71% (27) had dependable access to speculums and acetic acid, respectively. Being a public FP clinic was associated with higher prevalence of reported screening (14/38 [37%] vs 6/32 [16%]; prevalence rate ratio [PR] 1.57, 95%CI 1.05-2.33). Clinics that reported cervical cancer screening were much more likely to have at least one provider trained to perform cervical cancer screening

(84%, 32/38) compared to clinics that did not report screening (28%, 9/32; PR 3.77, 95%CIÂ 1.82-7.83).

CONCLUSION: Integration of cervical cancer screening into FP clinics offers great potential to reach large numbers of reproductive-aged women. Increasing training of healthcare providers and ensuring adequate commodity supplies in FP clinics offer concrete solutions to increase screening in a largely unscreened population.

Keywords: Early Detection of Cancer; Prevalence; Ambulatory Care Facilities; Cesarean Section

13. Piloting a systems level intervention to improve cervical cancer screening, treatment and follow up in Kenya.

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ABSTRACT
Although preventable, Cervical Cancer (CC) is the leading cause of cancer deaths among women in Sub-Saharan Africa with the highest incidence in East Africa. Kenyan guidelines recommend an immediate screen and treat approach using either Pap smear or visual screening methods. However, system (e.g., inadequate infrastructure, weak treatment, referral and tracking systems) and patient (e.g., stigma, limited accessibility, finance) barriers to comprehensive country wide screening continue to exist creating gaps in the pathways of care. These gaps result in low rates of eligible women being screened for CC and a high loss to follow up rate for treatment. The long-term goal of 70% CC screening and treatment coverage can partly be achieved by leveraging electronic health (eHealth, defined here as systems using Internet, computer, or mobile applications to support the provision of health services) to support service efficiency and client retention. To help address system level barriers to CC screening treatment and follow up, our team developed an eHealth tool-the Cancer Tracking System (CATSystem), to support CC screening, treatment, and on-site and external referrals for reproductive age women in Kenya. Preliminary data showed a higher proportion of women enrolled in the CATSystem receiving clinically adequate (patients tested positive were treated or rescreened to confirm negative within 3 months) follow up after a positive/suspicious screening, compared to women in the retrospective arm.

Keywords: Kenya, Uterine Cervical Neoplasms

14. Provider-client rapport in pre-exposure prophylaxis delivery: a qualitative analysis of provider and client experiences of an implementation science project in Kenya.

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ABSTRACT

Daily oral pre-exposure prophylaxis (PrEP) is being incorporated into services frequented by adolescent girls and young women (AGYW) in sub-Saharan Africa who are at a significant risk of HIV. In non-PrEP studies, positive provider-client rapport has been shown to improve patient decision-making and use of medication in clinical care. We examined AGYW and healthcare provider (HCP) perspectives on the value of and strategies for building positive provider-client rapport. We conducted in-depth interviews from January 2018 to December 2019 with 38 AGYW and 15 HCPs from two family planning clinics in Kisumu, Kenya where PrEP was being delivered to AGYW as part of the Prevention Options for Women Evaluation Research (POWER) study. We used semi-structured interview guides and audio-recorded interviews with participant consent. Verbatim transcripts were analysed using thematic content analysis. HCPs and AGYW emphasised the importance of positive provider-client rapport to meet AGYW support needs in PrEP service delivery. HCPs described how they employed rapport-building strategies that strengthened AGYW PrEP uptake and continuation, including: (1) using friendly and non-judgmental tones; (2) maintaining client confidentiality (to build client trust); (3) adopting a conversational approach (to enable accurate risk assessment); (4) actively listening and tailoring counselling (to promote client knowledge, skills, and self-efficacy); and (5) supporting client

agency. Positive provider-client relationships and negative experiences identified in this analysis have the potential to facilitate/deter AGYW from using PrEP while at risk. The strategies to enhance provider-client rapport identified in this study could be integrated into PrEP provider training and delivery practices.

Keywords: Adolescent; Anti-HIV Agents/therapeutic use; Female; HIV Infections/drug therapy/prevention & control;

15. Readiness of health facilities to deliver non-communicable diseases services in Kenya: a national cross-sectional survey.

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ABSTRACT

BACKGROUND: Non-communicable diseases (NCDs) account for an estimated 71% of all global deaths annually and nearly 80% of these deaths occur in low- and middle-income countries. This study aimed to assess the readiness of existing healthcare systems at different levels of health care in delivering NCDs management and prevention services in Kenya.

METHODS: A cross-sectional survey of 258 facilities was conducted between June 2019 and December 2020 using multistage sampling, examining facility readiness based on the availability of indicators such as equipment, diagnostic capacity, medicines and commodities, trained staff and guidelines for NCDs management. Readiness scores were calculated as the mean availability of tracer items expressed as a percentage and a cut-off threshold 70% was used to classify facilities as "ready" to manage NCDs. Descriptive and bivariate analyses were performed to assess the readiness of facilities by type, level, and location settings. Logistic regressions were used to identify factors associated with the readiness of facilities to provide disease-specific services.

RESULTS: Of the surveyed facilities, 93.8% offered chronic respiratory disease (CRD) diagnosis and/or management services, 82.2% diabetes mellitus, 65.1% cardiovascular disease (CVD), and only 24.4% cervical cancer screening services. The mean readiness scores for diabetes mellitus (71%; 95% CI: 67-74) and CVD (69%; 95% CI: 66-72) were relatively high. Although CRD services

were reportedly the most widely available, its mean readiness score was low (48%; 95% CI: 45-50). The majority of facilities offering cervical cancer services had all the necessary tracer items available to provide these services. Modeling results revealed that private facilities were more likely to be "ready" to offer NCDs services than public facilities. Similarly, hospitals were more likely "ready" to provide NCDs services than primary health facilities. These disparities in service readiness extended to the regional and urban/rural divide.

CONCLUSIONS: Important gaps in the current readiness of facilities to manage NCDs in Kenya at different levels of health care were revealed, showing variations by disease and healthcare facility type. A collective approach is therefore needed to bridge the gap between resource availability and population healthcare needs.

Keywords: readiness health facilities non-communicable diseases services

16. A community-based approach to cervical cancer prevention in western Kenya: An AMPATH feasibility project.

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ABSTRACT

OBJECTIVES: Centralized programs have been ineffective in reducing the burden of cervical cancer among Kenyan women. A community-based pilot study was initiated to screen Kenyan women for cervical cancer and to vaccinate their children against human papillomavirus (HPV).

METHODS: Women were educated about cervical cancer prevention at community meetings. Women then provided self-collected vaginal swabs for oncogenic HPV testing using the Roche Cobas Assay. All women were then referred to the local clinic for Visual Inspection with Acetic Acid (VIA). Women were offered the quadrivalent HPV vaccine for their children if and when it became available for the study.

RESULTS: Women in western Kenya were invited to participate in community meetings. A total of 200 women were enrolled: 151 (75.5%) were HIV-uninfected and 49 (24.5%) were HIV-infected; the median age for all women was 42years. High-risk (HR)-HPV types were detected in 49 of swabs from all 200 participants (24.5%) including 20.5% of HIV-uninfected women and 36.7% of HIV-infected women ($p<0.022$). VIA was performed on 198 women: 192 had normal examinations and six had abnormal examinations. Five cervical biopsies revealed two cases of

CIN 2 and one CIN 3. Although all mothers were willing to have their children vaccinated, the HPV vaccine could not be delivered to Kenya during the study period.

CONCLUSIONS: Kenyan women were willing to attend community meetings to learn about prevention of cervical cancer, to provide self-collected vaginal swabs for HPV testing, to travel to the Webuye Clinic for VIA following the collection of swabs, and to have their children vaccinated against HPV. HR-HPV was prevalent, especially in HIV-infected women. As a result of this pilot study, this community-based strategy to prevent cervical cancer will be continued in western Kenya.

Keywords: Uterine Cervical Neoplasms

17. Impact of catch-up human papillomavirus vaccination on cervical cancer incidence in Kenya: A mathematical modeling evaluation of HPV vaccination strategies in the context of moderate HIV prevalence.

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ABSTRACT

BACKGROUND: Cervical cancer incidence is high in Kenya due to HIV and limited access to cancer prevention services. Human papillomavirus (HPV) has been shown to increase HIV acquisition; however, the potential impact of HPV vaccination on HIV is unknown. We modeled the health impact of HPV vaccination in the context of the HIV epidemiology in Kenya.

METHODS: Using a validated compartmental transmission model of HIV and HPV set in Kenya, we evaluated five scenarios of nonavalent HPV vaccination: single-age-vaccination of 10-year-old girls at 90% coverage; multi-age-cohort (MAC) vaccination of 10-14-year-old girls at 90% coverage; MAC plus moderate-coverage (50%) catch-up vaccination of 15-24-year-old women; MAC plus high-coverage (80%) catch-up of 15-24-year-old women; and MAC plus catch-up of 15-44-year-old women at 80% coverage (HPV-FASTER). We compared cervical cancer incidence, HIV prevalence, and cumulative cervical cancer and HIV cases averted after 50 years

to a baseline scenario without vaccination. In all scenarios, we assumed the UNAIDS 90-90-90 goal for HIV treatment is attained by 2030.

FINDINGS: In 2021, model-estimated cervical cancer incidence is 44/100,000 and HIV prevalence among women is 6Â·5%. In 2070, projected cancer incidence declines to 27/100,000 and HIV prevalence reaches 0Â·3% without vaccination. With single-age-vaccination, cancer incidence in 2070 is reduced by 68%, averting 64,529 cumulative cancer cases. MAC vaccination reduces cancer incidence by 75%, averting 206,115 cancer cases. Moderate and high-coverage catch-up and HPV-FASTER reduce cancer incidence by 80%, 82%, and 84%, averting 254,930, 278,690, and 326,968 cancer cases, respectively. In all scenarios, HIV prevalence in 2070 is reduced by a relative 8-11%, with 15,609-34,981 HIV cases averted after 50 years.

INTERPRETATION: HPV vaccination can substantially reduce cervical cancer incidence in Kenya in the next 50 years, particularly if women up to age 24 are vaccinated. HIV treatment scale-up can also alleviate cervical cancer burden. However, HPV vaccination has modest additional impact on HIV when antiretroviral therapy coverage is high.

FUNDING: National Institutes of Health, Bill and Melinda Gates Foundation.

Keywords: Humanities; Humanism; Humans; Vaccination; Mathematics; Prevalence

18. Barriers and Facilitators to Cervical Cancer Screening in Western Kenya: a Qualitative Study.

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ABSTRACT

About nine out of 10 cervical cancer deaths occur in low-resource countries, with a particularly high burden in sub-Saharan Africa. The objectives of this study were to assess barriers and facilitators to cervical cancer screening in western Kenya from the perspectives of community members and healthcare providers. We conducted two focus groups with female community members one with providers in Migori County, Kenya. Discussion guides queried about knowledge and awareness of cervical cancer prevention; structural, social, and personal barriers;

and facilitators towards cervical cancer screening uptake. Group discussions were recorded, transcribed, and analyzed for emerging themes. Participants in both groups reported low awareness of HPV and cervical cancer screening in the community, and identified that as a main barrier to screening. Community members reported fear of pain and embarrassment as significant barriers to a screening pelvic exam. They also reported that providers' lack of knowledge and discomfort with a sensitive subject were significant barriers. A personal connection to cervical cancer and/or screening was associated with willingness to screen and awareness. Providers reported workload and lack of supplies and trained staff as significant barriers to offering services. Based on these findings, we identified three intervention components to address these facilitators and barriers to screening. They include utilizing existing social networks to expand awareness of cervical cancer risk and screening, training non-physician health workers to meet the demand for screening, and employing female-driven screening techniques such as self-collection of specimens for HPV testing. Cervical cancer prevention programs must take into account the local realities in which they occur. In low-resource areas in particular, identifying low-cost, effective, and culturally appropriate strategies for addressing poor screening uptake is important given limited funding. This study took a formative approach to identify facilitators and barriers to cervical cancer screening based on focus groups and interviews with community members and healthcare providers.

Keywords: Early Detection of Cancer/methods;

19. Indicators of Mental Health Disorder, COVID-19 Prevention Compliance and Vaccination Intentions among Refugees in Kenya.

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ABSTRACT

BACKGROUND AND OBJECTIVES: COVID-19 remains a major development challenge in many developing countries. This study analysed the effect of mental health disorder and indicators of COVID-19 preventive practices on vaccination intentions among refugees in Kenya.

MATERIALS AND METHODS: The data were the fourth and fifth waves of the High Frequency Phone Surveys on the impacts of COVID-19 that were collected by the Kenyan National Bureau of Statistics (KNBS) between May 2020 and June 2021. The data were collected from Kakuma, Kalobeyei, Dadaab and Shona camps using the stratified random sampling method. The data were analysed with random effects instrumental variable Probit regression model.

RESULTS: The results showed that 69.32% and 93.16% of the refugees were willing to be vaccinated during the 4th and 5th waves, respectively. The fear of dying was reported by 85.89% and 74.19% during the 4th and 5th waves, respectively. COVID-19 contact prevention and immune boosting indicators were differently influenced by some demographic and anxiety index variables, while being endogenous influenced vaccine hesitancy along with urban residence, age,

knowing infected persons, days of depression, days of anxiety, days of physical reactions, members losing job, searching for jobs, accepting job offers and being employed.

CONCLUSIONS: It was concluded that efforts to promote COVID-19 vaccination should address mental health disorder and compliance with existing COVID-19 contact and immune boosting behaviour with a focus on urban residents and youths.

Keywords: Adolescent; COVID-19/prevention & control; COVID-19 Vaccines/therapeutic use; Humans Intention;

20. Predictors of postnatal depression in the slums Nairobi, Kenya: a cross-sectional study.

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ABSTRACT
BACKGROUND: Postnatal depression (PND) is a universal mental health problem that prevents mothers' optimal existence and mothering. Although research has shown high PND prevalence rates in Africa, including Kenya, little research has been conducted to determine the contributing factors, especially in low-resource communities. OBJECTIVE: This study aimed to investigate the PND risk factors among mothers attending Lang'ata and Riruta Maternal and Child Health Clinics (MCH) in the slums, Nairobi.

METHODS: This study was cross-sectional. It is part of a large study that investigated the effectiveness of a brief psychoeducational intervention on PND. Postnatal mothers (567) of 6-10weeks postanatal formed the study population. Depression rate was measured using the original 1961 Beck's Depression Inventory (BDI). In addition, a sociodemographic questionnaire (SDQ) was used to collect hypothesized risk variables. Multivariable logistic regression analysis was used to explore predictors of PND.

RESULTS: The overall prevalence of PND in the sample of women was 27.1%. Women aged 18-24 (Î²=2.04 95% C.I.[0.02; 4.05], p< 0.047), dissatisfied with body image (Î²=4.33 95% C.I.[2.26; 6.41], p<0.001), had an unplanned pregnancy (Î²=.31 95% C.I.[0.81; 3.80], p<0.003 and felt fatigued (Î²=1.85 95% C.I.[-3.50; 0.20], p=0.028) had higher odds of developing PND. Participants who had no stressful life events had significantly lower depression scores as compared to those who had stressful life events (Î²=-1.71 95% C.I.[- 3.30; - 0.11], p=0.036) when depression was treated as a continuous outcome. Sensitivity analysis showed that mothers who had secondary and tertiary level of education had 51 and 73% had lower likelihood of having depression as compared to those with a primary level of education (A.O.R= 0.49 95% C.I.[0.31-0.78], p<0.002) and (A.O.R=0.27 95% C.I.[0.09-0.75], p<0.013) respectively.

CONCLUSION: This study reveals key predictors/risk factors for PND in low-income settings building upon the scanty data. Identifying risk factors for PND may help in devising focused preventive and treatment strategies.

Keywords: Adolescent; Adult; Child; Cross-Sectional Studies; Depression,

21. The avoidable disease burden associated with overweight and obesity in Kenya: A modelling study.

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ABSTRACT

BACKGROUND: Globally, there is a rising burden of non-communicable diseases related to high body mass index (BMI). Estimation of the magnitude of the avoidable disease burden related to high BMI in Kenya could inform priority setting in health.

METHODS: Using a proportional multistate life table model, we estimated the impact of the elimination of exposure to high BMI (>22Â·5 kg/m(2)) on health adjusted life years, health adjusted life expectancy, and burden of 27 obesity-related diseases. Participants were the 2019 Kenyan population modelled over their remaining lifetime.

FINDINGS: Elimination of high BMI could save approximately 83Â·5 million health-adjusted life years and increase the health-adjusted life expectancy by 2Â·3 (95% UI 2Â·0-2Â·8) years for females and 1Â·0 (95% UI 0Â·8-1Â·1) years for males. Over the first 25 years, over 7Â·4 million new cases of BMI-related diseases could be avoided and approximately half a million BMI related deaths postponed. The cumulative number of new cases of type 2 diabetes could reduce by approximately 1Â·6 million, cardiovascular diseases by over 1Â·3 million, chronic kidney disease by 850,473 and cancer would reduce by 55,624 estimated cases. In 2044, an estimated 867,664 prevalent cases of musculoskeletal disease would be prevented.

INTERPRETATION: The magnitude of avoidable high BMI-related disease burden in Kenya underscores the need to prioritise the control and prevention of overweight and obesity globally, especially in low- and middle-income settings, where obesity rates are rising rapidly. Reducing population BMI is challenging, but sustained and well-enforced system-wide approaches could be a great starting point. FUNDING: Mary Njeri Wanjau is supported by the Griffith University International Postgraduate Research Scholarship (GUIPRS) and Griffith University Postgraduate Research Scholarship (GUPRS).

Keywords: disease burden, Overweight, obesity

22. Mothers of adolescent girls and Human Papilloma Virus (HPV) vaccination in Western Kenya.

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ABSTRACT
INTRODUCTION: human papilloma virus (HPV) which is preventable is the main cause of cervical cancer and it targets mostly young adolescents. The study was to determine the practice desire, attitude and knowledge of mothers of adolescent girls on HPV vaccination in Western Kenya.

METHODS: this was a descriptive cross-sectional study design. Data was obtained using semi-structured questionnaires and analyzed using both descriptive and inferential statistics at 95% confidence level using the SPSS software version 22. A p-value â‰¤ 0.05 was considered statistically significant.

RESULTS: ninety five percent of the mothers had intentions to vaccinate their daughters and also had a positive attitude and their response to HPV vaccination was significantly lower than those without intentions p=0.02, 95% CI, OR=0.48 (0.90-0.89). Vaccination against HPV was low at 9.4% with a mean age of 34 years. Our results found a high level of cervical cancer awareness (85.0%), HPV and vaccine awareness respectively (62.0%, and 64.0%). "Vaccination of my daughters will prompt early sexual activity and the cost of HPV vaccination being a barrier to vaccination" had a statistically significant influence on the practice of vaccination. Negative attitude to daughters´ early onset of sexual activity significantly reduced up take while positive attitude to cost of HPV vaccine significantly increased up take of HPV vaccination with p value of 0.007 and 0.04 respectively.

CONCLUSION: awareness of HPV and HPV vaccine prevention is low among mothers of adolescent girls in Western Kenya. There was a positive attitude and high desire towards the use of HPV vaccination therefore a need for awareness, policy and unify efforts to reduce cervical cancer burden.

Keywords: Papillomavirus Infections, prevention & control, Papillomavirus Vaccines

23. Vaginal Bacteria and Risk of Incident and Persistent Infection With High-Risk Subtypes of Human Papillomavirus: A Cohort Study Among Kenyan Women.

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ABSTRACT

BACKGROUND: Bacterial vaginosis (BV) is associated with an increased risk of high-risk human papillomavirus (hrHPV), whereas Lactobacillus-dominated vaginal microbiotas are associated with reduced burden of hrHPV. Few epidemiologic studies have prospectively investigated the relationships between vaginal bacteria and hrHPV, particularly among women from countries in Africa.

METHODS: We conducted a prospective cohort study nested within the Preventing Vaginal Infections trial to evaluate associations between vaginal bacteria and hrHPV incidence and persistence. Sexually active, HIV-seronegative women aged 18 to 45 years who had a vaginal infection at screening were eligible to enroll. Analyses were restricted to participants enrolled in Kenya and randomized to placebo. At enrollment and months 2, 4, 6, 8, 10, and 12, hrHPV testing, quantitative polymerase chain reaction (measuring taxon quantity per swab), and 16S rRNA gene amplicon sequencing of the vaginal microbiota were performed. Generalized estimating equations multinomial logistic regression models were fit to evaluate associations between vaginal bacteria and incident and persistent hrHPV.

RESULTS: Eighty-four participants were included in this analysis. Higher concentrations of Lactobacillus crispatus were inversely associated with persistent hrHPV detection. Specifically, 1 tertile higher L. crispatus concentration was associated with 50% reduced odds of persistent hrHPV detection (odds ratio, 0.50; 95% confidence interval, 0.29-0.85).

CONCLUSIONS: This study is consistent with reports that vaginal L. crispatus is associated with reduced susceptibility to hrHPV persistence. Evidence from in vitro studies provides insight into potential mechanisms by which L. crispatus may mediate hrHPV risk. Future studies should further explore in vivo mechanisms that may drive this relationship and opportunities for intervention.

Keywords Adolescent; Adult; Alphapapillomavirus; Bacteria

24. Drug therapy problems and health related quality of life among patients with colorectal cancer in a Kenyan tertiary health facility.

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ABSTRACT

BACKGROUND: Colorectal cancer is the third most common form of cancer in males and the second in females globally. The ill-health due to cancer and use of multiple therapies may result in drug related problems and also affect the health-related quality of life of the patients.

OBJECTIVE: To characterize drug therapy problems and health-related quality of life among patients with colorectal cancer at Kenyatta National Hospital.

METHODOLOGY: A descriptive prospective cross-sectional study design was used and simple random sampling utilized to select seventy- one participants. The participants were interviewed and their responses captured using World Health Organisation Quality of Life-BREF and a structured questionnaire. The data were analysed using STATA version 15.0. Data was summarized using descriptive statistic such as mean, range and standard deviation. Association between variables was determined using linear regression model at 0.05% level of significance. Ethical approval was granted by the relevant authorities to conduct the study.

RESULTS: Patients were predominantly females (52.1%), had a mean age of 55.9± 14.4 years. The main drug therapy problems were adverse drug reactions (45.1%). Approximately two thirds (67.6%) of the participants complained of gastrointestinal problems followed by cardiovascular diseases (29.6%). Quality of life assessment indicated that psychological health had the highest score at 60.5%. On linear regression analysis, the presence of anemia (p=0.021), coverage (p=0.038), and cardiovascular problems (p=0.034) were significantly associated with the overall health-related quality of life.

CONCLUSION: The health-related quality of life was is dependent on several patient related factors. Interventions regarding prevention of drug therapy problems should be considered alongside other measures used to manage colorectal cancer.

Keywords: Mental Health, Middle Aged;

25. Scaling up cervical cancer prevention in Western Kenya: Treatment access following a community-based HPV testing approach.

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ABSTRACT

OBJECTIVE: To evaluate access to treatment after community-based HPV testing as testing within screen-and-treat programs has the potential to lower mortality from cervical cancer in low-resource settings.

METHODS: A prospective cohort study was conducted in western Kenya in 2018. Women aged 25-65Â years underwent HPV self-testing. HPV-positive women were referred for cryotherapy. Participant data were obtained from questionnaires during screening and treatment. The proportion successfully accessing treatment and variables associated with successful treatment was determined.

RESULTS: Of the 750 women included, 140 (18.6%) tested positive for HPV. Of them, 135 were notified of their results, of whom 77 (59.2%) sought treatment and 73 (52.1%) received cryotherapy. Women who received treatment had a shorter time from screening to result notification (median 92Â days, interquartile range [IQR] 84-104) compared to those who did not (97Â days, IQR 89-106; P=0.061). In adjusted analyses, women with a history of cervical cancer screening (odds ratio [OR] 11, 95% confidence interval [CI] 1.42-85.20) and those electing result notification through a home visit (OR 4, 95% CI 1.23-14.17) were significantly more likely to acquire treatment at follow-up.

CONCLUSION: Linkage to treatment after community-based HPV screening in this population was low, highlighting the need for strategies aimed at strengthening treatment linkage in similar settings.

Keywords: cervical cancer prevention

26. Engaging community voices to assess Kenya's strengths and limitations to support a child maltreatment prevention program.

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ABSTRACT
BACKGROUND: Preventing child maltreatment is a global mission of numerous international organizations, with parent support programs as the critical prevention strategy. In Kenya, 70 % of children are at risk of experiencing abuse and neglect, most often by their parents. Yet, there is a lack of evidence-based parent support programs, and a limited understanding of Kenya's capacity and infrastructures (e.g., policies, funding, service agencies) to support and sustain such programs.

OBJECTIVE: The purpose of this study was to assess systematically Kenya's strengths and limitations to implement a parent support program using a mixed-methods study design.

PARTICIPANTS AND METHODS: Twenty-one community stakeholders from Kenya completed the World Health Organization's (WHO) Readiness Assessment for the Prevention of Child Maltreatment to understand Kenya's preparedness to undertake a prevention program. In addition, 91 participants (e.g., parents, community health workers, community leaders) took part in focus group discussions or individual interviews to understand existing support networks around parenting programs.

RESULTS: Kenya's overall 'readiness' score was comparable to the other countries that completed the WHO survey. The survey results revealed Kenya's strengths and limitations across the ten readiness dimensions. Several themes emerged from the focus groups and interviews, including the diverse sources of support for parents, specific programs available for parents, and gaps in services offered.

CONCLUSIONS: The results document ways to build upon Kenyan's existing strengths to facilitate implementation of an evidence-based prevention program. These results also highlight the significant need to understand local context when adapting parenting programs for low/middle income countries (LMICs).

Keywords: community voices maltreatment prevention program**.**

27. Nutrition-related non-communicable disease and sugar-sweetened beverage policies: a landscape analysis in Kenya.

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ABSTRACT

BACKGROUND: The burden of undernutrition is significant in Kenya. Obesity and related non-communicable diseases are also on the increase. Government action to prevent non-communicable diseases is critical. Taxation of sugar-sweetened beverages has been identified as an effective mechanism to address nutrition-related non-communicable diseases, although Kenya is not yet committed to this.

OBJECTIVE: To assess the policy and stakeholder landscape relevant to nutrition related non - communicable diseases and sugar-sweetened beverage taxation in Kenya.

METHODS: A desk review of evidence and policies related to nutrition related non-communicable diseases and sugar-sweetened beverages was conducted. Data extraction matrices were used for analysis. Key informant interviews were conducted with 10 policy actors. Interviews were thematically analysed to identify enablers of, and barriers to, policy change towards nutrition-sweetened beverage taxation.

RESULTS: Although nutrition related non-communicable diseases are recognised as a growing problem in Kenya most food-related policies focus on undernutrition and food security, while underplaying the role of nutrition related non-communicable diseases. Policy development on communicable diseases is multi-sectoral, but implementation is biased towards curative rather than preventive services. An excise tax is charged on soft drinks, but is not specific to sugar-sweetened beverages. Government has competing roles: advocating for industrial growth, such as sugar and food processing industries to foster economic development, yet wanting to control nutrition related non-communicable diseases. There is no national consensus about the dangers posed by sugar-sweetened beverages.

CONCLUSION: Nutrition related non-communicable diseases policies should reflect a continuum of issues, from undernutrition to food security, nutrition transition, and the escalation of nutrition

related non-communicable diseases. A local advocacy case for sugar-sweetened beverage taxation has not been made. Public and policy maker education is critical to challenge the prevailing attitudes towards sugar-sweetened beverages and the western diet.

Keywords: Nutrition-related non-communicable disease sugar-sweetened beverage

28. Stakeholder-engaged research: strategies for the prevention and control of overweight and obesity in Kenya.

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ABSTRACT

BACKGROUND: This study was done as part of a larger study that aims to identify the most impactful and cost-effective strategies for the prevention and control of overweight and obesity in Kenya. Our objective was to involve stakeholders in the identification of the strategies that would be included in our larger study. The results from the stakeholder engagement are analyzed and reported in this paper.

DESIGN: This was a qualitative study. A one-day stakeholder workshop that followed a deliberative dialogue process was conducted. PARTICIPANTS: A sample of stakeholders who participate in the national level policymaking process for health in Kenya.

OUTCOME MEASURE: Strategies for the prevention and control of overweight and obesity in Kenya.

RESULTS: Out of the twenty-three stakeholders who confirmed attendance, fifteen participants attended the one-day workshop. The stakeholders identified a total of 24 strategies for the prevention and control of overweight and obesity in Kenya. From the ranking process carried out the top six strategies identified were: a research-based strategy for the identification of the nutritional value of indigenous foods, implementation of health promotion strategies that focus on the creation of healthy environments, physical activity behavior such as gym attendance, jogging, walking, and running at the individual level, implementation of school curricula on nutrition and health promotion, integration of physical education into the new Competency-Based Education policy, and policies that increase use of public transport.

CONCLUSION: The stakeholders identified and ranked strategies for the prevention and control of overweight and obesity in Kenya. This informs future overweight and obesity prevention research and policy in Kenya and similar settings.

Keywords: stakeholder-engaged research prevention control overweight obesity

29. Biopsychosocial risk factors and knowledge of cervical cancer among young women: A case study from Kenya to inform HPV prevention in Sub-Saharan Africa.

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ABSTRACT

BACKGROUND: Cervical cancer is the second most common female reproductive cancer after breast cancer with 84% of the cases in developing countries. A high uptake of human papilloma virus (HPV) vaccination and screening, and early diagnosis leads to a reduction of incidence and mortality rates. Yet uptake of screening is low in Sub-Saharan Africa and there is an increasing number of women presenting for treatment with advanced disease. Nine women in their twenties die from cervical cancer in Kenya every day. This paper presents the biopsychosocial risk factors that impact on cervical cancer knowledge among Kenyan women aged 15 to 24 years. The findings will highlight opportunities for early interventions to prevent the worrying prediction of an exponential increase by 50% of cervical cancer incidences in the younger age group by 2034.

METHODS: Data from the 2014 Kenya Demographic and Health Survey (KDHS) was analysed using complex sample logistic regression to assess biopsychosocial risk factors of knowledge of cervical cancer among young women aged 15 to 24 years (n = 5398).

FINDINGS: Close to one third of the participants were unaware of cervical cancer with no difference between participants aged 15-19 years (n = 2716) and those aged 20-24 years (n = 2691) (OR = 1; CI = 0.69-1.45). Social predisposing factors, such as lack of education; poverty; living further from a health facility; or never having taken a human immunodeficiency virus (HIV) test, were significantly associated with lack of awareness of cervical cancer ($p<0.001$). Young women who did not know where to obtain condoms had an OR of 2.12 (CI 1.72-2.61) for being unaware of cervical cancer. Psychological risk factors, such as low self-efficacy about seeking medical help, and an inability to refuse unsafe sex with husband or partner, perpetuated the low level of awareness about cervical cancer ($p<0.001$).

CONCLUSIONS: A considerable proportion of young women in Kenya are unaware of cervical cancer which is associated with a variety of social and psychological factors. We argue that the high prevalence of cervical cancer and poor screening rates will continue to prevail among older

women if issues that affect young women's awareness of cervical cancer are not addressed. Given that the Kenyan youth are exposed to HPV due to early sexual encounters and a high prevalence of HIV, targeted interventions are urgently needed to increase the uptake of HPV vaccination and screening.

Keywords: Biopsychosocial risk factors

30. Systems-level barriers to treatment in a cervical cancer prevention program in Kenya: Several observational studies.

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ABSTRACT

OBJECTIVE: To identify health systems-level barriers to treatment for women who screened positive for high-risk human papillomavirus (hrHPV) in a cervical cancer prevention program in Kenya.

METHODS: In a trial of implementation strategies for hrHPV-based cervical cancer screening in western Kenya in 2018-2019, women underwent hrHPV testing offered through community health campaigns, and women who tested positive were referred to government health facilities for cryotherapy. The current analysis draws on treatment data from this trial, as well as two observational studies that were conducted: 1) periodic assessments of the treatment sites to ascertain availability of resources for treatment and 2) surveys with treatment providers to elicit their views on barriers to care. Bivariate analyses were performed for the site assessment data, and the provider survey data were analyzed descriptively.

RESULTS: Seventeen site assessments were performed across three treatment sites. All three sites reported instances of supply stockouts, two sites reported treatment delays due to lack of supplies, and two sites reported treatment delays due to provider factors. Of the 16 providers surveyed, ten (67%) perceived lack of knowledge of HPV and cervical cancer as the main barrier in women's decision to get treated, and seven (47%) perceived financial barriers for transportation and childcare as the main barrier to accessing treatment. Eight (50%) endorsed that providing treatment free of cost was the greatest facilitator of treatment.

CONCLUSION: Patient education and financial support to reach treatment are potential areas for intervention to increase rates of hrHPV+ women presenting for treatment. It is also essential to

eliminate barriers that prevent treatment of women who present, including ensuring adequate supplies and staff for treatment.

Keywords: Systems-level, cervical cancer prevention

31. Prostate cancer awareness and screening practice among Kenyan men.

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ABSTRACT

Despite globally increased awareness and widespread availability of screening tools, little is known about prostate cancer (PCa) awareness and screening practices in Kenya. To assess PCa awareness and screening practice among Kenyan men (age: 15-54 years), a cross-sectional study was carried out using Kenya Demographic Health Survey (KDHS 2014) data. A subsample of 12 803 men was taken and analyzed using SPSS version 22. Overall, 7926 (61.9%) men were aware of PCa. Three hundred eleven (3.9%) men who were aware of PCa reported ever screening for PCa. A strong association was found by crude and adjusted logistic regression analysis between men's awareness and age categories [age: 25-34 years, 95% confidence interval (CI)= 1.32-1.73, P<0.001; age: 35-44 years, 95% CI:1.51-2.08, P<0.001; age: 45-54 years, 95% CI:1.70-2.44, P<0.001] compared with men in the age category of 15-24 years. Similarly, an association was observed in men with insurance coverage with awareness (95% CI:1.35-1.76, P<0.001) and with screening practice (95% CI:1.35-2.37, P<001). Compared with illiterate men, men with primary education (95% CI:1.82-2.72, P<001), secondary education (95% CI:3.84-5.89, P<001), and higher education (95% CI:9.93-17.38, P<0.001) were more likely to be aware of PCa. Sociodemographically, richer (95% CI:1.36-1.79, P<0.001) and richest (95% CI:1.62-2.27, P<0.001) men were more likely to be aware of PCa than those in the poorest wealth index category. The awareness of Kenyan men of PCa is good. However, the PCa screening practice among Kenyan men is very poor. Hence, health promotion in a PCa screening program should be strengthened to improve public understanding about PCa, available screening tests, and the importance of early PCa screening.

Keywords: Prostate cancer awareness and screening

32. Proactive risk assessment of vincristine use process in a teaching and referral hospital in Kenya and the implications.

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ABSTRACT

INTRODUCTION: The chemotherapy use process is potentially risky for cancer patients. Vincristine, a "High Alert" medicine, has been associated with fatal but preventable medication errors. Consequently, there is a need to improve the use of vincristine especially in lower- and middle-income countries where there are constraints with resources and often a lack of trained personnel to administer cancer medicines. However, where there is a rising prevalence of cancer cases. These concerns can be addressed by performing proactive risk assessments using Healthcare Failure Mode Effect Analysis (HFMEA) and implementing the findings.

METHODS: A multidisciplinary health team driven by pharmacists identified and evaluated potential failure modes based on a vincristine use process flow diagram using a hazard scoring matrix in a leading referral hospital in Kenya.

RESULTS: The processes evaluated were: prescribing, preparation and dispensing, transportation and storage, administration and monitoring of the use of vincristine. Seventy-seven failure modes were identified over the three-month study period, of which 25 were classified as high risk. Thirteen were adequately covered by existing control measures while 12 including one combined mode required new strategies. Two of the failure modes were single-point weaknesses. Recommendations were subsequently made for improving the administration of vincristine.

CONCLUSIONS: HFMEA is a useful tool to identify improvements to medication safety and reduction of patient harm. The HFMEA process brings together the multidisciplinary team involved in patient care in actively identifying potential failure modes and owning the recommendations made, which are now being actively followed up in this hospital. Pharmacists are a key part of this process.

Keywords: Referral and Consultation; Risk Assessment; Vincristine/adverse effects; Vincristine

33. Metformin's effectiveness in preventing prednisone-induced hyperglycemia in hematological cancers.

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ABSTRACT

BACKGROUND: Research has established the development of steroid-induced hyperglycemia as a glucometabolic side effect of high-dose prednisone therapy. Few studies, however, have demonstrated preventative measures that could effectively curtail this side effect in susceptible patients undergoing high-dose prednisone treatment.

OBJECTIVE: To assess metformin's prophylactic effectiveness of prednisone-induced hyperglycemia among hematological cancer patients.

SETTING: Prospective randomized controlled trial conducted at the Kenyatta National Hospital Oncology Clinic and Wards, Nairobi, Kenya.

METHOD: Non-hyperglycemic hematological cancer patients on current or newly initiated high-dose prednisone-based chemotherapy were randomized to receive metformin 850mg once then 850mg twice daily for two successive weeks each or to the control group receiving the standard care. Patients were subjected to once weekly fasting and 2-h postprandial glucose measurements for four weeks.

MAIN OUTCOME MEASURE: The primary outcome of measure was the development of hyperglycemia defined by fasting capillary blood glucose values >5.6mmol/L or 2-h postprandial capillary blood glucose values >7.8âmmol/L.

RESULTS: Eighteen of 24 randomized patients completed the study (11 control and 7 treatment). The proportion of the control subjects that developed prediabetes was 72.7% (95% confidence interval 45.5-90.9%) using fasting glucose and 54.5% (95% confidence interval 27.3-81.8%) using 2-h postprandial glucose. One treatment group participant developed prediabetes using fasting glucose, representing 14.3% (95% confidence interval 0-42.9%). No prediabetes was detected using the 2-h postprandial glucose. Analysis of mean fasting glucose between the two arms found no significant difference. However, significant differences in mean 2-h postprandial glucose were noted in week 2 (p:0.0144), week 3 (p:0.0095), and week 4 (p:0.0074) of the study. Double dose (1700mg) metformin was more effective in lowering blood glucose than single dose (850mg) (p:1.0000 (fasting), p:0.4531(2-h postprandial).

CONCLUSION: Metformin's prophylactic effectiveness was demonstrated in this randomized study on new and previously exposed non-diabetic cancer patients on high-dose prednisone-based chemotherapy.

Keywords: Metformin's effectiveness prednisone-induced hyperglycemia hematological cancers.

34. Influence of health insurance status on childhood cancer treatment outcomes in Kenya.

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ABSTRACT

BACKGROUND: Survival of childhood cancer in high-income countries is approximately 80%, whereas in low-income countries, it is less than 10%. Limited access to health insurance in low-income settings may contribute to poor survival rates. This study evaluates the influence of health insurance status on childhood cancer treatment in a Kenyan academic hospital.

METHODS: This was a retrospective study. All children diagnosed with a malignancy from 2010 until 2012 were included. Data on treatment outcomes and health insurance status at diagnosis were abstracted from patient charts.

RESULTS: Of 280 patients, 34% abandoned treatment, 19% died, and 18% had progressive or relapsed disease resulting in 29% event-free survival. The majority of patients (65%) did not have health insurance at diagnosis. Treatment results differed significantly between patients with different health insurance status at diagnosis; 37% of uninsured versus 28% of insured patients abandoned treatment, and 24% of uninsured versus 37% of insured patients had event-free survival. The event-free survival estimate was significantly higher for patients with health insurance at diagnosis compared with those without (P:0.004). Of patients without health insurance at diagnosis, 77% enrolled during treatment. Among those patients who later enrolled

in health insurance, frequency of progressive or relapsed disease and deaths was significantly lower (P:0.013, P<0.001, respectively), while the event-free survival estimate was significantly higher (P<0.001) compared with those who never enrolled.

CONCLUSION: Childhood cancer event-free survival was 29% at a Kenyan hospital. Children without health insurance had significant lower chance of event-free survival. Childhood cancer treatment outcomes could be ameliorated by strategies that prevent treatment abandonment and improve access to health insurance.

Keywords: health insurance, cancer treatment

35. Resting behaviour of malaria vectors in highland and lowland sites of western Kenya: Implication on malaria vector control measures.

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ABSTRACT

BACKGROUND: Understanding the interactions between increased insecticide resistance and resting behaviour patterns of malaria mosquitoes is important for planning of adequate vector control. This study was designed to investigate the resting behavior, host preference and rates of Plasmodium falciparum infection in relation to insecticide resistance of malaria vectors in different ecologies of western Kenya.

METHODS: Anopheles mosquito collections were carried out during the dry and rainy seasons in Kisian (lowland site) and Bungoma (highland site), both in western Kenya using pyrethrum spray catches (PSC), mechanical aspiration (Prokopack) for indoor collections, clay pots, pit shelter and Prokopack for outdoor collections. WHO tube bioassay was used to determine levels of phenotypic resistance of indoor and outdoor collected mosquitoes to deltamethrin. PCR-based molecular diagnostics were used for mosquito speciation, genotype for knockdown resistance mutations (1014S and 1014F) and to determine specific host blood meal origins. Enzyme-linked Immunosorbent Assay (ELISA) was used to determine mosquito sporozoite infections.

RESULTS: Anopheles gambiae s.l. was the most predominant species (75%, n = 2706) followed by An. funestus s.l. (25%, n = 860). An. gambiae s.s hereafter (An. gambiae) accounted for 91% (95% CI: 89-93) and An. arabiensis 8% (95% CI: 6-9) in Bungoma, while in Kisian, An. arabiensis composition was 60% (95% CI: 55-66) and An. gambiae 39% (95% CI: 34-44). The resting densities of An. gambiae s.l and An. funestus were higher indoors than outdoor in both sites (An. gambiae s.l; F1, 655 = 41.928, p < 0.0001, An. funestus; F1, 655 = 36.555, p < 0.0001). The mortality rate for indoor and outdoor resting An. gambiae s.l F1 progeny was 37% (95% CI: 34-39) vs 67% (95% CI: 62-69) respectively in Bungoma. In Kisian, the mortality rate was 67% (95% CI: 61-73) vs 76% (95% CI: 71-80) respectively. The mortality rate for F1 progeny of An. funestus resting indoors in Bungoma was 32% (95% CI: 28-35). The 1014S mutation was only detected in indoor resitng An. arabiensis. Similarly, the 1014F mutation was present only in indoor resting An. gambiae. The sporozoite rates were highest in An. funestus followed by An. gambiae, and An. arabiensis resting indoors at 11% (34/311), 8% (47/618) and 4% (1/27) respectively in Bungoma. Overall, in Bungoma, the sporozoite rate for indoor resting mosquitoes was 9% (82/956) and 4% (8/190) for outdoors. In Kisian, the sporozoite rate was 1% (1/112) for indoor resting An. gambiae. None of the outdoor collected mosquitoes in Kisian tested positive for sporozoite infections (n = 73).

CONCLUSION: The study reports high indoor resting densities of An. gambiae and An. funestus, insecticide resistance, and persistence of malaria transmission indoors regardless of the use of long-lasting insecticidal nets (LLINs). These findings underline the difficulties of controlling malaria vectors resting and biting indoors using the current interventions. Supplemental vector control tools and implementation of sustainable insecticide resistance management strategies are needed in western Kenya.

Keywords: Resting behaviour, vector control measures

36. Process and outcome of child psychotherapies offered in Kenya: a mixed methods study protocol on improving child mental health.

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ABSTRACT

BACKGROUND: Child and adolescent mental health problems account for a significant proportion of the local and global burden of disease and is recognized as a growing public health concern in

need of adequate services. Studies carried out in Kenya suggest a need for a robust service for the treatment, prevention, and promotion of child and adolescent mental health. Despite a few existing services to provide treatment and management of mental health disorders, we need more knowledge about their effectiveness in the management of these disorders. This paper describes a study protocol that aims to evaluate the process and outcomes of psychotherapies offered to children and adolescents seeking mental health services at the Kenyatta National Hospital in Kenya.

METHODS: This study will use a prospective cohort approach that will follow adolescent patients (12-17years of age) receiving mental health services in the youth clinics at the Kenyatta National Hospital for a period of 12months. During this time mixed methods research will be carried out, focusing on treatment outcomes, therapeutic relationship, understanding of psychotherapy, and other mental health interventions offered to the young patients. In this proposed study, we define outcome as the alleviation of symptoms, which will be assessed quantitatively using longitudinal patient data collected session-wise. Process refers to the mechanisms identified to promote change in the adolescent. For example, individual participant or clinician characteristics, therapeutic alliance will be assessed both quantitatively and qualitatively. In each session, assessments will be used to reduce problems due to attrition and to enable calculation of longitudinal change trajectories using growth curve modeling. For this study, these will be referred to as session-wise assessments. Qualitative work will include interviews with adolescent patients, their caregivers as well as feedback from the mental health care providers on existing services and their barriers to providing care.

CONCLUSION: This study aims to understand the mechanisms through which change takes place beyond the context of psychotherapy. What are the moderators and through which mechanisms do they operate to improve mental health outcomes in young people.

Keywords: child psychotherapies, improving child mental health

37. Benchmarking food environment policies for the prevention of diet-related non-communicable diseases in Kenya: National expert panel's assessment and priority recommendations.

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ABSTRACT

INTRODUCTION: Unhealthy food environments drive the increase of diet-related non-communicable diseases (NCDs).

OBJECTIVE: We aimed to examine healthy food environment policies in Kenya and identify priorities for future action.

METHODS: Using the Healthy Food Environment Policy Index (Food-EPI) we collected evidence on the extent of government action to create healthy food environments across 13 policy and infrastructure support domains and 43 related good practice indicators between 2017 and 2018. A panel of 15 national experts rated the extent of government action on each indicator compared to the policy development cycle and international best practice respectively. Based on gaps found, actions to improve food environments in Kenya were identified and prioritized.

RESULTS: In the policy development cycle, 16/43 (37%) of good practice policy indicators were judged to be in 'implementation' phase, including: food composition targets, packaged foods' ingredient lists/nutrient declarations; systems regulating health claims; restrictions on marketing breast milk substitutes; and school nutrition policies. Infrastructure support actions in 'implementation' phase included: food-based dietary guidelines; strong political support to reduce NCDs; comprehensive NCD action plan; transparency in developing food policies; and surveys monitoring nutritional status. Half (22/43) of the indicators were judged to be 'in development'. Compared to international best practice, the Kenyan Government was judged to be performing relatively well ('medium' implementation) in one policy (restrictions on marketing breast milk substitutes) and three infrastructure support areas (political leadership; comprehensive implementation plan; and ensuring all food policies are sensitive to nutrition). Implementation for 36 (83.7%) indicators were rated as 'low' or 'very little'. Taking into account importance and feasibility, seven actions within the areas of leadership, food composition, labelling, promotion, prices and health-in-all-policies were prioritized.

CONCLUSION: This baseline assessment is important in creating awareness to address gaps in food environment policy. Regular monitoring using Food-EPI may contribute to addressing the burden of diet-related NCDs in Kenya.

Keywords: prevention of diet-related non-communicable diseases

38. High prevalence of non-communicable diseases among key populations enrolled at a large HIV prevention & treatment program in Kenya.

Dunstan Achwoka [1], Julius O Oyugi [1 2], Regina Mutave [1], Patrick Munywoki [3], Thomas Achia [1], Maureen Akolo [4], Festus Muriuki [4], Mercy Muthui [4], Joshua Kimani [1 4]

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ABSTRACT

INTRODUCTION: People Living with HIV (PLHIV) bear a disproportionate burden of non-communicable diseases (NCDs). Despite their significant toll across populations globally, the NCD burden among key populations (KP) in Kenya remains unknown. The burden of four NCD-categories (cardiovascular diseases, cancer, chronic respiratory diseases and diabetes) was evaluated among female sex workers (FSWs) and men who have sex with men (MSM) at the Sex Workers Outreach Program (SWOP) clinics in Nairobi Kenya.

METHODS: A retrospective medical chart review was conducted at the SWOP clinics among KP clients of 15 years living with HIV enrolled between October 1, 2012 and September 30, 2015. The prevalence of the four NCD-categories were assessed at enrollment and during subsequent routine quarterly follow-up care visits as per the Ministry of Health guidelines. Prevalence at enrollment was determined and distributions of co-morbidities assessed using Chi-square and t-tests as appropriate during follow-up visits. Univariate and multivariate analysis were conducted to identify factors associated with NCD diagnoses.

RESULTS: Overall, 1,478 individuals' records were analyzed; 1,392 (94.2%) were from FSWs while 86 (5.8%) were from MSM over the three-year period. FSWs' median age was 35.3 years (interquartile range (IQR) 30.1-41.6) while MSM were younger at 26.8 years (IQR 23.2-32.1). At enrollment into the HIV care program, most KPs (86.6%) were at an early WHO clinical stage (stage I-II) and 1462 (98.9%) were on first-line anti-retroviral therapy (ART). A total of 271, 18.3% (95% CI: 16.4-20.4%), KPs living with HIV had an NCD diagnosis in their clinical chart records during the study period. Majority of these cases, 258 (95.2%) were noted among FSWs. Cardiovascular disease that included hypertension was present in 249/271, 91.8%, of KPs with a documented NCD. Using a proxy of two or more elevated blood pressure readings taken < 12 months apart, prevalence of hypertension rose from 1.0% (95% CI: 0.6-1.7) that was documented in the charts during the first year to 16.3% (95% CI: 14.4-18.3) in the third year. Chronic respiratory disease mainly asthma was present in 16/271, a prevalence of 1.1% (95% CI: 0.6-1.8) in the study population. Cancer in general was detected in 10/271, prevalence of 0.7% (95% CI: 0.3-1.2) over the same period. Interestingly, diabetes was not noted in the study group. Lastly, significant associations between NCD diagnosis with increasing age, body-mass index and CD4 + cell-counts were noted in univariate analysis. However, except for categories of BMI 30 kg/m2 and age â‰¥ 45, the associations were not sustained in adjusted risk estimates.

CONCLUSION: In Kenya, KP living with HIV and on ART have a high prevalence of NCD diagnoses. Multiple NCD risk factors were also noted against a backdrop of a changing HIV epidemic in the study population. This calls for scaling up focus on both HIV and NCD prevention and care in targeted populations at increased risk of HIV acquisition and transmission. Hence, KP programs could include integrated HIV-NCD screening and care in their guidelines.

Keywords: non-communicable diseases, key populations HIV prevention & treatment program

39. Risk reduction of diarrhea and respiratory infections following a community health education program - a facility-based case-control study in rural parts of Kenya.

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ABSTRACT

BACKGROUND: Diarrheal and acute respiratory infections remain a major cause of death in developing countries especially among children below 5 years of age. About 80% of all hospital attendances in Kenya can be attributed to preventable diseases and at least 50% of these preventable diseases are linked to poor sanitation. The purpose of this study was to assess the impact of a community-based health education program, called Familia Nawiri, in reducing the risk of diarrhea and respiratory infections among people living in three rural Kenyan communities.

METHODS: Cases were defined as patients attending the health facility due to diarrhea or a respiratory infection while controls were patients attending the same health facility for a non-communicable disease defined as an event other than diarrhea, respiratory infection. Adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were calculated using a logistic regression model to assess the risk of diarrheal or respiratory infection in association with exposure to the health education program.

RESULTS: There were 324 cases and 308 controls recruited for the study with 57% of the cases and 59% of the controls being male. Overall, 13% of cases vs. 20% of control patients were exposed to the education program. Participants exposed to the program had 38% lower odds of diarrhea and respiratory infections compared to those not exposed to the program (adjusted OR 0.62, 95% CI 0.41-0.96). A similar risk reduction was observed for participants in the study who resided in areas with water improvement initiatives (adjusted OR 0.65, 95% CI 0.47-0.90).

Variables in the adjusted model included water improvement projects in the area and toilet facilities.

CONCLUSION: Findings from this study suggest participants exposed to the education program and those residing in areas with water improvement initiatives have a reduced risk of having diarrhea or respiratory infection.

Keywords: Risk reduction of diarrhea and respiratory infections

40. Patient factors affecting successful linkage to treatment in a cervical cancer prevention program in Kenya: A prospective cohort study.

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ABSTRACT

OBJECTIVE: To identify patient factors associated with whether women who screened positive for high-risk human papillomavirus (hrHPV) successfully accessed treatment in a cervical cancer prevention program in Kenya.

METHODS: A prospective cohort study was conducted as part of a trial of implementation strategies for hrHPV-based cervical cancer screening in western Kenya from January 2018 to February 2019. In this larger trial, women underwent hrHPV testing during community health campaigns (CHCs), and hrHPV+ women were referred to government facilities for cryotherapy. For this analysis, we looked at rates of and predictors of presenting for treatment and presenting within 30 days of receiving positive hrHPV results ("timely" presentation). Data came from questionnaires completed at the time of screening and treatment. Multivariable logistic regression was used to identify factors associated with each outcome.

RESULTS: Of the 505 hrHPV+ women, 266 (53%) presented for treatment. Cryotherapy was performed in 236 (89%) of the women who presented, while 30 (11%) were not treated: 15 (6%) due to gas outage, six (2%) due to pregnancy, five (2%) due to concern for cervical cancer, and four (2%) due to an unknown or other reason. After adjusting for other factors in the multivariable analysis, higher education level and missing work to come to the CHC were associated with

presenting for treatment. Variables that were associated with increased likelihood of timely presentation were missing work to come to the CHC, absence of depressive symptoms, told by someone important to come to the CHC, and shorter distance to the treatment site.

CONCLUSION: The majority of hrHPV+ women who did not get treated were lost at the stage of decision-making or accessing treatment, with a small number encountering barriers at the treatment sites. Patient education and financial support are potential areas for intervention to increase rates of hrHPV+ women seeking treatment.

Keywords: patient factors cervical cancer prevention

41. Knowledge of Cervical Cancer and Acceptability of Prevention Strategies Among Human Papillomavirus-Vaccinated and Human Papillomavirus-Unvaccinated Adolescent Women in Eldoret, Kenya.

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ABSTRACT

Cervical cancer is a critical public health concern in sub-Saharan Africa. Adolescents are key targets in primary prevention strategies. Following a human papillomavirus (HPV) vaccination initiative (Gardasil) in Eldoret, Kenya, the knowledge and source of information of cervical cancer and acceptance of prevention strategies among vaccinated and unvaccinated adolescents were evaluated. A cross-sectional comparative study enrolled 60 vaccinated and 120 unvaccinated adolescent women. Institutional ethical approval was obtained and signed consent was obtained from the parents. Data collection was performed using interviewer-administered questionnaires derived from factual statements based on information from print material used for community sensitization on cervical cancer. The median age of the participants was 14.0 years (interquartile range [IQR]:13.0-15.0). Of 60 vaccinated adolescents, 56 (93.3%) had heard of the HPV vaccine compared with 6 (5%) of unvaccinated participants ($p<0.001$). Of 60 vaccinated participants, 58 (96.7%) had heard of cervical cancer compared with 61 (50.8%) unvaccinated participants ($p<0.001$). Both cohorts identified the school as the main source of information for cervical cancer. The two groups also showed similarity in their selection of cervical cancer prevention strategies acceptable to them such as delaying sexual debut, limiting number of sexual partners, and use of

condoms for protection against sexually transmitted infections. Of 120 unvaccinated participants, 63.7% expressed willingness to be vaccinated. Exposure to the HPV vaccine was associated with a higher knowledge of cervical cancer. The adolescents predominantly rely on the school for health information. Both cohorts of adolescents showed remarkable acceptability for cervical cancer prevention strategies.

Keywords: Humanities; Humanism; Humans; Adolescent; Vaccination

42. Female perspectives on male involvement in a human-papillomavirus-based cervical cancer-screening program in Western Kenya.

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ABSTRACT

BACKGROUND: To be effective, population-based cervical cancer prevention programs must be tailored to meet the needs of the target population. One important factor in cervical cancer screening may include male involvement. To iteratively improve a screening program employing self-collected vaginal swabs for human-papillomavirus (HPV) testing in western Kenya, we examined the role of male partners and community leaders in decision-making and accessing screening services.

METHODS: We carried out 604 semi-structured, in-depth interviews (IDIs) with women and community health volunteers who took part in a multiphase trial of implementation strategies for HPV-based cervical cancer screening. IDIs were coded and themes related to decision-making, screening and treatment barriers, and the influence of male partners and community leaders were identified and analyzed.

RESULTS: Women experienced both support and opposition from their male partners. Partner support took the form of financial support for transportation and emotional support and encouragement, while opposition ranged from anticipated negative reactions to lack of permission, isolation, and abandonment. Though most women described their own partners as supportive, many felt that other male partners would not be supportive. Most participants believed that increased HPV and cervical cancer knowledge would increase partner support. Women reported a general acceptance of involvement of community leaders in education and screening campaigns, in a setting where such leaders may hold influence over men in the community.

CONCLUSION: There was a clear interest in involving male partners in the cervical cancer prevention process, specifically in increasing knowledge and awareness. Future research should explore the feasibility and effectiveness of engaging male partners in cervical cancer screening and prevention programs.

Keywords: human-papillomavirus-based cervical cancer-screening

43. Perspectives of women participating in a cervical cancer screening campaign with community-based HPV self-sampling in rural western Kenya: a qualitative study.

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ABSTRACT

BACKGROUND: Despite cervical cancer being preventable with effective screening programs, it is the most common cancer and the leading cause of cancer-related death among women in many countries in Africa. Screening involving pelvic examination may not be feasible or acceptable in limited-resource settings. We sought to evaluate women's perspectives on human papillomavirus (HPV) self-sampling as part of a larger trial on cervical cancer prevention implementation strategies in rural western Kenya.

METHODS: We invited 120 women participating in a cluster randomized trial of cervical cancer screening implementation strategies in Migori County, Kenya for in-depth interviews. We explored reasons for testing, experience with and ability to complete HPV self-sampling, importance of clinician involvement during screening, factors and people contributing to screening decision-making, and ways to encourage other women to come for screening. We used validated theoretical frameworks to analyze the qualitative data.

RESULTS: Women reported having positive experiences with the HPV self-sampling strategy. The factors facilitating uptake included knowledge and beliefs such as prior awareness of HPV, personal perception of cervical cancer risk, desire for improved health outcomes, and peer and partner encouragement. Logistical and screening facilitators included confidence in the ability to complete HPV self-sampling strategy, proximity to screening sites and feelings of privacy and comfort conducting the HPV self- sampling. The barriers to screening included fear of need for a pelvic exam, fear of disease and death associated with cervical cancer. We classified these findings as capabilities, opportunities and motivations for health behavior using the COM-B framework.

CONCLUSIONS: Overall, HPV self-sampling was an acceptable cervical cancer screening strategy that seemed to meet the needs of the women in this community. These findings will further inform aspects of implementation, including outreach messaging, health education, screening sites and emphasis on availability and effectiveness of preventative treatment for women who screen positive.

Keywords: women cervical cancer screening

44. Predictors of cervical cancer screening among Kenyan women: results of a nested case-control study in a nationally representative survey.

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ABSTRACT

BACKGROUND: Cervical cancer is a major public health concern in Kenya. It is the leading cause of cancer morbidity and mortality among women. Although screening is an effective prevention method, uptake is low among eligible women. Little is known about predictors of cervical cancer screening uptake. This study explored relationship between uptake of cervical cancer screening, socio-demographic, behavioral and biological risk factors.

METHODS: Nested case-control study within STEPS survey, a population-based cross-sectional household survey conducted between April and June 2015.Cases were women who had undergone cervical cancer screening and controls were unscreened women. Study participants were women eligible for cervical cancer screening (30-49Â years). Variables included socio-demographic; behavioral risk factors such as physical activity, tobacco and alcohol use diet and biological factors like diabetes and hypertension. Outcome of interest was cervical cancer screening. Data analysis was done using STATA version 14. Logistic regression model was used to assess relationship between cervical cancer screening and socio-demographic, behavioral and biological risk factors.

RESULTS: Of 1180 women interviewed, 16.4% (n:194) had been screened for cervical cancer. Of unscreened women (n:986), 67.9% were aware of cervical cancer screening. Higher screening rates were observed in more educated women (25.2%), highest income quintile (29.6%) and living in urban areas (23%) than in women with no formal education (3.2%), poorest (3.6%) and living in rural areas (13.8%). Younger women (35-39) and those with low High-density lipoprotein (HDL) were less likely to be screened [OR:0.56; 95% CI:(0.34, 0.93); p-value:0.025] and [OR:0.51; 95% CI:(0.29, 0.91); p:value 0.023] respectively. Self-employed women, those in the fourth wealth quintile, binge drinkers, high sugar consumption and insufficient physical activity were more likely to be screened [OR 2.55 (1.12, 5.81) p value 0.026], [OR 3.56 (1.37, 9.28) p value 0.009], [OR 5.94 (1.52, 23.15) p value 0.010], [OR 2.99 (1.51, 5.89) p value 0.002] and [OR 2.79 (1.37, 5.68) p value 0.005] respectively.

CONCLUSION: Uptake of cervical cancer screening is low despite high awareness. Strategies to improve cervical cancer screening in Kenya should be implemented with messages targeting persons with both risky and non-risky lifestyles especially younger women with no formal education living in rural areas.

Keywords: Predictors cervical cancer screening women

45. Genetic Differentiation of Glossina pallidipes Tsetse Flies in Southern Kenya.

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ABSTRACT

The tsetse fly *Glossina pallidipes*, the major vector of the parasite that causes animal African trypanosomiasis in Kenya, has been subject to intense control measures with only limited success. The *G. pallidipes* population dynamics and dispersal patterns that underlie limited success in vector control campaigns remain unresolved, and knowledge on genetic connectivity can provide insights, and thereby improve control and monitoring efforts. We therefore investigated the population structure and estimated migration and demographic parameters in *G. pallidipes* using genotypic data from 11 microsatellite loci scored in 250 tsetse flies collected from eight localities in Kenya. Clustering analysis identified two genetically distinct eastern and western clusters (mean between-cluster F (ST) = 0.202) separated by the Great Rift Valley. We also found evidence of admixture and migration between the eastern and western clusters, isolation by distance, and a widespread signal of inbreeding. We detected differences in population dynamics and dispersal patterns between the western and eastern clusters. These included lower genetic diversity (allelic richness; 7.48 versus 10.99), higher relatedness (percent related individuals; 21.4% versus 9.1%), and greater genetic differentiation (mean within-cluster F (ST); 0.183 versus 0.018) in the western than the eastern cluster. Findings are consistent with the presence of smaller, less well-connected populations in Western relative to eastern Kenya. These data suggest that recent anthropogenic influences such as land use changes and vector control programs have influenced population dynamics in *G. pallidipes* in Kenya, and that vector control efforts should include some region-specific strategies to effectively control this disease vector.

Keywords: genetic differentiation of *Glossina pallidipes*

46. A cross-sectional study of depression with comorbid substance use dependency in pregnant adolescents from an informal settlement of Nairobi: drawing implications for treatment and prevention work.

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ABSTRACT

INTRODUCTION: Adolescent pregnancy is a highly prevalent and significant public health problem in Kenya, and mental health needs of pregnant adolescent girls have been overlooked. Nearly, 50% of the world's population comprises children and adolescents and 85% live in lower and middle-income countries.

OBJECTIVE: Pregnant adolescents were interviewed to ascertain certain social determinants of mental health such as social support, partner or parent support, and demographic profile and assessed for depression using EPDS and for severity of depression using BDI, and their alcohol abuse assessed using AUDIT.

METHODS: A cross-sectional descriptive study using a purposive sample of 212 pregnant adolescents visiting Kangemi Health Centre in Nairobi was conducted.

RESULTS: We found that 60.4% had depressive symptoms scores of 8 and above on EPDS, 51.9% were found to have severe depression score on BDI. About 26.9% were currently consuming alcohol. The more severely depressed participants were demonstrating greater alcohol use. Of the 110 pregnant adolescents who were severely depressed, 39 were currently consuming alcohol. We identified several alcohol use disorder factors associated with depression such as living with an alcoholic, ever and current use of alcohol, alcohol-related harm being experienced, being pressured to take alcohol. On our final multivariate logistic regression, we found that being a student (AOR 5.12, 95% CI 1.19-22.0, p<0.028); low family income (between 5000 and 10,000 shillings) (AOR 0.22, 95% CI 0.09-0.56, p<0.02); unplanned pregnancy (AOR 3.41, 95% CI 1.19-9.80, p<0.023); both negative and ambivalent attitudes of the unborn baby's father, respectively (AOR 8.72 95% CI 2.88-26.37 P<0.001; AOR 4.26 95% CI 1.35-13.45, p<0.013); early age at sexual debut (AOR 0.70, 95% CI 0.55-0.89, p<0.003); and ever used any psychoactive substances (AOR 3.21, 95% CI 1.31-7.88, p<0.011).

CONCLUSION AND RECOMMENDATIONS: Alcohol abuse during pregnancy presents a significant public health burden and the associated health risks for the adolescent mother and her baby are enormous. We need to bolster screening for the comorbid disorders such as depression and substance use disorders, particularly alcohol in order to address mental health and psychosocial functioning of adolescents. The underlying adversities and sociocultural challenges need to be better understood and mechanisms that lead to comorbidities require further research. Depression interventions for Kenyan adolescents would need to embed screening, treatment and management of substance abuse.

Keywords: Cross-Sectional Studies, Comorbidity, Adolescent, Cesarean Section

47. Risk Factors Associated with Severity of Nongenetic Intellectual Disability (Mental Retardation) among Children Aged 2-18 Years Attending Kenyatta National Hospital.

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ABSTRACT

BACKGROUND: Many of the nongenetic causal risk factors of intellectual disability (ID) can be prevented if they are identified early. There is paucity on information regarding potential risk factors associated with this condition in Kenya. This study aimed to establish risk factors associated with severity of nongenetic intellectual disability (ID) among children presenting with this condition at Kenyatta National Hospital (KNH).

METHODS: A hospital-based cross-sectional study was conducted over the period between March and June 2017 in pediatric and child/youth mental health departments of Kenyatta National Hospital (KNH), Kenya. It included children aged 2-18 years diagnosed with ID without underlying known genetic cause.

RESULTS: Of 97 patients with nongenetic ID, 24% had mild ID, 40% moderate, 23% severe-profound, and 10% unspecified ID. The mean age of children was 5.6 (Â±3.6) years. Male children were predominant (62%). Three independent factors including "labor complications" [AOR = 9.45, 95% CI = 1.23-113.29, P = 0.036], "admission to neonatal intensive care unit" [AOR = 8.09, 95% CI = 2.11-31.07, P = 0.002], and "cerebral palsy" [AOR = 21.18, CI = 4.18-107.40, P < 0.001] were significantly associated with increased risk of severe/profound nongenetic ID.

CONCLUSION: The present study findings suggest that perinatal complications as well as postnatal insults are associated with increased risk of developing severe-profound intellectual disability, implying that this occurrence may be reduced with appropriate antenatal, perinatal, and neonatal healthcare interventions.

Keywords: Risk Factors, Intellectual Disability

48. Depression and its psychosocial risk factors in pregnant Kenyan adolescents: a cross-sectional study in a community health Centre of Nairobi.

Judith Osok,[1] Pius Kigamwa,[2] Ann Vander Stoep,[3] Keng-Yen Huang,[4] and Manasi Kumar[5,6]

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ABSTRACT
BACKGROUND: Adolescent pregnancies within urban resource-deprived settlements predispose young girls to adverse mental health and psychosocial adversities, notably depression. Depression in sub-Saharan Africa is a leading contributor to years lived with disability (YLD). The study's objective was to determine the prevalence of depression and related psychosocial risks among pregnant adolescents reporting at a maternal and child health clinic in Nairobi, Kenya.

METHODS: A convenient sample of 176 pregnant adolescents attending antenatal clinic in Kangemi primary healthcare health facility participated in the study. We used PHQ-9 to assess prevalence of depression. Hierarchical multivariate linear regression was performed to determine the independent predictors of depression from the psychosocial factors that were significantly associated with depression at the univariate analyses.

RESULTS: Of the 176 pregnant adolescents between ages 15-18 years sampled in the study, 32.9% (n=58) tested positive for a depression diagnosis using PHQ-9 using a cut-off score of 15+. However, on multivariate linear regression, after various iterations, when individual predictors using standardized beta scores were examined, having experienced a stressful life event (<3.27, P<0.001, $\hat{I}^2$ =0.25) explained the most variance in the care giver burden, followed by absence of social support for pregnant adolescents.

CONCLUSION: Depression is common among pregnant adolescents in urban resource-deprived areas of Kenya and is correlated with well-documented risk factors such as being of a younger age and being HIV positive. Interventions aimed at reducing or preventing depression in this population should target these groups and provide support to those experiencing greatest stress.

Keywords: Depression psychosocial risk factors pregnant Kenyan adolescents

49. Twin Innovative Strategy to Sustain Cholera Prevention: Evidence from Kilifi HDSS.

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ABSTRACT

BACKGROUND: Cholera is an acute enteric infection caused by the ingestion of bacterium Vibrio cholerae present in faecally contaminated water or food. Africa contributes 42% to the global burden and Kenya is not exceptional in this major public health emergencies. Through the strong collaboration between the Ministry of ministry of Health (MOH) Kilifi District hospital and the Kilifi Health and Demographic Surveillance system (KHDSS), we carried out investigations on several cholera outbreaks and applied a twin innovate strategy: GIS and a new cholera communication strategy.

OBJECTIVES: To describe trends of cholera outbreak; to show geographical spread of cholera; to describe a new cholera communication strategy, and to demonstrate how the new strategy protects the community in subsequent outbreaks.

METHODS: We reviewed case reports from MOH facilities within KHDSS and all samples sent for laboratory confirmation. We performed GIS spatial analysis on the data showing the distribution of positives, negatives and epi-linked cholera cases. Cholera hotspot areas covering 4,250 households in an area of 131.7 km2 were identified. Cholera communication strategy which focused on empowering the community to realize unhygienic conditions of water, food, poor sanitation and personal hygiene was introduced and its impact assessed in subsequent outbreaks.

RESULTS: Total suspected cases were 125 (males 54%, females 46%) between June 2009 and March 2010. The positives were 54 (43%), Negatives 59 (47%) and Epi-linked 12 (10%). In the subsequent outbreak between April 2010 and May 2010, we observed 90 suspected cases, 8 (9%) positives, 4 (4%) Negatives, 73 (81%) Epi-linked and 5 (6%) samples were not collected. No cholera cases were reported in the cholera hotspot areas after implementing the twin strategy.

CONCLUSION: Cases of cholera declined considerably with subsequent outbreaks and no case was reported in the hotspot areas where the twin strategy was implemented. Our intervention worked well in a HDSS setting suggesting a replicable approach in other epidemic prone areas.
Keywords: Cholera Prevention

50. Policy environment for prevention, control and management of cardiovascular diseases in primary health care in Kenya.

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ABSTRACT
BACKGROUND: In Kenya, cardiovascular diseases (CVDs) accounted for more than 10% of total deaths and 4% of total Disability-Adjusted Life Years (DALYs) in 2015 with a steady increase over the past decade. The main objective of this paper was to review the existing policies and their content in relation to prevention, control and management of CVDs at primary health care (PHC) level in Kenya.

METHODS: A targeted document search in Google engine using keywords "Kenya national policy on cardiovascular diseases" and "Kenya national policy on non-communicable diseases (NCDs)" was conducted in addition to key informant interviews with Kenyan policy makers. Relevant regional and international policy documents were also included. The contents of documents identified were reviewed to assess how well they aligned with global health policies on CVD prevention, control and management. Thematic content analysis of the key informant interviews was also conducted to supplement the document reviews.

RESULTS: A total of 17 documents were reviewed and three key informants interviewed. Besides the Tobacco Control Act (2007), all policy documents for CVD prevention, control and management were developed after 2013. The national policies were preceded by global initiatives and guidelines and were similar in content with the global policies. The Kenya health policy (2014-2030), The Kenya Health Sector Strategic and Investment Plan (2014-2018) and the Kenya National Strategy for the Prevention and Control of Non-communicable diseases (2015-2020) had strategies on NCDs including CVDs. Other policy documents for behavioral risk factors (The Tobacco Control Act 2007, Alcoholic Drinks Control (Licensing) Regulations (2010)) were available. The National Nutrition Action Plan (2012-2017) was available as a draft. Although Kenya has a tiered health care system comprising primary healthcare, integration of CVD prevention and control at PHC level was not explicitly mentioned in the policy documents.

CONCLUSION: This review revealed important gaps in the policy environment for prevention, control and management of CVDs in PHC settings in Kenya. There is need to continuously engage the ministry of health and other sectors to prioritize inclusion of CVD services in PHC.

Keywords: prevention, control management cardiovascular diseases

51. Prevalence, awareness, treatment and control of hypertension and their determinants: results from a national survey in Kenya.

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ABSTRACT

BACKGROUND: Hypertension is the most important risk factor for cardiovascular diseases and the leading cause of death worldwide. Despite growing evidence that the prevalence of hypertension is rising in sub-Saharan Africa, national data on hypertension that can guide programming are missing for many countries. In this study, we estimated the prevalence of hypertension, awareness, treatment, and control. We further examined the factors associated with hypertension and awareness.

METHOD: We used data from the 2015 Kenya STEPs survey, a national cross-sectional household survey targeting randomly selected people aged 18-69Â years. Demographic and behavioral characteristics as well as physical measurements were collected using the World Health Organization's STEPs Survey methodology. Descriptive statistics were used to estimate the prevalence, awareness, treatment and control of hypertension. Multiple logistic regression models were used to identify the determinants of hypertension and awareness.

RESULTS: The study surveyed 4485 participants. The overall age-standardized prevalence for hypertension was 24.5% (95% confidence interval (CI) 22.6% to 26.6%). Among individuals with hypertension, only 15.6% (95% CI 12.4% to 18.9%) were aware of their elevated blood pressure. Among those aware only 26.9%; (95% CI 17.1% to 36.4%) were on treatment and 51.7%; (95% CI 33.5% to 69.9%) among those on treatment had achieved blood pressure control. Factors associated with hypertension were older age ($p<0.001$), higher body mass index (BMI) ($p<0.001$) and harmful use of alcohol ($p<0.001$). Similarly, factors associated with awareness were older age ($p<0.013$) and being male ($p<0.001$).

CONCLUSION: This study provides the first nationally-representative estimates for hypertension in Kenya. Prevalence among adults is high, with unacceptably low levels of awareness, treatment and control. The results also reveal that men are less aware of their hypertension status hence special attention should focus on this group.

Keywords: prevalence, awareness, treatment and control hypertension

52. Public health approach to prevent cervical cancer in HIV-infected women in Kenya: Issues to consider in the design of prevention programs.

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ABSTRACT

Women living with HIV in Africa are at increased risk to be co-infected with Human Papilloma Virus (HPV), persistent high risk (HR) HPV infection and bacterial vaginosis (BV), which compounds HPV persistence, thereby increasing the risk for cervical dysplasia. New guidance from WHO in 2014 advocating for a "screen and treat" approach in resource poor settings is becoming a more widely recommended screening tool for cervical cancer prevention programs in such contexts. This review article summarizes the risk factors to be considered when designing a primary and secondary cervical prevention program in a post-vaccination era for HIV-infected women in Kenya. This review article is based on our prior research on the epidemiology of pHR/HR-HPV genotypes in HIV-infected women and CIN 2Â + in Kenya and other sub-Saharan contexts. In order to contextualize the findings, a literature search was carried out in March 2017 by means of four electronic databases: PUBMED, EMBASE, SCOPUS, and PROQUEST. Risk factors for potential (pHR)/HR HPV acquisition, including CD4 count, HAART initiation, Female Sex Worker status (FSW) and BV need to be considered. Furthermore, there may be risk factors for abnormal cytology, including FSW status, multiple potential (p)HR/HR HPV genotypes, which may require that HIV-infected women be subjected to screening at more frequent intervals than the three year recommended by the WHO. The quadruple synergistic interaction between HIV, HPV and BV and its related cervicitis may need to be reflected within a larger prevention framework at the community level. The opportunities brought forth by the roll out of HAART could lead to task shifting of HIV-HPV-BV care to nurses, which may increase access in poorly-served areas.

Keywords: public health approach prevent cervical cancer HIV-infected women

53. Cost-effectiveness of cervical cancer screening and preventative cryotherapy at an HIV treatment clinic in Kenya.

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ABSTRACT
OBJECTIVE: This study evaluated the potential cost-effectiveness of cervical cancer screening in HIV treatment clinics in Nairobi, Kenya.

METHODS: A Markov model was used to project health outcomes and costs of cervical cancer screening and cryotherapy at an HIV clinic in Kenya using cryotherapy without screening, visual inspection with acetic acid (VIA), Papanicolaou smear (Pap), and testing for human papillomavirus (HPV). Direct and indirect medical and non-medical costs were examined from societal and clinic perspectives.

RESULTS: Costs of cryotherapy, VIA, Pap, and HPV for women with CD4 200-500 cells/mL were $99, $196, $219, and $223 from a societal perspective and $19, $94, $124, and $113 from a clinic perspective, with 17.3, 17.1, 17.1, and 17.1Â years of life expectancy, respectively. Women at higher CD4 counts (>500 cells/mL) given cryotherapy VIA, Pap, and HPV resulted in better life expectancies (19.9+Â years) and lower cost (societal: $49, $99, $115, and $102; clinic: $13, $51, $71, and $56). VIA was less expensive than HPV unless HPV screening could be reduced to a single visit.

CONCLUSIONS: Preventative cryotherapy was the least expensive strategy and resulted in highest projected life expectancy, while VIA was most cost-effective unless HPV could be reduced to a single visit.

Keywords: Cost-Benefit Analysis; Cryotherapy; Kenya; Uterine Cervical Neoplasms

54. Current status of insecticide resistance among malaria vectors in Kenya.

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ABSTRACT

BACKGROUND: Insecticide resistance has emerged as one of the major challenges facing National Malaria Control Programmes in Africa. A well-coordinated national database on insecticide resistance (IRBase) can facilitate the development of effective strategies for managing insecticide resistance and sustaining the effectiveness of chemical-based vector control measures. The aim of this study was to assemble a database on the current status of insecticide resistance among malaria vectors in Kenya.

METHODS: Data was obtained from published literature through PubMed, HINARI and Google Scholar searches and unpublished literature from government reports, research institutions reports and malaria control programme reports. Each data source was assigned a unique identification code and entered into Microsoft Excel 2010 datasheets. Base maps on the distribution of insecticide resistance and resistance mechanisms among malaria vectors in Kenya were generated using ArcGIS Desktop 10.1 (ESRI, Redlands, CA, USA).

RESULTS: Insecticide resistance status among the major malaria vectors in Kenya was reported in all the four classes of insecticides including pyrethroids, carbamates, organochlorines and organophosphates. Resistance to pyrethroids has been detected in *Anopheles gambiae (s.s.), An*. *arabiensis* and *An. funestus (s.s.)* while resistance to carbamates was limited to *An. gambiae (s.s.)* and *An. arabiensis*. Resistance to the organochlorine was reported in An. gambiae (s.s.) and *An. funestus (s.s.)* while resistance to organophosphates was reported in *An. gambiae (s.l.)* only. The mechanisms of insecticide resistance among malaria vectors reported include the kdr mutations (L 1014S and L 1014F) and elevated activity in carboxylesterase, glutathione S-transferases (GST) and monooxygenases. The kdr mutations L 1014S and L 1014F were detected in *An. gambiae (s.s.)* and *An. arabiensis* populations. Elevated activity of monooxygenases has been detected in both *An. arabiensis* and *An. gambiae (s.s.)* populations while the elevated activity of carboxylesterase and GST has been detected only in *An. arabiensis* populations.

CONCLUSIONS: The geographical maps show the distribution of insecticide resistance and resistance mechanisms among malaria vectors in Kenya. The database generated will provide a guide to intervention policies and programmes in the fight against malaria.

Keywords: insecticide resistance among malaria vector

55. Adequacy of control of cardiovascular risk factors in ambulatory patients with type 2 diabetes attending diabetes out-patients clinic at a county hospital, Kenya.

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ABSTRACT

BACKGROUND: Type 2 diabetes is associated with substantial cardiovascular morbidity and mortality arising from the high prevalence of cardiovascular risk factors such as hypertension, dyslipidaemia, obesity, poor glycaemic control and albuminuria. Adequacy of control of these risk factors determines the frequency and outcome of cardiovascular events in the patients. Current clinical practice guidelines emphasize primary prevention of cardiovascular disease in type 2 diabetes. There is scarce data from the developing countries, Kenya included, on clinical care of patients with type 2 diabetes in the regions that are far away from tertiary health facilities. So we determined the adequacy of control of the modifiable risk factors: glycaemic control, hypertension, dyslipidemia, obesity and albuminuria in the study patients from rural and peri-urban dwelling.

METHODS: This was a cross-sectional study on 385 randomly selected ambulatory patients with type 2 diabetes without overt complications. They were on follow up for at least 6Â months at the Out-patient diabetes clinic of Nyeri County Hospital, a public health facility located in the central region of Kenya.

RESULTS: Females were 65.5%. The study subjects had a mean duration of diabetes of 9.4Â years, IQR of 3.0-14Â years. Their mean age was 63.3Â years, IQR of 56-71Â years. Only 20.3% of our subjects had simultaneous optimal control of the three (3) main cardiovascular risk factors of hypertension, high LDL-C and hyperglycaemia at the time of the study. The prevalence of cardiovascular risk factors were as follows: HbA1c above 7% was 60.5% (95% CI, 55.6-65.5), hypertension, 49.6% of whom 76.6% (95% CI, 72.5-80.8) were poorly controlled. High LDL-Cholesterol above 2.0Â mmol/L was found in 77.1% (95% CI 73.0-81.3) and Albuminuria occurred in 32.7% (95% CI 27.8-37.4). The prevalence of the other habits with cardiovascular disease risk were: excess alcohol intake at 26.5% (95% CI 27.8-37.4) and cigarette-smoking at 23.6%. A modest 23.4% of the treated patients with hypertension attained target blood pressure of <140/90Â mmHg. Out of a paltry 12.5% of the statin-treated patients and others not actively treated, only 22.9% had LDL-Cholesterol of target <2.0Â mmol/L. There were no obvious socio-demographic and clinical determinants of poor glycaemic control. However, old age above 50Â yrs., longer duration with diabetes above 5Â yrs. and advanced stages of CKD were significantly associated with hypertension. Female gender and age, statin non-use and socio-economic factor of employment were the significant determinants of high levels of serum LDL-cholesterol.

CONCLUSION: The majority of the study patients attending this government-funded health facility had high prevalence of cardiovascular risk factors that were inadequately controlled. Therefore patients with type 2 diabetes should be risk-stratified by their age, duration of diabetes and cardiovascular risk factor loading. Consequently, composite risk factor reduction strategies are needed in management of these patients to achieve the desired targets safely. This would be achieved through innovative care systems and modes of delivery which would translate into maximum benefit of primary cardiovascular disease prevention in those at high risk. It is a desirable quality objective to have a higher proportion of the patients who access care benefiting maximally more than the numbers we are achieving now.

Keywords: cardiovascular risk factors ambulatory patients type 2 diabetes

56. Genetic variability and population structure of Plasmodium falciparum parasite populations from different malaria ecological regions of Kenya.

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Infection, Genetics And Evolution: Journal Of Molecular Epidemiology And Evolutionary Genetics In Infectious Diseases 1567-7257 (Electronic), 39, 372-380 (2016): https://www.sciencedirect.com/science/article/pii/S1567134815300137

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ABSTRACT

Transmission intensity, movement of human and vector hosts, biogeographical features, and malaria control measures are some of the important factors that determine Plasmodium falciparum parasite genetic variability and population structure. Kenya has different malaria ecologies which might require different disease intervention methods. Refined parasite population genetic studies are critical for informing malaria control and elimination strategies. This study describes the genetic diversity and population structure of P. falciparum parasites from the different malaria ecological zones in Kenya. Twelve multi-locus microsatellite (MS) loci previously described were genotyped in 225 P. falciparum isolates collected between 2012 and 2013 from five sites; three in lowland endemic regions (Kisumu, Kombewa, and Malindi) and two in highland, epidemic regions (Kisii and Kericho). Parasites from the lowland endemic and highland epidemic regions of western Kenya had high genetic diversity compared to coastal lowland endemic region of Kenya [Malindi]. The Kenyan parasites had a mean genetic differentiation index (FST) of 0.072 ($p=0.011$). The multi-locus genetic analysis of the 12 MS revealed all the parasites had unique haplotypes. Significant linkage disequilibrium (LD) was observed in all the five parasite populations. Kisumu had the most significant index of association values (0.16; $p<0.0001$) whereas Kisii had the least significant index of association values (0.03; $p<0.0001$). Our data suggest high genetic diversity in Kenyan parasite population with the exception of parasite from Malindi where malaria has been on the decline. The presence of significant LD suggests that there is occurrence of inbreeding in the parasite population. Parasite populations from Kisii showed the strongest evidence for epidemic population structure whereas the rest of the regions showed panmixia. Defining the genetic diversity of the parasites in different ecological regions of Kenya after introduction of the artemether-lumefantrine is important in refining the spread of drug resistant strains and malaria transmission for more effective control and eventual elimination of malaria in Kenya.

Keywords: genetic variability population structure

57. Barriers to Cervical Cancer Screening in Rural Kenya: Perspectives from a Provider Survey.

Rosser J[I] and Njoroge B[1] and Huchko MJ[1]

Journal of Community Health - 1573-3610 (Electronic), 40, 4, 756-61 (2015): https://link.springer.com/article/10.1007/s10900-015-9996-1

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ABSTRACT
Although cervical cancer is highly preventable through screening, it remains the number one cause of cancer-related death in Kenyan women due to lack of funding and infrastructure for prevention programs. In 2012, Family AIDS Care and Education Services in partnership with the Kenya Ministry of Health began offering free screening at eleven rural health facilities. We sought to explore why screening coverage remains low at some sites. We examined the barriers to screening through a survey of 106 healthcare staff. The most frequently cited barriers to service delivery included staffing shortages, lack of trained staff, insufficient space, and supply issues. The patient barriers commonly perceived by the staff included inadequate knowledge, wait time, discomfort with male providers, and fear of pain with the speculum exam. Despite multilateral efforts to implement cervical cancer screening, staff face significant challenges to service provision and increased education is needed for both providers and patients.

Keywords: cervical cancer screening

58. Cervical Cancer Screening Knowledge and Behavior among Women Attending an Urban HIV Clinic in Western Kenya.

Rosser J[I] and Njoroge B[1] and Huchko MJ[1]

Journal Of Cancer Education: The Official Journal Of the American Association for Cancer Education
1543-0154 (Electronic), 30, 3, 567-72 (2015): https://link.springer.com/article/10.1007/s13187-014-0787-7

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ABSTRACT
Cervical cancer is a highly preventable disease that disproportionately affects women in developing countries and women with HIV. As integrated HIV and cervical cancer screening programs in Sub-Saharan Africa mature, we have an opportunity to measure the impact of

outreach and education efforts and identify areas for future improvement. We conducted a cross-sectional survey of 106 women enrolled in care at an integrated HIV clinic in the Nyanza Province of Kenya 5 years after the start of a cervical cancer screening program. Female clinic attendees who met clinic criteria for cervical cancer screening were asked to complete an oral questionnaire assessing their cervical cancer knowledge, attitudes, and screening history. Ninety-nine percent of women had heard of screening, 70 % felt at risk, and 84 % had been screened. Increased duration of HIV diagnosis was associated with feeling at risk and with a screening history. Nearly half (48 %) of women said they would not get screened if they had to pay for it.

59. Cardiovascular health knowledge and preventive practices in people living with HIV in Kenya.

Tecla M. Temu [1,2*,] Nicholas Kirui[1,4], Celestine Wanjalla[5], Alfred M. Ndungu[6], Jemima H. Kamano [1,3,4], Thomas S. Inui [1,3,4,7] , Gerald S. Bloomfield [8]

BMC Infectious Diseases - 1471-2334 (Electronic), 15, 421 (2015):
https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-015-1157-8

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ABSTRACT

BACKGROUND: Traditional cardiovascular disease (CVD) risk factors contribute to increase risk of CVD in people living with HIV (PLWH). Of all world regions, sub-Saharan Africa has the highest prevalence of HIV yet little is known about PLWH's CVD knowledge and self- perceived risk for coronary heart disease (CHD). In this study, we assessed PLWH's knowledge, perception and attitude towards cardiovascular diseases and their prevention.

METHODS: We conducted a cross-sectional study in the largest HIV care program in western Kenya. Trained research assistants used validated questionnaires to assess CVD risk patterns. We used logistic regression analysis to identify associations between knowledge with demographic variables, HIV disease characteristics, and individuals CVD risk patterns.

RESULTS: There were 300 participants in the study; median age (IQR) was 40 (33-46) years and 64 % women. The prevalence of dyslipidemia, overweight and obesity were 70 %, 33 % and 8 %, respectively. Participant's knowledge of risk factors was low with a mean (SD) score of 1.3 (1.3) out of possible 10. Most (77.7 %) could not identify any warning signs for heart attack. Higher education was a strong predictor of CVD risk knowledge (6.72, 95 % CI 1.98-22.84, P<0.0001).

Self-risk perception towards CHD was low (31 %) and majority had inappropriate attitude towards CVD risk reduction.

CONCLUSION: Despite a high burden of cardiovascular risk factors, PLWH in Kenya lack CVD knowledge and do not perceived themselves at risk for CHD. These results emphasis the need for behavior changes interventions to address the stigma and promote positive health behaviors among the high risk HIV population in Kenya.

60. Development of the roadmap and guidelines for the prevention and management of high blood pressure in Africa: Proceedings of the PASCAR Hypertension Task Force meeting: Nairobi, Kenya, 27 October 2014.

A Dzudie [1], D Ojji [2], B C Anisiuba [3], B A Abdou [4], R Cornick [5], A Damasceno [6], A L Kane [7], A O Mocumbi [8], A Mohamed [9], G Nel [10], E Ogola [11], B Onwubere [3], H Otieno [1,2], B Rainer [13], A Schutte [1,4], I T Ali [1,5], M Twagirumukiza [1,6], N Poulter [17], B Mayosi [1,8];

Cardiovascular Journal of Africa - 1680-0745 (Electronic), 26, 2, 82-5 (2015):
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ABSTRACT
Africa has one of the fastest growing economies in the world. The economic changes are associated with a health transition characterised by a rise in cardiovascular risk factors and complications, which tend to affect the African population at their age of maximum productivity. Recent data from Africa have highlighted the increasing importance of high blood pressure in this region of the world. This condition is largely underdiagnosed and poorly treated, and therefore leads to stroke, renal and heart failure, and death. Henceforth, African countries are taking steps to develop relevant policies and programmes to address the issue of blood pressure and other cardiovascular risk factors in response to a call by the World Health Organisation (WHO) to reduce premature deaths from non-communicable diseases (NCDs) by 25% by the year 2025 (25 Ã— 25). The World Heart Federation (WHF) has developed a roadmap for global implementation of the prevention and management of raised blood pressure using a health system approach to help realise the 25 Ã— 25 goal set by the WHO. As the leading continental organisation of cardiovascular professionals, the Pan-African Society of Cardiology (PASCAR) aims to contextualise the roadmap framework of the WHF to the African continent through the PASCAR Taskforce on Hypertension. The Taskforce held a workshop in Kenya on 27 October 2014 to

discuss a process by which effective prevention and control of hypertension in Africa may be achieved. It was agreed that a set of clinical guidelines for the management of hypertension are needed in Africa. The ultimate goal of this work is to develop a roadmap for implementation of the prevention and management of hypertension in Africa under the auspices of the WHF.

Keywords: Cardiology; Humans; Hypertension/diagnosis/prevention & control/therapy;

61. Engaging the Entire Care Cascade in Western Kenya: A Model to Achieve the Cardiovascular Disease Secondary Prevention Roadmap Goals.

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Global Heart, - 2211-8179 (Electronic), 10, 4, 313-7, (2015):
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ABSTRACT

Cardiovascular disease (CVD) is the leading cause of death in the world, with a substantial health and economic burden confronted by low- and middle-income countries. In low-income countries such as Kenya, there exists a double burden of communicable and noncommunicable diseases, and the CVD profile includes many nonatherosclerotic entities. Socio-politico-economic realities present challenges to CVD prevention in Kenya, including poverty, low national spending on health, significant out-of-pocket health expenditures, and limited outpatient health insurance. In addition, the health infrastructure is characterized by insufficient human resources for health, medication stock-outs, and lack of facilities and equipment. Within this socio-politico-economic reality, contextually appropriate programs for CVD prevention need to be developed. We describe our experience from western Kenya, where we have engaged the entire care cascade across all levels of the health system, in order to improve access to high-quality, comprehensive, coordinated, and sustainable care for CVD and CVD risk factors. We report on several initiatives: 1) population-wide screening for hypertension and diabetes; 2) engagement of community resources and governance structures; 3) geographic decentralization of care services; 4) task redistribution to more efficiently use of available human resources for health; 5) ensuring a consistent supply of essential medicines; 6) improving physical infrastructure of rural health facilities; 7) developing an integrated health record; and 8) mobile health (mHealth) initiatives to provide clinical decision support and record-keeping functions. Although several challenges remain, there currently exists a critical window of opportunity to establish systems of care and prevention that can alter the trajectory of CVD in low-resource settings.

Keywords: Ambulatory Care; Cardiovascular Diseases/epidemiology/*prevention & control; Cost of Illness; Delivery of Health Care/organization, cardiovascular diseases

62. Men's knowledge and attitudes about cervical cancer screening in Kenya.

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BMC Women's Health - 1472-6874 (Electronic), 14, 138 (2014):
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ABSTRACT

BACKGROUND: A number of studies have identified male involvement as an important factor affecting reproductive health outcomes, particularly in the areas of family planning, antenatal care, and HIV care. As access to cervical cancer screening programs improves in resource-poor settings, particularly through the integration of HIV and cervical cancer services, it is important to understand the role of male partner support in women's utilization of screening and treatment.

METHODS: We administered an oral survey to 110 men in Western Kenya about their knowledge and attitudes regarding cervical cancer and cervical cancer screening. Men who had female partners eligible for cervical cancer screening were recruited from government health facilities where screening was offered free of charge.

RESULTS: Specific knowledge about cervical cancer risk factors, prevention, and treatment was low. Only half of the men perceived their partners to be at risk for cervical cancer, and many reported that a positive screen would be emotionally upsetting. Nevertheless, all participants said they would encourage their partners to get screened.

CONCLUSIONS: Future interventions should tailor cervical cancer educational opportunities towards men. Further research is needed among both men and couples to better understand barriers to male support for screening and treatment and to determine how to best involve men in cervical cancer prevention efforts.

Keywords: men knowledge attitudes cervical cancer screening

63. Determinants of acceptance and subsequent uptake of the HPV vaccine in a cohort in Eldoret, Kenya.

Vermandere H[1] and Naanyu V[2] and Mabeya H[3] and Vanden Broeck D[4] and Michielsen K[4] and Degomme O[4]

PloS One, 1932-6203 (Electronic), 9, 10, e109353 (2014):
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ABSTRACT
The development of Human Papillomavirus (HPV) vaccines provides new opportunities in the fight against cervical cancer. Many acceptability studies have revealed high interest in these vaccines, but acceptance is only a precursor of behavior, and many factors, at personal, community and provider level, may inhibit the translation of willingness to vaccinate into actual uptake. Through a longitudinal study in Eldoret, Kenya, HPV vaccine acceptability was measured before a vaccination program and vaccine uptake, as reported by mothers, once the program was finished. In between baseline and follow-up, a pilot HPV vaccination program was implemented via the GARDASIL Access Program, in which parents could have their daughter vaccinated for free at the referral hospital. The program was promoted at schools: Health staff informed teachers who were then asked to inform students and parents. Even though baseline acceptance was very high (88.1%), only 31.1% of the women reported at follow-up that their daughter had been vaccinated. The vaccine was declined by 17.7%, while another 51.2% had wanted the vaccination but were obstructed by practical barriers. Being well-informed about the program and baseline awareness of cervical cancer were independently associated with vaccine uptake, while baseline acceptance was correlated in bivariate analysis. Side effects were of great concern, even among those whose daughter was vaccinated. Possible partner disapproval lowered acceptance at baseline, and women indeed reported at follow-up that they had encountered his opposition. In Kenya, women prove to be very willing to have their daughter vaccinated against cervical cancer. However, in this study, uptake was more determined by program awareness than by HPV vaccine acceptance. School-based vaccination might improve coverage since it reduces operational problems for parents. In addition, future HPV vaccination campaigns should address concerns about side effects, targeting men and women, given both their involvement in HPV vaccination decision-making.

Keywords: Adolescent; Child; Decision Making; Female; Health Knowledge, Attitudes, Practice;

64. Abandonment of childhood cancer treatment in Western Kenya.

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ABSTRACT
BACKGROUND: The most important reason for childhood cancer treatment failure in low-income countries is treatment abandonment.

OBJECTIVE: The aim of this study was to explore reasons for childhood cancer treatment abandonment and assess the clinical condition of these children.

DESIGN: This was a descriptive study using semi-structured questionnaires. Home visits were conducted to interview families of childhood cancer patients, diagnosed between January 2007 and January 2009, who had abandoned treatment at the Moi Teaching and Referral Hospital (MTRH).

RESULTS: Between January 2007 and January 2009, 222 children were newly diagnosed with a malignancy at MTRH. Treatment outcome was documented in 180 patients. Of these 180 patients, 98 (54%) children abandoned treatment. From December 2011 until August 2012, 53 (54%) of the 98 families were contacted. Due to lack of contact information, 45 families were untraceable. From 53 contacted families, 46 (87%) families agreed to be interviewed. Reasons for abandonment were reported by 26 families, and they were diverse. Most common reasons were financial difficulties (46%), inadequate access to health insurance (27%) and transportation difficulties (23%). Most patients (72%) abandoned treatment after the first 3 months had been completed. Of the 46 children who abandoned treatment, 9 (20%) were still alive: 6 (67%) of these children looked healthy and 3 (33%) ill. The remaining 37 (80%) children had passed away.

CONCLUSIONS: Prevention of childhood cancer treatment abandonment requires improved access to health insurance, financial or transportation support, proper parental education, psychosocial guidance and ameliorated communication skills of healthcare providers.

Keywords Adolescent; Child, Preschool; Female; Health Services Accessibility

65. Tobacco control research in Kenya: the existing body of knowledge.
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The Pan African Medical Journal - 1937-8688 (Electronic), 17, 155 (2014):
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4119461/

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ABSTRACT

This review examines the existing tobacco control research done in the country. It further identifies key gaps present in research and gives recommendations on priority research areas required to implement effective tobacco control programmes. Published literature, technical reports and reports by the Ministry of Health were reviewed. It included studies that measure tobacco use and its effects, monitor progress of tobacco control, or articles that are discussing tobacco control policy. The review was conducted in January 2013 and included 18 papers. There are six studies that assessed the prevalence of current tobacco consumption which yielded prevalence's of between 3.8%-19%. Only one study tried to determine an association between Tobacco use and Health. Studies that monitored progress of legislation indicated that the country lacked coordinated efforts for tobacco control, enforcement was weak and monitoring of the existing tobacco legislation was poor. This review has demonstrated that Kenya has made efforts to generate knowledge on tobacco control through research. However, there is lack of research that demonstrates the effects of tobacco consumption on health and studies that detail the impact of the various tobacco control interventions.

Keywords: Tobacco control knowledge

66. Trends in non-communicable disease mortality among adult residents in Nairobi's slums, 2003-2011: applying InterVA-4 to verbal autopsy data.

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ABSTRACT

BACKGROUND: About 80% of deaths from non-communicable diseases (NCDs) occur in developing countries such as Kenya. However, not much is known about the burden of NCDs in slums, which account for about 60% of the residences of the urban population in Kenya. This study examines trends in NCD mortality from two slum settings in Nairobi.

DESIGN: We use verbal autopsy data on 1954 deaths among adults aged 35 years and older who were registered in the Nairobi Urban Health and Demographic Surveillance System between 2003 and 2011. InterVA-4, a computer-based program, was used to assign causes of death for each case.

RESULTS are presented as annualized cause-specific mortality rates (CSMRs) and cause-specific mortality fractions (CSMFs) by sex. The CSMRs for NCDs did not appear to change significantly over time for both males and females. Among males, cardiovascular diseases (CVDs) and neoplasms were the leading NCDs--contributing CSMFs of 8 and 5%, respectively, on average over time. Among females, CVDs contributed a CSMF of 14% on average over time, while neoplasms contributed 8%. Communicable diseases and related conditions remained the leading causes of death, contributing a CSMF of over 50% on average in males and females over time.

CONCLUSIONS: Our findings are consistent with the Global Burden of Disease 2010 study which shows that communicable diseases remain the dominant cause of death in Africa, although NCDs were still significant contributors to mortality. We recommend an integrated approach towards disease prevention that focuses on health systems strengthening in resource-limited settings such as slums.

Keywords: non-communicable disease mortality, verbal autopsy

67. Preventable but neglected: rickets in an informal settlement, Nairobi, Kenya.

Edwards, J. K. [1]; Thiongó, A. [1]; Van den Bergh, R. [2]; Kizito, W. [1]; Kosgei, R. J. [3]; Sobry, A. [1]; Vandenbulcke, A. [1]; Zuniga, I. [4]; Reid, A. J. [2];

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ABSTRACT

SETTING: The primary care clinics of Medicins Sans Frontieres within the informal settlement of Kibera, Nairobi, Kenya. OBJECTIVE: To describe the demographic and clinical characteristics of children clinically diagnosed with rickets from September 2012 to October 2013.

DESIGN: Descriptive retrospective case review of diagnosis and treatment course with vitamin D and calcium using routine programme data.

RESULTS: Of the 82 children who met the clinical diagnosis of rickets, 57% were male, with a median age of 12 months and 14 months for females. Children with rickets were found to have â©½3 hours/week sunlight exposure for 71% of the children and malnutrition in 39%. Clinical findings on presentation revealed gross motor developmental delays in 44%. The loss to follow-up rate during treatment was 40%.

CONCLUSIONS: This study found that rickets is a common clinical presentation among children living in the informal settlement of Kibera and that there are likely multiple factors within that

environment contributing to this condition. As rickets is a simply and inexpensively preventable non-communicable disease, we suggest that routine vitamin D supplementation be formally recommended by the World Health Organization for well-child care in Africa, especially in the contexts of informal settlements.

Keywords: Preventable rickets informal settlement

68. Level of blood pressure control among hypertensive patients on follow-up in a regional referral hospital in Central Kenya.

Mutua EM[1], Gitonga MM[1] , Mbuthia B[2] , Muiruri N[2] , Cheptum JJ[3] , Maingi T[3]

The Pan African medical journal, 1937-8688 (Electronic), 18, 278 (2014):
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ABSTRACT

INTRODUCTION: Uncontrolled hypertension is a leading modifiable risk factor for cardiovascular disease morbidity and mortality. Data on adequacy of blood pressure control in Kenya is scarce. This study aimed at assessing the level of blood pressure control among hypertensive patients on follow-up in a regional referral hospital.

METHODS: Data regarding blood pressure, antihypertensive medication use, and comorbidities was abstracted from medical records of 452 hypertensive patients seen in Nyeri Provincial General Hospital between January and March 2013. Adequate blood pressure control was defined as a systolic pressure<140 mmHg (<130 mmHg for diabetic hypertensive patients) and a diastolic pressure<90 mmHg (<80 mmHg for diabetic hypertensive patients). Data was entered and analyzed using STATA 9 (StataCorp, Inc, Texas, USA).

RESULTS: Only 33.4% of patients had a blood pressure within the recommended limits. In multivariate analysis, using a calcium channel blocker was significantly associated with good blood pressure control (OR, 2.1; 95% CI, 1.4, 3.3). On the other hand, old age (>60 years), being diabetic, and the use of three or more antihypertensive drugs were associated with reduced odds of good blood pressure control (OR, 0.64; 95% CI, 0.43; OR, 0.54; 95% CI, 0.36, 0.81; and OR, 0.41; 95% CI, 0.26, 0.64, respectively).

CONCLUSION: Poorly controlled blood pressure is an important public health concern among hypertensive patients in this region. Elderly patients, those with diabetes, and those on multidrug regimens are at higher risk for poor blood pressure control and warrant closer attention.

Keywords: Aged; Aged, 80 and over; Antihypertensive Agents/*therapeutic use; Blood Pressure/*drug effects/; Diabetes Mellitus/epidemiology; Drug Therapy,

69. A community-based intervention for primary prevention of cardiovascular diseases in the slums of Nairobi: the SCALE UP study protocol for a prospective quasi-experimental community-based trial.

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ABSTRACT

BACKGROUND: The burden of cardiovascular disease is rising in sub-Saharan Africa with hypertension being the main risk factor. However, context-specific evidence on effective interventions for primary prevention of cardiovascular diseases in resource-poor settings is limited. This study aims to evaluate the feasibility and cost-effectiveness of one such intervention--the "Sustainable model for cardiovascular health by adjusting lifestyle and treatment with economic perspective in settings of urban poverty".

DESIGN: A prospective quasi-experimental community-based intervention study. SETTING: Two slum settlements (Korogocho and Viwandani) in Nairobi, Kenya. STUDY POPULATION: Adults aged 35 years and above in the two communities. INTERVENTION: The intervention community (Korogocho) will be exposed to an intervention package for primary prevention of cardiovascular disease that comprises awareness campaigns, household screening for cardiovascular diseases risk factors, and referral and treatment of people with high cardiovascular diseases risk at a primary health clinic. The control community (Viwandani) will continue accessing the usual standard of care for primary prevention of cardiovascular diseases in Kenya. DATA: Demographic and socioeconomic data; anthropometric and clinical measurements including blood pressure. Population-based data will be collected at the baseline and endline--12 months after implementing the intervention. These data will be collected from a random sample of 1,610 adults aged 35 years and above in the intervention and control sites at both baseline and endline. Additionally, operational (including cost) and clinic-based data will be collected on an ongoing basis.

MAIN OUTCOMES: (1) A positive difference in the change in the proportion of the intervention versus control study populations that are at moderate or high risk of cardiovascular disease; (2) a difference in the change in mean systolic blood pressure in the intervention versus control study populations; (3) the net cost of the complete intervention package per disability-adjusted life year gained. ANALYSIS: Primary outcomes comparing pre- and post-, and operational data will be analyzed descriptively and "impact" of the intervention will be calculated using double-difference methods. We will also conduct a cost-effectiveness analysis of the intervention using World Health Organization guidelines.

DISCUSSION: The outcomes of the study will be disseminated to local policy makers and health planners. TRIAL REGISTRATION: Current controlled trials ISRCTN84424579.

Keywords: Adult; Cardiovascular Diseases/*prevention & control; Community Health Services; Cost-Benefit Analysis;

70. Interrelation of risk factors for coronary heart disease among residents of Langata County, Nairobi, Kenya

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ABSTRACT
BACKGROUND: There has been considerable progress in the understanding of conventional risk factors for coronary heart disease (CHD). However, they do not fully account for the disease-associated complications. As a result, novel risk factors such as C-reactive protein (CRP) and homocysteine have come under investigation.

OBJECTIVE: The aim of this study was to determine the interrelation of conventional and novel risk factors for CHD among residents of Langata County, Nairobi, Kenya.

MATERIALS & METHODS: This was a cross-sectional study based on a three-stage cluster sampling methodology. Information on demographics and behavioural habits was collected using a structured questionnaire; body composition determined based on measurements of height and weight; and a general clinical examination performed including blood pressure check. Biochemical measurements included fasting blood glucose, homocysteine, CRP and the lipid profile. Data was weighted and analyzed with values of p-values. Results: A total of 539 adults (m : 299; w: 240) with mean age of 38.09 + 13.4 years participated. Homocysteine was significantly associated with increasing blood pressure [AOR 6.3 (95% CI 1.5-6.3); p=0.002], and obesity [AOR 0.15 (95% CI 0.06-0.4).

DISCUSSION: The coexistence of hyperhomocysteineamia with other CHD risk factors positions homocysteine as a potential prevention intervention target in this study population. Addition of homocysteine and CRP to conventional risk factors may result in small increases in the ability to classify risk.

CONCLUSION & RECOMMENDATION: High blood pressure and dyslipideamia are the major contributors to the overall CHD risk. As markers of atherogenesis, both CRP and homo cysteine should be considered when evaluating the disease process. Longitudinal studies are recommended for prospective validation of the risk factors observed and determination of the independent predictive power of the novel markers.
Keywords: coronary heart disease

71. Prevalence of Personality Disorders among Substance Abusers at the Mathari Hospital Rehabilitation Centre

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Proceedings of the KEMRI Annual Scientific & Health (KASH) Conference, 2018, Book of Abstracts (*unpublished)*

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ABSTRACT

BACKGROUND: In Kenya substance abuse is a growing menace with high individual and social costs. Hence there is a great need to study factors related to such behaviour. Personality disorders play a potential role in vulnerability to substance misuse and dependence. Very little information is available on the co-occurrence of different personality disorders (PDs) and drug use disorders among treatment seeking substance abusers in the Kenyan population. Research on the correlates of drug addiction provides insights for understanding aetiology and informs prevention and cessation programs. The present study contributes to this line of research by examining personality disorders associated with substance abuse.

OBJECTIVE: The aim of the study was to establish the prevalence of personality disorders among substance abusers and to identify factors associated with the presence of personality disorders.

MATERIALS & METHODS: A cross-sectional descriptive study. The study was conducted in the following drug rehabilitation centres: Mathari Hospital. A sample of 207 patients admitted in drug rehabilitation centres in Kenya was assessed within a period of three months. Informed consent was sought from the patients. Individual screening for inclusion criteria followed and recruitment was done for patients who met the inclusion criteria. A socio demographic questionnaire was administered to collect socio demographic information. SCID II was used to assess for axis II diagnosis of personality disorder. The ASSIST instrument was then administered to assess for the specific substances used. Descriptive and inferential analysis was done using the Statistical Package for Social Sciences (SPSS) version 12.

RESULTS: Out of 207 patients successfully enrolled in the study 115 (55.7%) of them were found to have at least one personality disorder. Of these 16.9% were found to have more than one personality disorder. Majority of the patients with a personality disorder had a Cluster C personality disorder (37.7%). The most prevalent personality disorder found in the participants was Avoidant personality disorder (21.3%). Alcohol, tobacco and cannabis were found to be the most abused substances. 95.2% of the participants reported alcohol use, 81.6% reported tobacco use, 55.6% reported cannabis use and 47.8% amphetamine use. Hallucinogens were the least

used substance 2.9%. Analysis of the ages of the substance abuser showed the participants with personality disorders were significantly younger than those without personality disorders (p= 0.0059). Substance abusers with personality disorders were also less likely to be married (p=0.04) and employed (p=0.02). No significant association to gender, level of education and religion was found.

CONCLUSION AND RECOMMENDATION: The prevalence of personality disorders is high among substance abusers admitted in drug rehabilitation Centres around Kenya. Further research in community samples is required to clarify the relationship between substance abuse and personality disorder.

Keywords: personality disorders substance abusers

72. Factors Influencing Utilization of Health Care Services Among Type 2 Diabetes Mellitus Patients Attending Coast Provincial General Hospital Mombasa, Kenya

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ABSTRACT

BACKGROUND / INTRODUCTION: Diabetes mellitus is a worldwide public health problem and one of the main chronic syndromes currently affecting humankind, regardless of socioeconomic status and geographic location. Type 2 diabetes defines 85% of the cases, followed by type 1 at 10% with secondary and gestational types accounting for about 5% globally.

OBJECTIVE: The main aim of this study was to determine the factors influencing utilization of health care services among Type 2 Diabetic patients attending Coast Provincial General Hospital Mombasa, Kenya.

MATERIALS & METHODS: This was a descriptive cross-sectional study which utilized quantitative technique. A total of 250 participants, were purposively selected and recruited for the study as they visited Coast Provincial General Hospital for diabetes health care. Interviewer-based questionnaire was used to collect data, entered into MS excel and analyzed using epi info.

RESULTS: The study results indicated that the level of education was significantly associated with utilization of health facility for diabetes healthcare (P e (P 1). Gender, income levels, occupation and age of the respondents were not significantly associated with utilization of health facility for diabetes healthcare (p=0.415,p=0.297,P=0.517 and p=0.650) respectively.

DISCUSSION: The study results indicate that patient's knowledge of diabetes status and patient's level of education influences utilization of health care services for diabetes care. This study

reveals that higher education is significantly associated with better management of diabetes. Education has a significant, positive effect on diabetes. One possible interpretation for this finding is that education might be acting as a proxy for better knowledge and understanding of when to seek medical help.

CONCLUSION & RECOMMENDATION: The study concludes that education levels and individual knowledge of diabetic status among diabetic patients influences utilization of diabetes health care. These variables have an impact in the long-term management and preventive care hence national Diabetes control Programme should put into place health systems that can develop programs to address diabetes bearing in mind the role played by the above variables.
Key words: Utilization of Health Type 2 Diabetes Mellitus.

73. Characterization of Cancer among Patients Enrolled for Palliative Care in Nyeri Hospice, Nyeri County-2013

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ABSTRACT

INTRODUCTION: Cancer is a leading cause of death worldwide. In 2009, cancer accounted for 13% of all global deaths. More than 70% of all cancer deaths occur in developing countries. In Kenya, cancer ranks third as a cause of death in adults with an estimated annual incidence of 28,000 cases and an annual mortality of >22,000.

METHODS: We conducted retrospective descriptive study in Nyeri Hospice among all cancer patients enrolled for palliative care in 2013. Two hundred and fifty records of cancer patients were abstracted from patient's files and registers using a standardized check-list. We collected data on socio-demographic characteristics, referral mechanisms, duration on care and outcome.

RESULTS: Women were more affected at 53% (133). The mean age of cancer cases was 65 ±16 years. Women reported cancer at a mean age of 62±16 years. Overall, the leading cancers were oesophageal 15.6 %, Colo-rectal 12 % and stomach 11.6 %. Among men, the leading cancers were oesophageal 22.2%, prostate 19.7% and stomach 12.8%; whereas in women, leading cancers were cervix 21.1%, breast 12.8% and Colo-rectal 12%. Fifty-four percent of the patients self-referred themselves to the hospice, compared to 35% from public/faith-based facilities and 10% from private practitioners. Cancer Deaths were higher in males at 76 (64 %). The median duration from admission to death was 31 days with a range of 1 to 416 days.

CONCLUSION: The leading cancers were esophagus, colo-rectal and stomach, with females more affected than males. The mean age of the cancer in both sexes was lower than the national

average. It's evident that preventable cancers accounted for most deaths. This concurs with Nairobi Cancer Registry report (2006) that cancer of esophagus; prostrate, cervix and breast were the leading cancers. There is need for health care workers to be trained on cancer diagnoses and timely referral.

Keywords: Cancer, palliative care, prevention

74. Systems thinking with stakeholders to strengthen primary health care in Kenya: concept mapping in the Health Kiosk in Markets "HEKIMA" study, Vihiga, Kenya

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ABSTRACT
BACKGROUND: Cardiovascular diseases (CVD) are a serious and urgent problem, requiring at-scale, multi-component/stakeholder action and cooperation. Kenya, like many lower- and middle-income countries, will struggle to meet its SDG targets with the rising burden from CVD and under-resourced health systems. Improved evidence on effective strategies for the CVD prevention is required. HEKIMA is a theoretically driven intervention that explores whether kiosks in community markets, manned by community health workers (CHWs) and supervised by health centre (HC) nurses, can improve the reach of preventative care to vulnerable communities. HEKIMA is a multi-phased intervention and here we report on stakeholder consultations.

OBJECTIVE: To co-identify with stakeholders a priority set of important and feasible action domains to inform the factors that could influence creation and use of the kiosk, and hence the development of the HC-market interface for CVD prevention and control.

METHODS: A cross-sectionals study using concept mapping, a mixed-methods approach to making use of the best available tacit knowledge of recognized, diverse and experienced actors, actions for co-development were identified and then mapped. Participants included a multisectoral sample of stakeholders representing the community such as traders, practitioners (healthcare workers), local policy actors. Data collection involved the generation and sorting of statements by participants. A series of visual representations of the data were then developed. Ethical considerations were met.

KEY FINDINGS: A total of 91 statements were distilled into 8 clusters for action, namely equipment and drug supply, competence of nurses and CHWs, motivations of kiosk staff, kiosk accessibility, kiosk referrals, confidentiality, awareness and complexity of market context. Specific

areas for action included securing commodity supply, ensuring privacy and confidentiality, training, community sensitization, and leveraging on existing networks and partnerships.

Conclusion: There was strong consensus that a HC-community market interface via CHW manned kiosk could have a positive impact on health systems, markets, and CVD in vulnerable communities. Creation and promotion of the use of the kiosk will require cross sectoral action and cooperation to address the actions perceived to be important and feasible. Concept mapping enabled the synthesis of views across stakeholders with differing access to resources and ability to implement change. Both divergent and convergent perspectives emerged, and collectively created signals for where to priorities actions within a home-grown framework.

Keywords: Systems thinking primary health care

75. Understanding the risk factors of type 2 diabetes and lived experiences of diabetes risk in Nairobi, Kenya

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Proceedings of the KEMRI Annual Scientific & Health (KASH) Conference, 2021, Book of Abstracts (*unpublished)*

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ABSTRACT

BACKGROUND: Type 2 diabetes (T2D) is on the rise in Kenya and prevention measures are needed. Understanding T2D risk factors and lived experiences of diabetes risk in Kenya are important for development of appropriate prevention interventions. This study aimed to identify T2D risk factors and the barriers of uptake of diabetes prevention measures in Nairobi, Kenya.

METHODS: The study used mixed methods approach – a case control and a qualitative case study. The case-control study comprised of 70 (53% women) recently diagnosed T2D cases who were age-, sex and socioeconomic status-matched to normoglycemic controls (1:1). Data was collected on lifestyle factors, anthropometrics, body composition and handgrip strength. For the qualitative study, in-depth interviews in two contrasting communities in Nairobi, one low-income (n=15, 7 female) and one middle-income (n=14, 6 female), were conducted. Quantitative data was analysed using logistic regression models, adjusted for covariates, while qualitative data was thematically analysed.

RESULTS: A standard deviation (SD) increase in fat-free mass was associated with lower T2D odds (adjusted odds ratio (AOR)=0.42 (95% confidence intervals [CIs] 0.24, 0.75, p=0.0032). Grip strength was inversely associated with T2D (AOR=0.20 (95% CI 0.08, 0.45), p<0.001) per SD increase. BMI was not associated with T2D and the mean BMI was a normal weight in men. However, each SD increase in waist-to-hip ratio was associated with over two times higher odds of T2D (AOR=2.28 (95% CI 1.38, 3.79), p=0.0014). The qualitative study identified a number of barriers to uptake of diabetes prevention measures (e.g., lifestyle modification, diabetes screening) such as: low disclosure by people with diabetes in both communities; and (mainly in

the low-income community) knowledge gaps on diabetes risk factors; low perceived threat and susceptibility; and limited access to diabetes screening and fear of a positive diabetes diagnosis (due to high costs of diabetes management).

CONCLUSION: These findings imply that central obesity measures, rather than BMI, should be used for risk stratification and there is an urgent need to intervene to reduce central obesity, even when people have a normal weight. Secondly, interventions that increase muscle mass and strength may be useful in reducing T2D risk. Thirdly, there is need for interventions that educate people on diabetes risk factors and persuade them on their susceptibility, especially in the low-income community. Fourthly and in both communities, intervening to enable people with diabetes to disclose their condition would increase knowledge on diabetes preventive measures in the community. Finally, there is need to increase access to diabetes screening services and work towards achievement of universal health coverage, which may lead to affordable diabetes management and consequently reduce fear associated with positive diagnosis, hence contribute to increased uptake of diabetes screening.

Keywords: type 2 diabetes lived experiences of diabetes risk

76. Socio-cultural perspectives of suicidal behavior at the Coast region of Kenya: an exploratory study.

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ABSTRACT

BACKGROUND: To design and implement effective suicide prevention interventions, a socio-cultural understanding of the population's attitudes to suicide is imperative. Suicide incidence is high in Kenya, including the coastal region, where culture and religion are diverse. Further, suicide remains illegal in Kenya despite ongoing efforts to decriminalize it. While survey data exists confirming high incidence of suicide in the coastal region, no exploratory qualitative study has been conducted in the region to understand the cultural perspectives for these high rates. This study reports perceived socio-cultural factors that may influence suicidality in coastal Kenya.

METHODS: We purposively sampled key informants such as administrative leaders, community leaders, health care workers, persons with history of attempted suicide and bereaved family members. In-depth interviews were used to collect data on socio-cultural perspectives of suicide. Thematic analysis was used to identify key themes using both inductive and deductive processes.

RESULTS: Four key themes were identified from the inductive content analysis of 25 in-depth interviews as being important for understanding cultural perspectives related to suicidality: (i) the

stigma of suicidal behavior, with suicidal victims perceived as weak or crazy, and suicidal act as evil and illegal; (ii) the attribution of supernatural causality to suicide for example due to sorcery or inherited curses; (iii) the convoluted pathway to care, specifically, delayed access to biomedical care and preference for informal healers; and (iv) gender and age differences influencing suicide motivation, method of suicide and care seeking behavior for suicidality.

CONCLUSION: This study provides an in depth understanding of cultural factors attributed to suicide in this rural community that may engender stigma, discrimination, and poor access to mental health care in this community. We recommend the study results be used to inform the design of a quantitative study in order to provide additional baseline information.

Keywords: suicide; risk factors; suicide prevention; qualitative study

92 citations

(Sorted by Partner State)

Rwanda

1. Taking stock of population-level interventions targeting risk factors for hypertension and diabetes in Rwanda and South Africa: methodological reflections and lessons learnt from conducting a multi-component situational analysis

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ABSTRACT

BACKGROUND: Hypertension and diabetes are on the rise both in Rwanda and South Africa. The responsibility for NCD risk factors cut across different sectors, which makes it complex to effectively manage. Policy-relevant intervention research is thus critical for addressing the NCD challenge. We conducted a situational analysis in both countries to identify and describe current population-level interventions targeting risk factors for diabetes and hypertension. This paper presents this methodology and shares challenges encountered, and lessons learnt in applying the methodology.

METHODS: We describe a multi-component methodology for conducting a situational analysis, which included a desk review, stakeholder mapping, survey, key informant interviews, and a consultative workshop. This methodology was applied in a standardized manner in two African countries. Following the analysis, the authors held iterative team consultations to reflect on challenges and lessons learnt during this process.

RESULTS: Key challenges and lessons learnt relate to i) stakeholder recruitment, engagement and retainment; ii) utilization and triangulation of multiple sources of data; and iii) evolving circumstances, particularly related to the Covid-19 pandemic. It proved challenging to recruit stakeholders outside the health sector and in the private sector, as they often do not consider themselves as making or influencing policies and thus were reluctant to engage. The difficulties with responsiveness were often overcome through face-to-face visits, an opportunity to explain the relevance of their participation. With regards to health sector stakeholders and all other stakeholders, continued engagement over prolonged periods of time also turned out to be challenging. Covid-19 restrictions were preserved to be an impediment throughout the conduct of the situational analysis, specifically in South Africa. The use of multi-stage mixed methods was

found to be appropriate for addressing the study objectives, as each step yielded unique data, concepts, and perspectives that complemented the other data.

CONCLUSION: Conducting a situational analysis is crucial for understanding the current state of interventions and identifying opportunities for new interventions. The multi-component methodology used in two African countries was found to be feasible, appropriate, and informative. Others planning to conduct situational analysis may follow, adapt and improve upon our approach, reacting to the challenges encountered.

Keywords: Challenges; Diabetes; Hypertension; Lessons learnt; Methodology; Multi-component; Non-communicable diseases; Population level interventions; Rwanda and South Africa; Situational analysis.

2. Spatial and temporal trends of overweight/obesity and tobacco use in East Africa: subnational insights into cardiovascular disease risk factors

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ABSTRACT

BACKGROUND: Cardiovascular disease (CVD) is increasing in Sub-Saharan Africa (SSA). Overweight/obesity and tobacco use are modifiable CVD risk factors, however literature about the spatiotemporal dynamics of these risk factors in the region at subnational or local scales is lacking. We describe the spatiotemporal trends of overweight/obesity and tobacco use at subnational levels over a 13-year period (2003 to 2016) in five East African nations.

METHODS: Cross-sectional, nationally representative Demographic and Health Surveys (DHS) were used to explore the subnational spatiotemporal patterns of overweight/obesity and tobacco use in Burundi, Kenya, Rwanda, Tanzania, and Uganda, five East African Community (EAC) nations with unique cultural landscapes influencing CVD risk factors. Adaptive kernel density estimation and logistic regression were used to determine the spatial distribution and change over time of CVD risk factors on a subnational and subpopulation (rural/urban) scale.

RESULTS: Subnational analysis shows that regional and national level analysis masks important trends in CVD risk factor prevalence. Overweight/obesity and tobacco use trends were not similar: overweight/obesity prevalence increased across most nations included in the study and the inverse was true for tobacco use prevalence. Urban populations in each nation were more likely to be overweight/obese than rural populations, but the magnitude of difference varied widely between nations. Spatial analysis revealed that although the prevalence of overweight/obesity increased over time in both urban and rural populations, the rate of change differed between

urban and rural areas. Rural populations were more likely to use tobacco than urban populations, though the likelihood of use varied substantially between nations. Additionally, spatial analysis showed that tobacco use was not evenly distributed across the landscape: tobacco use increased in and around major cities and urban centers but declined in rural areas.

CONCLUSIONS: We highlight the importance of de-homogenizing CVD risk factor research in SSA. Studies of national or regional prevalence trends mask important information about subpopulation and place-specific behavior and drivers of risk factor prevalence. Spatially explicit studies should be considered as a vital tool to understand local drivers of health, disease, and associated risk factor trends, especially in highly diverse yet low-resourced, marginalized, and often homogenized regions.

3. Prevalence of Central Obesity and its Association with Cardiovascular Risk Factors among Women of Reproductive Age in Rwanda

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ABSTRACT

Central obesity is quite prevalent in women of reproductive age in Sub-Saharan Africa and has been a major risk factor for metabolic syndrome and cardiovascular diseases. However, few studies have analyzed its association with cardiovascular risk factors among those women. This study seeks to assess the magnitude of central obesity and its association with cardiovascular risk factors among women of reproductive age in Rwanda. The study used a cross-sectional study design, which involved 138 women aged between 15 and 49 years attending selected family planning centers in Kigali. Central obesity was measured through the size of the waist circumference. The adjusted logistic regression analysis with 95% confidence intervals was used to determine the correlates of central obesity. A statistical significance was defined at a p-value <0.05. Participants' mean age was 29.14 ± 6.72 with ages ranging between 18 and 45 years old. The prevalence of central obesity was 48.5%, and there was significantly associated with age (OR=2, 95% CI: 1.24-3.35), alcohol use (OR=5.8, 95% CI: 2.08-16.08), meat consumption (OR=5.3, 95% CI: 1.94-14.63), hypertriglyceridemia (OR= 3.87, 1.02-14.76), and elevated diastolic blood pressure (OR=6.1, 95% CI: 2.80-17.92). The prevalence of central obesity is relatively high among women of reproductive age, and it is associated with older age, elevated diastolic blood pressure, high triglycerides levels, meat, and alcohol consumption. The study recommends an intensive awareness about health risks associated with central obesity and its

associated factors as a strategy to address the rising risk of cardiovascular diseases in this population.

Keywords: women in reproductive age group central obesity cardiovascular risk factors lipid profile

4. Stakeholder perspectives on promoting health enhancing sport through the Rwanda Sports Policy

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ABSTRACT

Sport is an adaptable channel for change. It has been widely used to enhance health and wellbeing, foster social cohesion, and engender peace and development in different societies. The government of Rwanda developed a Sports Development Policy (SDP) to advance sports within the spectrum of its development agendas. However, the extent to which health constructs are integrated and implemented within the tenets of this policy remain unexplored, despite their pivotal role in population wellbeing and in contributing to the country's overarching development goals. This study sought to understand if and how the Rwanda SDP promotes sports for health from the stakeholders' perspectives. In-depth semi structured interviews were used for thirteen purposively sampled stakeholders of the SDP. Thematic and narrative analysis were used to examine and report the findings. Themes highlighted a progressive awareness of the Sports Policy pertaining to health outcomes, less involvement of stakeholders in sport policy formulation which affected its implementation, disproportionate efforts between sports policies for health, competitive, and mass sports activities. Stakeholders further underscored cultural beliefs, attitudes, and contextual environmental factors as the key constraints to bridge the policy theory and practice of sports. Finally, findings emphasise the integral role stakeholders play in the life course of a policy. Further, the SDP does not primarily promote sports for health, but rather elite sports, on the premise that health benefits are automatically achieved through participation in sports activities. Thus, reinforcements are still needed to clearly define the national physical activity plan either through the SDP or other national physical activity guidelines.

5. Prediction of the Prevalence of Hypertension and Associated Risk Factors in Rwanda Using Gibbs Sampling Method

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ABSTRACT

In Rwanda, the prevalence of hypertension was 15.3% in 2015. At present, there are no accurate predictions of the prevalence of hypertension and its trend over time in Rwanda to assist decision makers in making plans for prevention and more effective interventions. This study used the Gibbs sampling method in combination with the Markov Chain Monte Carlo approach to predict the prevalence of hypertension and its associated risk factors in Rwanda over a period of ten years. The data were from World Health Organization (WHO) reports. The findings showed that the prevalence of hypertension is estimated to reach 17.82% in 2025, with tobacco use, being overweight or obese, and other risk factors having a respective prevalence of 26.26%, 17.13%, 4.80%, and 33.99%, which shows the increase and, therefore, measures for prevention to be taken. Therefore, to prevent and reduce the prevalence of this disease, the government of Rwanda should take appropriate measures to promote a balanced diet and physical exercise.

Keywords: Gibbs sampling method; Markov Chain Monte Carlo; hypertension; non-communicable disease; prediction.

6. Community Health Worker-Led Cardiovascular Disease Risk Screening and Referral for Care and Further Management in Rural and Urban Communities in Rwanda

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ABSTRACT

Cardiovascular disease (CVD) is a global health issue. Low- and middle-income countries (LMICs) are facing early CVD-related morbidity. Early diagnosis and treatment are an effective strategy to tackle CVD. The aim of this study was to assess the ability of community health

workers (CHWs) to screen and identify persons with high risks of CVD in the communities, using a body mass index (BMI)-based CVD risk assessment tool, and to refer them to the health facility for care and follow-up. This was an action research study conducted in rural and urban communities, conveniently sampled in Rwanda. Five villages were randomly selected from each community, and one CHW per each selected village was identified and trained to conduct CVD risk screening using a BMI-based CVD risk screening tool. Each CHW was assigned to screen 100 fellow community members (CMs) for CVD risk and to refer those with CVD risk scores ≥10 (either moderate or high CVD risk) to a health facility for care and further management. Descriptive statistics with Pearson's chi-square test were used to assess any differences between rural and urban study participants vis-à-vis the key studied variables. Spearman's rank coefficient and Cohen's Kappa coefficient were mainly used to compare the CVD risk scoring from the CHWs with the CVD risk scoring from the nurses. Community members aged 35 to 74 years were included in the study. The participation rates were 99.6% and 99.4% in rural and urban communities, respectively, with female predominance (57.8% vs. 55.3% for rural and urban, p-value: 0.426). Of the participants screened, 7.4% had a high CVD risk (≥20%), with predominance in the rural community compared to the urban community (8.0% vs. 6.8%, p-value: 0.111). Furthermore, the prevalence of moderate or high CVD risk (≥10%) was higher in the rural community than in the urban community (26.7% vs. 21.1%, p-value: 0.111). There was a strong positive correlation between CHW-based CVD risk scoring and nurse-based CVD risk scoring in both rural and urban communities, 0.6215 (p-value < 0.001) vs. 0.7308 (p-value = 0.005). In regard to CVD risk characterization, the observed agreement to both the CHW-generated 10-year CVD risk assessment and the nurse-generated 10-year CVD risk assessment was characterized as "fair" in both rural and urban areas at 41.6% with the kappa statistic of 0.3275 (p-value < 001) and 43.2% with kappa statistic of 0.3229 (p-value =0.057), respectively. In Rwanda, CHWs can screen their fellow CMs for CVD risk and link those with high CVD risk to the healthcare facility for care and follow-up. CHWs could contribute to the prevention of CVDs through early diagnosis and early treatment at the bottom of the health system.

Keywords: Rwanda; cardiovascular diseases risk screening; community health workers.

7. Quality of Care for Patients with Hypertension in selected Health Centres in Rwamagana District, Rwanda

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ABSTRACT

BACKGROUND:Hypertension is the main risk factor for cardiovascular diseases and its prevalence is high in Rwanda. Rwanda has integrated the management of hypertension in health centres (HCs). However, little is known about the quality of hypertension care in HCs in Rwanda.
STUDY OBJECTIVE:To examine the quality of care for patients with hypertension and associated outcome of hypertension control in Health Centres.
METHODS: A cross-sectional study design was used, and data were collected from a convenience sample of 202 patients. A self-reported questionnaire and blood pressure measurement were taken. Data were analysed using descriptive, bivariate, and hierarchical logistic regression analyses.
RESULTS: A total of 166 (82.2%) patients participated in the study. Of these, 130 (78.3%) were females. Mean age was 57.8 (SD =14.0). The quality of hypertension care process was high with mean score of 5.86 over 7 (SD = 1.4). However, only 30.1% (n = 50/166) had well-controlled hypertension. Comorbidity (OR = 2.3; 95% CI:1.0-5.1, p =.039) and the quality of care (OR = 1.6; 95% CI: 1.1- 2.4, p = .024) were associated with higher odds of having hypertension control.
CONCLUSION: Tailored patient-centred primary care interventions that consider comorbidity could contribute to hypertension control in primary HCs in Rwanda.

8. Early Stage and Established Hypertension in Sub-Saharan Africa: Results From Population Health Surveys in 17 Countries, 2010-2017

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ABSTRACT

BACKGROUND: Multiple studies have reported a high burden of hypertension in sub-Saharan Africa, but none have examined early-stage hypertension. We examined contemporary prevalence of diagnosed, treated, and controlled stage I (130-139/80-89 mm Hg) and II (≥140/90 mm Hg) hypertension in the general population of sub-Saharan Africa.

METHODS: We analyzed World Health Organization STEPwise Approach to Noncommunicable Disease Risk Factor Surveillance surveys from 17 sub-Saharan Africa countries including 85 371 respondents representing 85 million individuals from 2010 to 2017. We extracted demographic variables, blood pressure, self-reported hypertension diagnosis/awareness, and treatment status to estimate prevalence of stage I and II hypertension and treatment by country. We examined diagnosis and treatment trends by national sociodemographic index, a marker of development.

RESULTS: Stage I hypertension prevalence (regardless of diagnosis/treatment) was >25% in 13 of 17 countries, highest in Sudan (35.3% [95% CI, 33.7%-37.0%]), and lowest in Eritrea (20.2% [18.8%-21.6%]). Combined stages I and II hypertension prevalence was >50% in 13 countries; <20% were diagnosed in every country. Treatment among those diagnosed ranged from 26% to 63%, and control (<140/90 mm Hg) from 4% to 17%. In 8 of 9 countries reporting on behavioral interventions (eg, salt reduction, weight loss, exercise, and smoking cessation), <60% of diagnosed individuals received counseling. Rates of diagnosis, but not treatment, were positively associated with sociodemographic index (P=0.008), although there was substantial variation between countries even at similar levels of development.

CONCLUSIONS: Hypertension is common in sub-Saharan Africa but rates of diagnosis, treatment, and control markedly low. There is a large population with early stage hypertension that may benefit from behavioral counseling to prevent progression. Our analyses suggest that success in population hypertension care may be achieved independently of socioeconomic development, highlighting a need for policymakers to identify best practices in those countries that outperform similar or more developed countries.

Keywords: blood pressure; developing countries; hypertension; noncommunicable diseases; risk factors

9. Cross-sectional analysis of the association between personal exposure to household air pollution and blood pressure in adult women: Evidence from the multi-country Household Air Pollution Intervention Network (HAPIN) trial

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ABSTRACT

Elevated blood pressure (BP) is a leading risk factor for the global burden of disease. Household air pollution (HAP), resulting from the burning of biomass fuels, may be an important cause of elevated BP in resource-poor communities. We examined the exposure-response relationship of personal exposures to HAP -fine particulate matter (PM2.5), carbon monoxide (CO), and black carbon (BC) - with BP measures in women aged 40-79 years across four resource-poor settings in Guatemala, Peru, India and Rwanda. BP was obtained within a day of 24-h personal exposure measurements at baseline, when participants were using biomass for cooking. We used generalized additive models to characterize the shape of the association between BP and HAP, accounting for the interaction of personal exposures and age and adjusting for a priori identified confounders. A total of 418 women (mean age 52.2 ± 7.9 years) were included in this analysis. The interquartile range of exposures to PM2.5 was 42.9-139.5 µg/m3, BC was 6.4-16.1 µg/m3, and CO was 0.5-2.9 ppm. Both SBP and PP were positively associated with PM2.5 exposure in older aged women, achieving statistical significance around 60 years of age. The exact threshold varied by BP measure and PM2.5exposures being compared. For example, SBP of women aged 65 years was on average 10.8 mm Hg (95% CI 1.0-20.6) higher at 232 µg/m3 of PM2.5 exposure (90th percentile) when compared to that of women of the same age with personal exposures of 10 µg/m3. PP in women aged 65 years was higher for exposures ≥90 µg/m3, with mean differences of 6.1 mm Hg (95% CI 1.8-10.5) and 9.2 mm Hg (95% CI 3.3-15.1) at 139 (75th percentile) and 232 µg/m3 (90th percentile) respectively, when compared to that of women of the same age with PM2.5 exposures of 10 µg/m3. Our findings suggest that reducing HAP exposures may help to reduce BP, particularly among older women.

Keywords: Blood pressure; Cardiovascular diseases; Household air pollution; Low- and middle-income countries.

10. Glycemic control among patients with type 2 diabetes in a low resource setting in Rwanda: a prospective cohort study

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ABSTRACT

INTRODUCTION: diabetes is a leading cause of death, disability, and high healthcare costs, especially among patients with poor glycemic control. Providing decentralized diabetes care to patients in low-income countries remains a major challenge. We aimed to assess hemoglobin A1C (HbA1c) level of patients enrolled in primary-level non-communicable disease clinics of Rwamagana, Rwanda, and identify predictors associated with a) change in HbA1c level over a 6-month period or b) achieving HbA1c <7%. We also explored whether living in a community with a home-based care practitioner was associated with HbA1c-related outcomes.

METHODS: we conducted structured interviews and HbA1c testing among patients with type 2 diabetes at baseline and after six months. Multivariable linear regression and multivariable logistic regression were used.

RESULTS: hundred and thirty (130) participants enrolled at baseline, and 123 patients remained in the study after six months. At baseline, 26% of patients had HbA1c <7%. After 6-months, 37% of patients had HbA1c <7%. Factors correlated with the greatest improvements in HbA1c were having HbA1c >9% at baseline, while factors associated with having HbA1c <7% after six months included older age and having HbA1c <7% at baseline. We did not find significant associations between home-based care practitioners and improvement in HbA1c level or achieving HbA1c <7.

CONCLUSION: the number of patients with well-controlled glycemia improved over time during this study but was still low overall. Care provided by home-based care practitioners was not associated with six-month HbA1c outcomes. Enhanced care is needed to achieve glycemia control in primary healthcare settings.

Keywords: Diabetes; chronic care; non-communicable diseases; primary healthcare; sub-Saharan African**.**

11. Prevalence of mental disorders, associated co-morbidities, health care knowledge and service utilization in Rwanda - towards a blueprint for promoting mental health care services in low- and middle-income countries?

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ABSTRACT

BACKGROUND: In order to respond to the dearth of mental health data in Rwanda where large-scale prevalence studies were not existing, Rwanda Mental Health Survey was conducted to measure the prevalence of mental disorders, associated co-morbidities and knowledge and utilization of mental health services nationwide within Rwanda.

METHODS: This cross-sectional study was conducted between July and August 2018, among the general population, including survivors of the 1994 Genocide against the Tutsi. Participants (14-65 years) completed the Mini-International Neuropsychiatric Interview (Version 7.0.2), sociodemographic and epilepsy-related questionnaires. General population participants were selected first by random sampling of 240 clusters, followed by systematic sampling of 30 households per cluster. Genocide survivors within each cluster were identified using the 2007-2008 Genocide Survivors Census.

RESULTS: Of 19,110 general survey participants, most were female (n = 11,233; 58.8%). Mental disorders were more prevalent among women (23.2%) than men (16.6%) ($p < 0.05$). The most prevalent mental disorders were major depressive episode (12.0%), panic disorder (8.1%) and post-traumatic stress disorder (PTSD) (3.6%). Overall, 61.7% had awareness of mental health services while only 5.3% reported to have used existing services. Of the 1271 genocide survivors interviewed, 74.7% (n = 949) were female; prevalence of any mental disorder was 53.3% for women and 48.8% for men. Most prevalent disorders were major depressive episode (35.0%), PTSD (27.9%) and panic disorder (26.8%). Among genocide survivors, 76.2% were aware of availability of mental health services, with 14.1% reported having used mental health services.

CONCLUSIONS: Despite high prevalence of mental disorders among the general population and genocide survivors, utilization of available mental health services was low. A comprehensive approach to mental health is needed for prevention of mental illness and to promote mental healthcare services.

Keywords: Genocide survivors; Healthcare knowledge; Low- and middle-income countries (LMIC); Mental health; Mental health service utilization; Mental illness; Rwanda.

12. Case study of cervical cancer prevention in two sub-Saharan African countries: Rwanda and Sierra Leone

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ABSTRACT

BACKGROUND: Cervical cancer is a public health issue of global concern. It is a preventable disease but continues to threaten the lives of women, especially in developing countries in sub-Saharan Africa.

METHODS: We selected two African countries in sub-Saharan Africa (the Republic of Rwanda and the Republic of Sierra Leone) to show a good example of cervical cancer prevention and constrains hindering countries from effectively implementing cervical cancer programs. Secondary data were collected from the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), the Global Burden of Cancer (GLOBOCAN), the United Nations Development Programme (UNDP), and the World Bank and from official websites of the selected countries. A descriptive analysis method was used to source data and compare variables such as the associated factors, disease burden, prevention programs, health workforce, success factors, and challenges.

RESULTS: Rwanda achieved 93.3% human papillomavirus (HPV) vaccination of the three doses vaccinating girls in class 6, as a result of effective school-based platform delivery system and community partnership to identify girls who are out of school. Rwanda reduced the historical two-decade gap in vaccine introduction between high- and low-income countries. The country also introduced a nationwide cervical cancer screening and treatment program. An impressive decreased cervical cancer incidence rate in Rwanda in recent years was observed. Sierra Leone lags behind in terms of almost all cervical cancer prevention programs. Therefore, Sierra Leone needs more efforts to implement cervical cancer intervention programs at the national level,

including HPV vaccination, and train and increase the number of health professionals, treatment, and palliative care services to accelerate cervical cancer activities.

CONCLUSION: The disease burden of cervical cancer for Rwanda and Sierra Leone is heavy. There remains huge room for improvement in preventing and controlling cervical cancer in these countries. The goal of cervical cancer elimination would not be feasible in countries without the awareness and will of the policymakers and the public, the compliance to fund cervical cancer programs, the prioritization of cervical cancer activities, the availability of resources, the adequate health workforce and infrastructure, the cross-sectional collaboration and planning, inter-sectorial, national, regional, and international partnerships.

Keywords: Rwanda; Sierra Leone; cervical cancer; screening; vaccination.

13. Knowledge, Barriers and Motivators to Cervical Cancer Screening in Rwanda: A Qualitative Study

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ABSTRACT

BACKGROUND: Cervical cancer is a global public health problem with marked geographical disparity. High morbidity and mortality rates in developing countries are associated with low screening rates. In 2020, in Rwanda, 3.7 million women aged 15-59 years were at risk of developing cervical cancer, the most commonly diagnosed female cancer in Rwanda. Despite Rwanda being the first African country to vaccinate against human papilloma virus with a three-dose regimen vaccination coverage of nearly 93% in the target population of girls aged <15 years,

and having established cervical cancer screening program, recent studies have found low screening rates. Our study sought to determine knowledge, motivators and barriers of cervical cancer screening.

METHODS: We conducted a qualitative descriptive study; using focus group interview in an urban health facility (Muhima district hospital) and a rural health center (Nyagasambu health center) offering cervical screening services in Rwanda. Participants were women seeking these services and other women attending the health facility for any reason, and female staff working in these facilities. Interviews were recorded and transcribed, and data were analyzed using content analysis.

RESULTS: Thirty women participated in focus group interview, with an average age of 39 years. Many of women showed knowledge about cervical cancer existence and prevention methods. However, fear for pain, lack of knowledge about screening, how and where the screening was done, and concern for privacy were recurring subthemes. Some participants also mentioned lack of health insurance as a barrier for cervical cancer screening.

CONCLUSION: Barriers to uptake cervical cancer screening services in Rwanda are related to poor information about cervical cancer and the importance of screening as well as non-adherence to medical insurance. Population sensitization through campaign and community outreach activities could have a positive impact on increasing the usage of cervical cancer screening in Rwanda.

Keywords: Rwanda; acceptance; cervical cancer; fear for pain; qualitative; screening.

14. The Role of the Integrated District Hospital Based Non Communicable Diseases' Clinics in Cardiovascular Disease Control: Preliminary Data from Rwanda

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ABSTRACT

INTRODUCTION: Noncommunicable diseases (NCDs), remain the leading cause of death worldwide and represent an emerging global health threat. In Rwanda and elsewhere, the prevalence of cardiovascular diseases is increasing. To address this global health threat, Rwanda

launched integrated nurse-led NCD clinics in all the forty-five District Hospitals across the country in 2006, but no evaluation study has been conducted so far for the added value of this program. The main goal of this study was to assess the impact of NCD clinics on disease control in Rwanda.

METHODS: This was a retrospective ambulatory patient chart review at a rural district hospital and an urban teaching hospital; which enrolled patients with diabetes and/or hypertension who consulted in a period of 1 month with retrospective data of one year.

RESULTS: A total of 199 patients' electronic health records were reviewed from the University Teaching Hospital of Kigali (CHUK) (53%) and Nyamata District Hospital (47%). Among them, 31% had diabetes, 38% had hypertension and 31% had both diseases. The mean age for the total cohort was 60 years and was predominantly female at 70%. Throughout the year, about 59% patients with hypertension had blood pressure control at the district hospital as opposed to 38% at the referral hospital. The rate of diabetes control was 20% at the referral hospital, but no comparison could be established between the two health facilities as the follow up laboratory markers were not available at the district hospital.

CONCLUSION: There was a consistent blood pressure control at the district hospital. Diabetes control was not optimal at the referral hospital despite the presence of human resources and logistics required for diabetes care. The situation was even worse at the district hospital where the follow up markers were rarely available.

Keywords: NCD clinic; Rwanda; diabetes; hypertension.

15. Population-Level Interventions Targeting Risk Factors for Hypertension and Diabetes in Rwanda: A Situational Analysis

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ABSTRACT

BACKGROUND: Eighty percent (80%) of global Non-Communicable Diseases attributed deaths occur in low- and middle-income countries (LMIC) with hypertension and diabetes being key contributors. The overall prevalence of hypertension was 15.3% the national prevalence of diabetes in rural and urban was 7.5 and 9.7%, respectively among 15-64 years. Hypertension represents a leading cause of death (43%) among hospitalized patients at the University teaching

hospital of Kigali. This study aimed to identify ongoing population-level interventions targeting risk factors for diabetes and hypertension and to explore perceived barriers and facilitators for their implementation in Rwanda.

METHODS: This situational analysis comprised a desk review, key informant interviews, and stakeholders' consultation. Ongoing population-level interventions were identified through searches of government websites, complemented by one-on-one consultations with 60 individuals nominated by their respective organizations involved with prevention efforts. Semi-structured interviews with purposively selected key informants sought to identify perceived barriers and facilitators for the implementation of population-level interventions. A consultative workshop with stakeholders was organized to validate and consolidate the findings.

RESULTS: We identified a range of policies in the areas of food and nutrition, physical activity promotion, and tobacco control. Supporting program and environment interventions were mainly awareness campaigns to improve knowledge, attitudes, and practices toward healthy eating, physical activity, and alcohol and tobacco use reduction, healthy food production, physical activity infrastructure, smoke-free areas, limits on tobacco production and bans on non-standardized alcohol production. Perceived barriers included limited stakeholder involvement, misbeliefs about ongoing interventions, insufficient funding, inconsistency in intervention implementation, weak policy enforcement, and conflicts between commercial and public health interests. Perceived facilitators were strengthened multi-sectoral collaboration and involvement in ongoing interventions, enhanced community awareness of ongoing interventions, special attention paid to the elderly, and increased funds for population-level interventions and policy enforcement.

CONCLUSION: There are many ongoing population-level interventions in Rwanda targeting risk factors for diabetes and hypertension. Identified gaps, perceived barriers, and facilitators provide a useful starting point for strengthening efforts to address the significant burden of disease attributable to diabetes and hypertension.

Keywords: Rwanda; alcohol use; diabetes; hypertension; physical inactivity; population-level interventions; tobacco use; unhealthy diet.

16. Risk factors associated with Type 2 Diabetes Mellitus at Kibuye Referral Hospital, Rwanda- A case control study

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ABSTRACT

BACKGROUND: Type 2 Diabetes Mellitus (T2DM) is increasing globally, being among the leading cause of premature mortality. If no bold actions are taken, nine in ten persons diagnosed with diabetes will have T2DM by 2025.

OBJECTIVES: This study aims at assessing socio-demographic characteristics and identify lifestyle factors associated with T2DM at Kibuye Referral Hospital.

METHODS: Hospital-based case control study design was used. Food frequency, and global physical activity questionnaires adapted from WHO were used. SPSS v 23 was used for all research analysis. Descriptive statistics were used to summarize categorical variables with help of frequencies and percentages. Binary logistic regression was used to identify the factors associated with T2DM by computing odds ratio with corresponding 95% confidence interval. Logistic regression models using multivariate analysis with a significance level of 5% was used to establish the independent risk factors of T2DM by controlling the confounding variables.
RESULTS: Smoking, level of physical activity, low level of dietary diversity were associated with T2DM. The likelihood of developing T2DM among smokers was about 9 times more [AOR= 8.9; 95%CI=2.84-27.86; p<0.001] compared to non- smokers. Respondents with low level of physical activities were 8.1 times more likely to get T2DM than those with high or moderate physical activities [AOR= 8.1; 95%CI= 2.90-22.79; p<0.001]. Similarly, respondents with low level of dietary diversity score were 6 times more likely to developT2DM [AOR= 6.03; 95%CI= 1.67-21.80; p=0.006] compared to those with high level of dietary diversity score.

CONCLUSION: Lifestyle factors that showed strong association with T2DM can all be modified by public health interventions that are promoting physical activity, healthy lifestyle, and dietary diversity.

17. Knowledge, Attitudes and Practices about Cardiovascular Diseases among Adult Patients Attending Public Health Centers in Kigali city, Rwanda

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ABSTRACT

In Rwanda, CVDs accounts around 14% of all death. Studies on knowledge, attitude, and practice (KAP) would be of great value in helping public health professionals develop targeted programs and measure the effectiveness of interventional programs. The main objective of this study was to analyze the KAP about CVDs among adult patients attending public health centers located in the City of Kigali, Rwanda. A total of 384 adult patients were enrolled in this study. A structured

questionnaire was used. Data entry and analysis was done using SPSS version 21. Findings were presented as frequencies and percentages in tables. For determining the KAP-levels, the overall scores were determined for each respondent by adding up the scores through the KAP-related questions. The mean age was 36.4 years, primary school (57.3%), married (62.8%), self-employed (40.9%), and females predominated (61.5%). The knowledge mean score was 14.2 and 76% had high level of knowledge of CVD risks and prevention. The average attitude score for all respondents was 17.6 and 22.9% of the respondents showed negative attitude towards CVDs prevention. Research findings revealed that 36.5 % were not practicing physical activity and exercise. The mean practice score for all respondents was 3.9 and 70% of respondents had negative practice towards CVDs prevention. Poor CVDs prevention practices were observed among the study participants. Therefore, it is necessary to establish more effective educational interventions intended to promote positive health behaviors related CVD prevention

18. Perceived cardiovascular disease risk and tailored communication strategies among rural and urban community dwellers in Rwanda: a qualitative study

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ABSTRACT

BACKGROUND: In Rwanda, cardiovascular diseases (CVDs) are the third leading cause of death, and hence constitute an important public health issue. Worldwide, most CVDs are due to lifestyle and preventable risk factors. Prevention interventions are based on risk factors for CVD risk, yet the outcome of such interventions might be limited by the lack of awareness or misconception of CVD risk. This study aimed to explore how rural and urban population groups in Rwanda perceive CVD risk and tailor communication strategies for estimated total cardiovascular risk.

METHODS: An exploratory qualitative study design was applied using focus group discussions to collect data from rural and urban community dwellers. In total, 65 community members took

part in this study. Thematic analysis with Atlas ti 7.5.18 was used and the main findings for each theme were reported as a narrative summary.

RESULTS: Participants thought that CVD risk is due to either financial stress, psychosocial stress, substance abuse, noise pollution, unhealthy diets, diabetes or overworking. Participants did not understand CVD risk presented in a quantitative format, but preferred qualitative formats or colours to represent low, moderate and high CVD risk through in-person communication. Participants preferred to be screened for CVD risk by community health workers using mobile health technology.

CONCLUSION: Rural and urban community members in Rwanda are aware of what could potentially put them at CVD risk in their respective local communities. Community health workers are preferred by local communities for CVD risk screening. Quantitative formats to present the total CVD risk appear inappropriate to the Rwandan population and qualitative formats are therefore advisable. Thus, operational research on the use of qualitative formats to communicate CVD risk is recommended to improve decision-making on CVD risk communication in the context of Rwanda.

Keywords: Cardiovascular disease; Communication strategies; Perceived risk; Rwanda.

19. High rates of undiagnosed and uncontrolled hypertension upon a screening campaign in rural Rwanda: a cross-sectional study

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ABSTRACT

BACKGROUND: Hypertension remains the major risk factor for cardiovascular diseases (CVDs) worldwide with a prevalence and mortality in low- and middle-income countries (LMICs) among the highest. The early detection of hypertension risk factors is a crucial pillar for CVD prevention. DESIGN AND METHOD: This cross-sectional study included 4284 subjects, mean age 46 ± 16SD, 56.4% females and mean BMI 26.6 ± 3.7 SD. Data were collected through a screening campaign in rural area of Kirehe District, Eastern of Rwanda, with the objective to characterize and examine the prevalence of elevated blood pressure (BP) and other CVD risk factors. An adapted tool from the World Health Organization STEPwise Approach was used for data collection. Elevated BP was defined as ≥ 140/90 mm/Hg and elevated blood glucose as blood glucose ≥ 100 mg/dL after a 6-h fast.

RESULTS: Of the sampled population, 21.2% (n = 910) had an elevated BP at screening; BP was elevated among individuals not previously known to have HTN in 18.7% (n = 752). Among individuals with a prior diagnosis of HTN, 62.2% (n = 158 of 254) BP was uncontrolled. Age, weight, smoking, alcohol history and waist circumference were associated with BP in both univariate analyses and multivariate analysis.

CONCLUSION: High rates of elevated BP identified through a health screening campaign in this Rwandan district were surprising given the rural characteristics of the district and relatively low population age. These data highlight the need to implement an adequate strategy for the prevention, diagnosis, and control of HTN that includes rural areas of Rwanda as part of a multicomponent strategy for CVD prevention.

Keywords: High blood pressure; Hypertension; Rwanda; Screening.

20. Prevalence and characteristics associated with diabetes mellitus and impaired fasting glucose among people aged 15 to 64 years in rural and urban Rwanda: secondary data analysis of World Health Organization surveillance data

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ABSTRACT

INTRODUCTION: diabetes mellitus is an increasing public health burden in developing countries. The magnitude of diabetes association with traditional risk factors for diabetes have been given less attention in rural population. This study aims to determine the prevalence of diabetes and impaired fasting glucose and to assess associated characteristics to hyperglycemia in rural and urban Rwanda.

METHODS: this is a secondary analysis of data from a population-based cross-sectional study of 7240 people describing risk factors for non-communicable diseases using the WHO stepwise methods (STEPS). Relative frequencies of variables of interest were compared in rural and urban residence using Pearson chi-square tests. Diabetes and impaired fasting glucose were combined in a single hyperglycemia variable and odds ratios with 95% confidence intervals were used to explore associations between hyperglycemia, socio-demographic and health factors in urban and rural populations.

RESULTS: the prevalence in rural and urban areas was 7.5% and 9.7% (p.005) for diabetes and 5.0% and 6.2% for impaired fasting glucose (p.079) respectively. Obesity (AOR 2.57: CI: 0.86-7.9), high total cholesterol (AOR 3.83: CI: 2.03-7.208), hypertension (AOR 1.18: CI: 0.69-2.00), increasing age were associated with hyperglycemia in urban participants but only high total cholesterol and low high density lipoproteins (HDL) cholesterol were risk factors for hyperglycemia in rural participants.

CONCLUSION: approximately one in six people in Rwanda have hyperglycemia. The magnitude of the association with traditional risk factors for diabetes differ in rural and urban settings. Different approaches to primary and secondary prevention of diabetes may be needed in rural populations.

21. Diabetic Complications and Associated Factors: A 5-Year Facility-Based Retrospective Study at a Tertiary Hospital in Rwanda

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ABSTRACT

INTRODUCTION: Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemia resulting from defects in insulin production, insulin action, or both. Despite advances in DM diagnosis and management, the incidence of DM-related complications remains

high. This study aimed to determine patterns of common complications and associated factors among hospitalized patients in Rwanda.

METHODS: A cross-sectional study, with retrospective chart review, was conducted at CHUK from July to August, 2021. Charts for DM patients admitted from January 2016 to December 2020 were considered while those inaccessible at the time of data collection were excluded. Linear regression model was used to assess the relationship between dependent and independent variables with a $p < 0.05$ considered statistically significant.

RESULTS: A total of 246 charts were reviewed. The median age was 56 years (IQR: 14-90). More than half of participants (n = 135; 54.9%) were females; majority from the Central region (n = 138; 56.7%). Recorded DM risk factors included alcohol intake (n = 81; 48.5%); smoking (n = 40; 24.2%), obesity (n = 43; 52.4%), and family history of DM (n = 27; 56.3%). Majority (n = 153; 84.5%) had type 2 DM and (n = 147; 69%) had known their diagnosis for at least 6 years. Hypertension (n = 124, 50.4%), acute hyperglycemic state (n = 59, 24%), nephropathy (n = 58, 23.6%), and stroke (n = 38, 15.4%) were frequently reported complications. Nearly all participants (n = 81, 95.2%) with complications had poor glycemic control. Alcohol intake, age ≥45 years, and T1DM were associated with higher odds of DM complications (aOR = 8, 95% CI = 2-32.6, p = 0.003, aOR = 6.2, 95% CI = 1.4-27.6, p = 0.016 and aOR = 14.1, 95% CI = 1.2-161.5, p = 0.034, respectively). Duration of DM (p = 0.001) was significant at bivariate analysis.

CONCLUSION: DM complications were prevalent among the studied population with poor glycemic control mainly influenced by alcohol consumption and duration of DM. Expansion of integrated DM and hypertension screening services to lower-level centers is needed to reduce the associated morbidity and mortality.

Keywords: complications; diabetes mellitus; macrovascular; microvascular; non-communicable disease.

22. Trends in Prevalence of Tobacco Use by Sex and Socioeconomic Status in 22 Sub-Saharan African Countries, 2003-2019

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ABSTRACT

IMPORTANCE: Tobacco companies have shifted their marketing and production to sub-Saharan African countries, which are in an early stage of the tobacco epidemic.

OBJECTIVE: To estimate changes in the prevalence of current tobacco use and socioeconomic inequalities among male and female participants from 22 sub-Saharan African countries from 2003 to 2019.

DESIGN, SETTING, AND PARTICIPANTS: Secondary data analyses were conducted of sequential Demographic and Health Surveys in 22 sub-Saharan African countries including male and female participants aged 15 to 49 years. The baseline surveys (2003-2011) and the most recent surveys (2011-2019) were pooled.

EXPOSURES: Household wealth index and highest educational level were the markers of inequality.

MAIN OUTCOMES AND MEASURES: Sex-specific absolute and relative changes in age-standardized prevalence of current tobacco use in each country and absolute and relative measures of inequality using pooled data.

RESULTS: The survey samples included 428 197 individuals (303 232 female participants [70.8%]; mean [SD] age, 28.6 [9.8] years) in the baseline surveys and 493 032 participants (348 490 female participants [70.7%]; mean [SD] age, 28.5 [9.4] years) in the most recent surveys. Both sexes were educated up to primary (35.7%) or secondary school (40.0%). The prevalence of current tobacco use among male participants ranged from 6.1% (95% CI, 5.2%-6.9%) in Ghana to 38.3% (95% CI, 35.8%-40.8%) in Lesotho in the baseline surveys and from 4.5% (95% CI, 3.7%-5.3%) in Ghana to 46.0% (95% CI, 43.2%-48.9%) in Lesotho during the most recent surveys. The decrease in prevalence ranged from 1.5% (Ghana) to 9.6% (Sierra Leone). The World Health Organization target of a 30% decrease in smoking was achieved among male participants in 8 countries: Rwanda, Nigeria, Ethiopia, Benin, Liberia, Tanzania, Burundi, and Cameroon. For female participants, the number of countries having a prevalence of smoking less than 1% increased from 9 in baseline surveys to 16 in the most recent surveys. The World Health Organization target of a 30% decrease in smoking was achieved among female participants in 15 countries: Cameroon, Namibia, Mozambique, Mali, Liberia, Nigeria, Burundi, Tanzania, Malawi, Kenya, Rwanda, Zimbabwe, Ethiopia, Burkina Faso, and Zambia. For both sexes, the prevalence of tobacco use and the decrease in prevalence of tobacco use were higher among less-educated individuals and individuals with low income. In both groups, the magnitude of inequalities consistently decreased, and its direction remained the same. Absolute inequalities were 3-fold higher among male participants, while relative inequalities were nearly 2-fold higher among female participants.

CONCLUSIONS AND RELEVANCE: Contrary to a projected increase, tobacco use decreased in most sub-Saharan African countries. Persisting socioeconomic inequalities warrant the stricter implementation of tobacco control measures to reach less-educated individuals and individuals with low income.

23. Uptake of Cervical Cancer Screening and Associated Factors Among Women Attending Outpatient Services in Rwamagana Hospital, Rwanda

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ABSTRACT

BACKGROUND: Cervical cancer is a global public health threat for women. Rwanda Ministry of Health recommends screening as preventive strategy. However, the screening remains low in Rwanda.
OBJECTIVE: To determine the uptake level of cervical cancer screening and associated factors among Rwandan women.

METHODS: A quantitative analytical cross-sectional study design was used. We recruited 178 participants using convenience sampling from an estimated 320 women who attended outpatient department in the previous month. The sample size was calculated using the Yamane's formula. We used chi-square test, t-test and multiple logistic regression analysis to analyse data.

RESULTS: A total of 178 (100%) participants completed the survey. Forty-one (23%) participants had undertaken cervical cancer screening. Knowledge (OR: 1.26,95% CI:1.069-1.485, p=.006) and income were predictors of cervical cancer screening uptake. Participants earning RWF ≥ 63,751 were more likely to uptake cervical cancer screening (OR:11.141, 95% CI:3.136-39.571, p< .001) compared to those earning less than RWF 25,500 monthly.

CONCLUSION: Cervical cancer screening uptake among study population was low. Participants with more knowledge and high-income were more likely to uptake cervical cancer screening. Improving women's knowledge and socioeconomic situation would improve the uptake of cervical cancer screening.

Keywords: Cervical cancer screening, women, pap smear test, Rwanda

24. Cigarette smoking and hypertension among adult outpatients: An explanatory evidence model from a rural District Hospital, Rwanda

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ABSTRACT

Cigarette smoking is one of the main risk factors of hypertension. The association between tobacco smoking and hypertension in current published studies remains unclear with many

controversies despite experimental evidence confirming that smoking elevates blood pressure in different settings globally. Many studies on this topic are conducted at national level by focusing on a community-based approach. There is limited information on the association between cigarette smoking and hypertension at hospital level in many countries, including rural Rwanda. This study aimed to determine the prevalence of hypertension, the smoking prevalence and to investigate the association between smoking and hypertension among adult outpatients attending Ruli District hospital. This cross-sectional analytical study used a quantitative approach. Systematic sampling was used to select 404 participants among adult patients attending the Ruli District hospital's outpatient department, located in the Gakenke District in the Northern Province, from 23rd April to 24th July 2020. A questionnaire was used to gather information on behavioral risk factors from the participants. Measurements of blood pressure was performed according to internationally standardized protocols. A written consent was sought from the participants. Research clearance was provided by the Institutional Research Review Committee of the Mount Kenya University in Rwanda, and the Ruli Higher Institute of Health Saint Rose de Lima (RHIH). Confidentiality was considered during the research process. Data entry and processing used the 21st version of the IBM ® Numerical Package of Social Sciences (SPSS). Descriptive statistics were used to generate frequency tables, while a bivariate logistic regression model allowed to identify the factors associated with hypertension, which were finally adjusted into a multivariate analysis by using a 'backward condition' method. A p-value ≤ 0.05 with a 95% confidence interval (CI), was considered significant. Our research found that the overall prevalence of hypertension was 43.3%.The mean age (SD) of respondents was 45.6 years. Among participants, 7.7% were current smokers of any type of tobacco products, while 28.2% had a history of smoking. In bivariate analysis, current smoking of any type of tobacco product and history of smoking were found significantly associated with the development of hypertension (p-value ≤ 0.05). In multiple logistic regression analysis, history of smoking remained independently associated with hypertension; and study participants with a history of smoking were 3.15 more likely to develop hypertension compared to those who had never smoked (AOR=3.15; 95%CI= [1.44-6.85]).This research concluded that there is a high prevalence of hypertension in this study setting. The identified determinants of this public health problem included past history of smoking, which was found to be independently associated with hypertension. There is therefore a need for setting a public health intervention for health education and a systematic screening program among the population who stopped or current smoking for early diagnosis and treatment of hypertension.

25. Implementation outcomes of national decentralization of integrated outpatient services for severe non-communicable diseases to district hospitals in Rwanda

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ABSTRACT

OBJECTIVES: Effective coverage of non-communicable disease (NCD) care in sub-Saharan Africa remains low, with the majority of services still largely restricted to central referral centres. Between 2015 and 2017, the Rwandan Ministry of Health implemented a strategy to decentralise outpatient care for severe chronic NCDs, including type 1 diabetes, heart failure and severe hypertension, to rural first-level hospitals. This study describes the facility-level implementation outcomes of this strategy.

METHODS: In 2014, the Ministry of Health trained two nurses in each of the country's 42 first-level hospitals to implement and deliver nurse-led, integrated, outpatient NCD clinics, which focused on severe NCDs. Post-intervention evaluation occurred via repeated cross-sectional surveys, informal interviews and routinely collected clinical data over two rounds of visits in 2015 and 2017. Implementation outcomes included fidelity, feasibility and penetration.

RESULTS: By 2017, all NCD clinics were staffed by at least one NCD-trained nurse. Among the approximately 27 000 nationally enrolled patients, hypertension was the most common diagnosis (70%), followed by type 2 diabetes (19%), chronic respiratory disease (5%), type 1 diabetes (4%) and heart failure (2%). With the exception of warfarin and beta-blockers, national essential medicines were available at more than 70% of facilities. Clinicians adhered to clinical protocols at approximately 70% agreement with evaluators.

CONCLUSION: The government of Rwanda was able to scale a nurse-led outpatient NCD programme to all first-level hospitals with good fidelity, feasibility and penetration as to expand access to care for severe NCDs.

Keywords: Africa; Rwanda; first-level hospital; national scale-up; non-communicable disease; rheumatic heart disease; rural; type 1 diabetes.

26. Eradicating cervical cancer: Lessons learned from Rwanda and Australia

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ABSTRACT

Both Rwanda and Australia have made significant strides to eradicate cervical cancer. To understand the successes in Rwanda and Australia, a comparative policy analysis was conducted based on key informant interviews and a review of peer-reviewed literature and policy briefs. Notable findings were identified that offer lessons for countries across the income spectrum. To address cervical cancer, low- and middle-income countries can leverage foreign aid, international collaboration, and strong political advocacy, as Rwanda did. High-income countries can invest in translational research that builds capacity from basic science research to implementation of novel and impactful health products and services, as Australia did. All countries can consider rolling out HPV vaccination by targeting the social and/or physical environment (e.g., a school-based vaccination program, as both Rwanda and Australia did). Cervical cancer is preventable, and eradication is within reach for countries across the income spectrum around the world. Cervical cancer screening programs are needed to minimize the incidence of and mortality from cervical cancer in the short term, and HPV vaccination programs are the best strategy to eradicate cervical cancer in the long term.

Keywords: Australia; HPV vaccination; Rwanda; cervical cancer; cervical cancer screening; policy analysis.

27. Knowledge, utilization and barriers of cervical cancer screening among women attending selected district hospitals in Kigali - Rwanda

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ABSTRACT

BACKGROUND: Cervical cancer is the third most common cancer attacking women globally, and the second in Eastern Africa where Rwanda is located. Regular screening is an effective prevention approach for cervical cancer. Despite that, the screening rate for cervical cancer in Africa is estimated between 10% and 70%, with a number of barriers. This is especially the case in sub-Saharan Africa. In Rwanda, there is limited literature on the rate of use of screening services or the barriers to cervical screening.

OBJECTIVE: To assess knowledge, utilization, and barriers of cervical cancer screening among women attending selected district hospitals in Kigali, Rwanda.

METHODS: A descriptive cross-sectional study with a structured questionnaire was used to collect data. Nominal 'yes' or 'no' questions were used to gather data on knowledge and utilisation of cervical cancer and its screening. Likert-type scale questions were used to identify different barriers to screening services. Data were analysed using descriptive and inferential statistics. Respondents were selected by systematic random sampling from the database of women attending gynaecology services at three district hospitals in Kigali, Rwanda.

RESULTS: Three hundred and twenty-nine women responded to the survey. Half of the respondents (n = 165) had high knowledge level scores on cervical cancer screening. The cervical cancer screening rate was 28.3%. Utilization of screening was associated with knowledge (P = 0.000, r = -0.392) and selected demographic factors (P = 0.000). Individual barriers included poor knowledge on availability of screening services, community barriers included living in a rural area, and health provider and systems barriers included lack of awareness campaigns, negative attitudes of healthcare providers toward clients, and long waiting times; all barriers limit the access to screening services.

CONCLUSION: A low rate of cervical cancer screening was identified for women attending selected district hospitals in Kigali-Rwanda due to various barriers. On-going education on cervical cancer and its screening is highly recommended. It is important that trained health providers encourage their clients to have cervical cancer screening and work to reduce related barriers.

Keywords: barriers to screening; cervical cancer; cervical screening; knowledge about screening; screening in LMIC; utilization of cervical screening.

28. Children and Adolescent Mental Health in a Time of COVID-19: A Forgotten Priority

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ABSTRACT

Globally, 10-20% of children and adolescents experience mental health conditions, but most of them do not receive the appropriate care when it is needed. The COVID-19 deaths and prevention measures, such as the lockdowns, economic downturns, and school closures, have affected many communities physically, mentally, and economically and significantly impacted the already-neglected children and adolescents' mental health. As a result, evidence has shown that many children and adolescents are experiencing psychological effects such as depression and anxiety without adequate support. The consequences of not addressing the mental health conditions in children and adolescents extend through adulthood and restrict them from reaching their full potential. The effects of COVID-19 on children and adolescents' mental health highlight the urgent need for multisectoral home-grown solutions to provide early diagnosis and treatment and educate caregivers on home-based interventions and community outreach initiatives to address children and adolescents' mental health challenges during this pandemic and beyond.

29. Prediction of prevalence of type 2 diabetes in Rwanda using the metropolis-hasting sampling

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ABSTRACT

In this work, we predict the prevalence of type 2 diabetes among adult Rwandan people. We used the Metropolis-Hasting method that involved calculating the metropolis ratio. The data are those reported by World Health Organization in 2015. Considering Suffering from diabetes, Overweight, Obesity, Dead and other subject as states of mathematical model, the transition matrix whose elements are probabilities is generated using Metropolis-Hasting sampling. The numerical results show that the prevalence of type 2 diabetes increases from 2.8% in 2015 to reach 12.65% in 2020 and to 22.59% in 2025. Therefore, this indicates the urgent need of prevention by Rwandan health decision makers who have to play their crucial role in encouraging for example physical activity, regular checkups and sensitization of the masses.

Keywords: Markov Chain Monte Carlo method; Metropolis-Hasting method; Non communicable diseases; Transition probabilities; type 2 diabetes.

30. Integration of non-communicable disease and HIV/AIDS management: a review of healthcare policies and plans in East Africa

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ABSTRACT

BACKGROUND: Low-income and middle-income countries are struggling to manage growing numbers of patients with chronic non-communicable diseases (NCDs), while services for patients with HIV infection are well established. There have been calls for integration of HIV and NCD services to increase efficiency and improve coverage of NCD care, although evidence of effectiveness remains unclear. In this review, we assess the extent to which National HIV and NCD policies in East Africa reflect the calls for HIV-NCD service integration.

METHODS: Between April 2018 and December 2020, we searched for policies, strategies and guidelines associated with HIV and NCDs programmes in Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda. Documents were searched manually for plans for integration of HIV and NCD services. Data were analysed qualitatively using document analysis.

RESULTS: Thirty-one documents were screened, and 13 contained action plans for HIV and NCDs service integration. Integrated delivery of HIV and NCD care is recommended in high level health policies and treatment guidelines in four countries in the East African region; Kenya, Rwanda, Tanzania and Uganda, mostly relating to integrating NCD care into HIV programmes. The increasing burden of NCDs, as well as a move towards person-centred differentiated delivery of services for people living with HIV, is a factor in the recent adoption of integrated HIV and NCD service delivery plans. Both South Sudan and Burundi report a focus on building their healthcare

infrastructure and improving coverage and quality of healthcare provision, with no reported plans for HIV and NCD care integration.

CONCLUSION: Despite the limited evidence of effectiveness, some East African countries have already taken steps towards HIV and NCD service integration. Close monitoring and evaluation of the integrated HIV and NCD programmes is necessary to provide insight into the associated benefits and risks, and to inform future service developments.

31. The Comparability of Lipid-based and Body Mass Index-based Cardiovascular Disease Risk Scores: Using the Rwanda 2012-2013 Non-communicable Diseases Risk Factors Survey Data

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ABSTRACT

BACKGROUND: In Rwanda, cardiovascular diseases (CVDs) ranked second of the most common cause of death in 2016. CVD risk score tools have been recommended to identify people at high risk for management.

OBJECTIVE: To assess the comparability of body mass index (BMI)-based and lipid-based CVD risk scores in Rwandan population.

METHODS: Secondary analysis was conducted on 4185 study participants extracted from the dataset of Rwanda 2012-2013 non-communicable diseases risk factors survey. Individual CVD risk scores were calculated using both BMI-based and lipid-based algorithms, one at a time. Spearman rank's coefficient and Cohen's Kappa coefficient were used to compare the two tools.

RESULTS: About 63.5% of participants were women. There was a significant positive correlation between BMI-based algorithm and lipid-based algorithm vis-à-vis a 10-year CVD risk prediction

(Spearman rank correlation coefficients > 0.90, p<0.001) considering either men, women or overall study participants. There was a moderate agreement between BMI-based and lipid-based algorithms vis-à-vis CVD risk characterization, kappa = 0.52; p-value p<0.001 considering either overall study participants or men and kappa = 0.48; p-value p<0.001 considering women.

CONCLUSION: The findings from this study suggest the use of BMI-based algorithm, a cost-effective tool compared to lipid-based tool, can be alternatively used in resource-limited settings.

Keywords: Cardiovascular diseases, algorithms, Rwanda

32. Cancer care delivery innovations, experiences and challenges during the COVID-19 pandemic: The Rwanda experience

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ABSTRACT

Globally, cancer is the second leading cause of mortality. In 2018, 9.6 million lives were lost to cancer of which over 70% occurred in low and middle-income countries (LMICs) where limited access to cancer care and overwhelming late disease presentations negatively impact cancer related survival and quality of life [1]. Moreover, globally, new cancer cases are expected to increase from 18.1 million in 2018 to 21.4 million by 2030 [2]. In settings of poor health care systems and impoverished communities, the scarcity of and limited access to diagnostic and treatment modalities negatively impacts health outcomes and undermines achievement of the universal health care coverage (UHC) targets.

Over the past 20 years, Rwanda has recorded gains in key health indicators including increased life expectancy (from 48.6 in 2000 to 67.4 in 2015); declines in maternal mortality (from 1071 in 2000 to 210 per 100 000 live births in 2015) [3]. Concurrently, impressive gains were registered in the control of infectious diseases such as HIV, tuberculosis and malaria [3]. However, little gains have been recorded for the management of non-communicable diseases (NCDs) where age-standardized NCD mortality rates slightly decreased from 894.9 to 548.6 deaths per 100 000 people from 2000 to 2016 [4,5]. Anecdotally, plausible hindrances to the prevention and control of NCDs in Rwanda include low community awareness, lack of trained providers, limited access to diagnostic services and treatment capacity for complicated cases [5].

33. Screen, Notify, See, and Treat: Initial Results of Cervical Cancer Screening and Treatment in Rwanda

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ABSTRACT

PURPOSE: To describe the first year results of Rwanda's Screen, Notify, See, and Treat cervical cancer screening program, including challenges encountered and revisions made to improve service delivery.

METHODS: Through public radio broadcasts, meetings of local leaders, church networks, and local women's groups, public awareness of cervical cancer screening opportunities was increased and community health workers were enlisted to recruit and inform eligible women of the locations and dates on which services would be available. Screening was performed using human papillomavirus (HPV) DNA testing technology, followed by visual inspection with acetic acid (VIA), and cryotherapy, biopsy, and surgical treatment for those who tested HPV-positive. These services were provided by five district hospitals and 15 health centers to HIV-negative women of age 35-45 and HIV-positive women of age 30-50. Service utilization data were collected from the program's initiation in September 2013 to October 2014.

RESULTS: Of 7,520 cervical samples tested, 874 (11.6%) screened HPV-positive, leading 780 (89%) patients to undergo VIA. Cervical lesions were found in 204 patients (26.2%) during VIA; of these, 151 were treated with cryoablation and 15 were referred for biopsies. Eight patients underwent complete hysterectomy to treat advanced cervical cancer. Challenges to service delivery included recruitment of eligible patients, patient loss to follow-up, maintaining HIV status confidentiality, and efficient use of consumable resources.

CONCLUSION: Providing cervical cancer screening services through public health facilities is a feasible and valuable component of comprehensive women's health care in resource-limited settings. Special caution is warranted in ensuring proper adherence to follow-up and maintaining patient confidentiality.

34. Blood Pressure In A Population of A Rural Area of Rwanda: Preliminary Data

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ABSTRACT

OBJECTIVE: Arterial hypertension likely affects millions of people in Africa and is the most important cause of heart disease and stroke. In Sub-Saharan Africa, the burden of hypertension is a rapid growing health threat. The objective of our study was to perform a screening of the local population living in the rural area of the District of Nyaruguru (Rwanda) to determine the prevalence of high blood pressure (BP).

DESIGN AND METHOD: Between February and July 2020, instructed health care workers collected some anthropometric data (such as height and weight) and measured BP three times in sitting position with validated oscillometric device (OMRON HEM-7322U).

RESULTS: A total of 7336 subjects participated to the screening, with median age of 32 (IQR 21,47) years; 4053 (55%) were female, age 35 (23, 49) years; 3283 (45%) were male, age 30 (20, 44) years ($p < 0.001$). Body Mass Index was 20.7 (19.0, 22.3) in males and 21.8 (20.0, 23.8) in females ($p < 0.001$). The mean of the last two BP measurements were 119.5 ± 15.2 mm Hg. Males had a higher systolic blood pressure (SBP) 120.1 ± 14.0 mm Hg comparing to female 118.6 ± 16.1 ($p < 0.001$.) Considered SBP equal or more than 140 mm Hg for the diagnosis of hypertension 642 subjects (8.8%) had high BP values, without differences between males (8.4%) and female (9.0%); $p = 0.36$.

CONCLUSIONS: Surprisingly, in a very rural peripheral region where the average age of the inhabitants is relatively low, about 9% of the subjects examined have abnormal BP values. These data confirm the need to implement also in rural areas of Rwanda an adequate strategy for the prevention, diagnosis and treatment of hypertension.

35. Exploring Barriers to Mental Health Services Utilization at Kabutare District Hospital of Rwanda: Perspectives from Patients

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ABSTRACT

Barriers to mental health interventions globally remain a health concern; however, these are more prominent in low- and middle-income countries (LMICs). The barriers to accessibility include stigmatization, financial strain, acceptability, poor awareness, and sociocultural and religious influences. Exploring the barriers to the utilization of mental health services might contribute to mitigating them. Hence, this research aims to investigate these barriers to mental health service utilization in depth at the Kabutare District Hospital of the Southern Province of Rwanda. The qualitative approach was adopted with a cross-sectional study design. The participants were patients with mental illnesses seeking mental health services at the hospital. Ten interviews were conducted in the local language, recorded, and transcribed verbatim and translated by the researchers. Thematic analysis was applied to analyze the data collected. The results revealed that the most common barriers are fear of stigmatization, lack of awareness of mental health services, sociocultural scarcity, scarcity of financial support, and lack of geographical accessibility, which limit the patients to utilize mental health services. Furthermore, it was revealed that rural gossip networks and social visibility within the communities compounded the stigma and social exclusion for patients with mental health conditions. Stigmatization should be reduced among the community members for increasing their empathy. Then, the awareness of mental disorders needs to be improved. Further research in Rwanda on the factors associated with low compliance to mental health services with greater focus on the community level is recommended.

36. Quality of life among adult patients living with diabetes in Rwanda: a cross-sectional study in outpatient clinics

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ABSTRACT

OBJECTIVES: To report on the disease-related quality of life of patients living with diabetes mellitus in Rwanda and identify its predictors.

DESIGN: Cross-sectional study, part of the baseline assessment of a cluster-randomised controlled trial.

SETTING: Outpatient clinics for non-communicable diseases of nine hospitals across Rwanda.

PARTICIPANTS: Between January and August 2019, 206 patients were recruited as part of the clinical trial. Eligible participants were those aged 21-80 years and with a diagnosis of diabetes mellitus for at least 6 months. Illiterate patients, those with severe hearing or visual impairments, those with severe mental health conditions, terminally ill, and those pregnant or in the postpartum period were excluded PRIMARY AND SECONDARY OUTCOME MEASURES: Disease-specific quality of life was measured with the Kinyarwanda version of the Diabetes-39 (D-39) questionnaire. A glycated haemoglobin (HbA1c) test was performed on all patients. Sociodemographic and clinical data were collected, including medical history, disease-related complications and comorbidities.

RESULTS: The worst affected dimensions of the D-39 were 'anxiety and worry' (mean=51.63, SD=25.51), 'sexual functioning' (mean=44.58, SD=37.02), and 'energy and mobility' (mean=42.71, SD=20.69). Duration of the disease and HbA1c values were not correlated with any of the D-39 dimensions. A moderating effect was identified between use of insulin and achieving a target HbA1c of 7% in the 'diabetes control' scale. The most frequent comorbidity was hypertension (49.0% of participants), which had a greater negative effect on the 'diabetes control' and 'social burden' scales in women. Higher education was a predictor of less impact on the 'social burden' and 'energy and mobility' scales.

CONCLUSIONS: Several variables were identified as predictors for the five dimensions of quality of life that were studied, providing opportunities for tailored preventive programmes. Further prospective studies are needed to determine causal relationships.

37. Frequency and correlates of anxiety symptoms during the COVID-19 pandemic in low- and middle-income countries: A multinational study

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ABSTRACT

OBJECTIVE: Studies have documented the significant direct and indirect psychological, social, and economic consequences of the Coronavirus disease 2019 (COVID-19) in many countries but little is known on its impact in low- and middle-income countries (LMICs) already facing difficult living conditions and having vulnerable health systems that create anxiety among the affected populations. Using a multinational convenience sample from four LMICs (DR Congo, Haiti, Rwanda, and Togo), this study aims to explore the prevalence of anxiety symptoms and associated risk and protective factors during the COVID-19 pandemic.

METHODS: A total of 1267 individuals (40.8% of women) completed a questionnaire assessing exposure and stigmatization related to COVID-19, anxiety, and resilience. Analyses were performed to examine the prevalence and predictors of anxiety.

RESULTS: Findings showed a pooled prevalence of 24.3% (9.4%, 29.2%, 28.5%, and 16.5% respectively for Togo, Haiti, RDC, and Rwanda, $x2 = 32.6$, $p < .0001$). For the pooled data, exposure to COVID-19 ($\beta = 0.06$, $p = .005$), stigmatization related to COVID-19 ($\beta = 0.03$, $p < .001$), and resilience ($\beta = -0.06$, $p < .001$) contributed to the prediction of anxiety scores. Stigmatization related to COVID-19 was significantly associated to anxiety symptoms in all countries ($\beta = 0.02$, $p < .00$; $\beta = 0.05$, $p = .013$; $\beta = 0.03$, $p = .021$; $\beta = 0.04$, $p < .001$, respectively for the RDC, Rwanda, Haiti, and Togo).

CONCLUSIONS: The findings highlight the need for health education programs in LMICs to decrease stigmatization and the related fears and anxieties, and increase observance of health instructions. Strength-based mental health programs based on cultural and contextual factors need to be developed to reinforce both individual and community resilience and to address the complexities of local eco-systems.

KEYWORDS: Anxiety; COVID-19; Exposure; Low- and middle-income countries; Resilience; Stigmatization.

38. The political economy of sugar-sweetened beverage taxation: an analysis from seven countries in sub-Saharan Africa

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ABSTRACT

BACKGROUND: Non-communicable diseases are on the rise across sub-Saharan Africa. The region has become a targeted growth market for sugar-sweetened beverages, which are associated with weight gain, cardiovascular diseases and diabetes.

OBJECTIVE: To identify politico-economic factors relevant to nutrition-related fiscal policies, and to draw lessons regarding strategies to strengthen sugar-sweetened beverages taxation in the region and globally.

METHODS: We collected documentary data on policy content, stakeholders and corporate political activity from seven countries in east and southern Africa augmented by qualitative interviews in Botswana, Namibia, Kenya and Zambia, and stakeholder consultations in Rwanda, Tanzania and Uganda. Data were analysed using a political economy framework, focusing on ideas, institutions, interests and power, and a 'bricolage' approach was employed to identify strategies for future action.

RESULTS: Non-communicable diseases were recognised as a priority in all countries. Kenya, Zambia, Rwanda, Tanzania and Uganda had taxes on non-alcoholic beverages, which varied in rate and tax base, but appeared to be motivated by revenue rather than health concerns. Botswana and Namibia indicated intention to adopt sugar-sweetened beverage taxes. Health-oriented sugar-sweetened beverage taxation faced challenges from entrenched economic policy paradigms for industry-led economic growth and was actively opposed by sugar-sweetened beverage-related industries. Strategies identified to support stronger sugar-sweetened beverage taxation included shifting the economic discourse to strengthen health considerations, developing positive public opinion, forging links with the agriculture sector for shared benefit, and leadership by a central government agency.

CONCLUSIONS: There are opportunities for more strategic public health engagement with the economic sector to foster strong nutrition-related fiscal policy for non-communicable disease prevention in the region.

Keywords: Noncommunicable disease; policy; political economy; sugar-sweetened beverage; tax.

39. Strengthening prevention of nutrition-related non-communicable diseases through sugar-sweetened beverages tax in Rwanda: a policy landscape analysis

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ABSTRACT

BACKGROUND: Food and beverages high in sugar are recognized to be among the major risk factors for nutrition-related non-communicable diseases. The growing presence of ultra-processed food producers has resulted in shifts to diets that are associated with non-communicable diseases and which include sugar-sweetened beverages. Sugar-sweetened beverage taxation presents an opportunity to prevent non-communicable diseases but it comes with challenges.

OBJECTIVES: To describe the policy landscape, identify and analyse the facilitators of and barriers to strengthening taxation on sugar-sweetened beverages in Rwanda.

METHODS: We conducted a desk-based policy analysis to assess the facilitators of and barriers

to strengthening sugary beverage taxation policy. We consulted eight stakeholders to validate the findings of the desk review.

RESULTS: Non-communicable diseases are recognized as a public health challenge in Government health and non-health policy documents. However, sugar intake is not explicitly identified as a risk factor for non-communicable diseases and existing policies do not clearly aim to reduce sugar consumption. The Rwandan Government's commitment to growing the local sugar industry and the substantial economic contribution of Rwandan beverage producers are potential barriers to fiscal policies aimed at reducing sugar consumption. However, the current 39% excise tax levied on all soft drinks could support the adoption of future sugar-sweetened beverage policies.

CONCLUSIONS: The landscape for strengthening a sugar-sweetened beverage tax in Rwanda is complex. The policy environment provides both facilitators of and impediments to strengthening the existing tax. A differential tax could be introduced by leveraging on the existing excise tax and linking it to the sugar content of beverages.

Keywords: NCD prevention; SSB taxation; fiscal policies; sugar-sweetened beverages.

40. Socio-demographic and clinical characteristics of diabetes mellitus in rural Rwanda: time to contextualize the interventions? A cross-sectional study

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ABSTRACT

BACKGROUND: Existing prevention and treatment strategies target the classic types of diabetes yet this approach might not always be appropriate in some settings where atypical phenotypes exist. This study aims to assess the socio-demographic and clinical characteristics of people with diabetes in rural Rwanda compared to those of urban dwellers.

METHODS: A cross-sectional, clinic-based study was conducted in which individuals with diabetes mellitus were consecutively recruited from April 2015 to April 2016. Demographic and clinical data were collected from patient interviews, medical files and physical examinations. Chi-square tests and T-tests were used to compare proportions and means between rural and urban residents.

RESULTS: A total of 472 participants were recruited (mean age 40.2 ± 19.1 years), including 295 women and 315 rural residents. Compared to urban residents, rural residents had lower levels of education, were more likely to be employed in low-income work and to have limited access to running water and electricity. Diabetes was diagnosed at a younger age in rural residents (mean ± SD 32 ± 18 vs 41 ± 17 years; $p < 0.001$). Physical inactivity, family history of diabetes and obesity were significantly less prevalent in rural than in urban individuals (44% vs 66, 14.9% vs 28.7 and 27.6% vs 54.1%, respectively; $p < 0.001$). The frequency of fruit and vegetable consumption was lower in rural than in urban participants. High waist circumference was more prevalent in urban than in rural women and men (75.3% vs 45.5 and 30% vs 6%, respectively; $p < 0.001$). History of childhood under-nutrition was more frequent in rural than in urban individuals (22.5% vs 6.4%; $p < 0.001$).

CONCLUSIONS: Characteristics of people with diabetes in rural Rwanda appear to differ from those of individuals with diabetes in urban settings, suggesting that sub-types of diabetes exist in Rwanda. Generic guidelines for diabetes prevention and management may not be appropriate in different populations.

Keywords: Diabetes; Malnutrition; Risk factors; Rural; Rwanda.

41. The Need for Interdisciplinary Collaboration between Dental Professionals, Nurses and General Practitioners to Control NCDs

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ABSTRACT
Acute Numerous interventions have been put in place for the proper management of noncommunicable diseases (NCDs). However, NCDs remain a large threat to the health of human beings. Therefore, interventions must be effectively and efficiently implemented and have the desired outcomes with a collaborative approach between healthcare providers. Because oral diseases share risk factors with some NCDs, and given that there is a two-way association between both groups of diseases, an argument could be made that integrating dental professionals in the management of NCDs can be a key component in an effective response to tackling NCDs. This is due to dentists being skilled and experienced in preventing, controlling, and detecting oral diseases, which share common risk factors with NCDs. Aside from engaging dentists in the management of NCDs, nurses are another group of healthcare providers who can play a significant role in the prevention and treatment of NCDs when effectively utilized and given their access to a large number of patients who attend their services at all levels of the health system. From primary health care facilities to referral hospitals, various strategies to handle NCDs can be used. However, integrating the dental team and Nurses in tackling NCDs would be the best approach to reach positive health outcomes.

42. Exploring the mental health and psychosocial problems of Congolese refugees living in refugee settings in Rwanda and Uganda: a rapid qualitative study

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ABSTRACT

BACKGROUND: Refugees fleeing conflict often experience poor mental health due to experiences in their country of origin, during displacement, and in new host environments. Conditions in refugee camps and settlements, and the wider socio-political and economic context of refugees' lives, create structural conditions that compound the effects of previous adversity. Mental health and psychosocial support services must address the daily stressors and adversities refugees face by being grounded in the lived reality of refugee's lives and addressing issues relevant to them.

METHODS: We undertook a rapid qualitative study between March and May 2019 to understand the local prioritisation of problems facing Congolese refugees living in two refugee settings in Uganda and Rwanda. Thirty free list interviews were conducted in each setting, followed by 11 key informant interviews in Uganda and 12 in Rwanda.

RESULTS: Results from all interviews were thematically analysed following a deductive process by the in-country research teams. Free list interview findings highlight priority problems of basic needs such as food, shelter, and healthcare access; alongside contextual social problems including discrimination/inequity and a lack of gender equality. Priority problems relating to mental and psychosocial health explored in key informant interviews include discrimination and inequity; alcohol and substance abuse; and violence and gender-based violence.

CONCLUSIONS: Our findings strongly resonate with models of mental health and psychosocial wellbeing that emphasise their socially determined and contextually embedded nature. Specifically, findings foreground the structural conditions of refugees' lives such as the physical organisation of camp spaces or refugee policies that are stigmatising through restricting the right to work or pursue education. This structural environment can lead to disruptions in social relationships at the familial and community levels, giving rise to discrimination/inequity and gender-based violence. Therefore, our findings foreground that one consequence of living in situations of pervasive adversity caused by experiences of discrimination, inequity, and violence is poor mental health and psychosocial wellbeing. This understanding reinforces the relevance of feasible and acceptable intervention approaches that aim to strengthening familial and community-level social relationships, building upon existing community resources to promote positive mental health and psychosocial wellbeing among Congolese refugees in these settings.

43. Fighting non-communicable diseases in East Africa: assessing progress and identifying the next steps

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ABSTRACT

Sub-Saharan Africa has seen a rapid increase in non-communicable disease (NCD) burden over the last decades. The East African Community (EAC) comprises Burundi, Rwanda, Kenya, Tanzania, South Sudan and Uganda, with a population of 177 million. In those countries, 40% of deaths in 2015 were attributable to NCDs. We review the status of the NCD response in the countries of the EAC based on the available monitoring tools, the WHO NCD progress monitors in 2017 and 2020 and the East African NCD Alliance benchmark survey in 2017. In the EAC,

modest progress in governance, prevention of risk factors, monitoring, surveillance and evaluation of health systems can be observed. Many policies exist on paper, implementation and healthcare are weak and there are large regional and subnational differences. Enhanced efforts by regional and national policy-makers, non-governmental organisations and other stakeholders are needed to ensure future NCD policies and implementation improvements.

Keywords: control strategies; health policy; other study design; public Health.

44. Decentralized, primary-care delivered epilepsy services in Burera District, Rwanda: Service use, feasibility, and treatment

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ABSTRACT

BACKGROUND: Integrating epilepsy care into primary care settings could reduce the global burden of illness attributable to epilepsy. Since 2012, the Rwandan Ministry of Health and the international nonprofit Partners In Health have collaboratively used a multi-faceted implementation program- MESH MH-to integrate and scale-up care for epilepsy and mental disorders within rural primary care settings in Burera district, Rwanda. We here describe demographics, service use and treatment patterns for patients with epilepsy seeking care at MESH-MH supported primary care health centers.

METHODS AND FINDINGS: This was a retrospective cohort study using routinely collected data from fifteen health centers in Burera district, from January 2015 to December 2016. 286 patients with epilepsy completed 3307 visits at MESH-MH participating health centers over a two year period (Jan 1st 2015 to Dec 31st 2016). Men were over twice as likely to be diagnosed with epilepsy than women (OR 2.38, CI [1.77-3.19]), and children under 10 were thirteen times as likely to be diagnosed with epilepsy as those 10 and older (OR 13.27, CI [7.18-24.51]). Carbamazepine monotherapy was prescribed most frequently (34% of patients).

CONCLUSION: Task-sharing of epilepsy care to primary care via implementation programs such as MESH-MH has the potential to reduce the global burden of illness attributable to epilepsy.

45. State of Cancer Control in Rwanda: Past, Present, and Future Opportunities

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ABSTRACT

Rwanda is a densely populated low-income country in East Africa. Previously considered a failed state after the genocide against the Tutsi in 1994, Rwanda has seen remarkable growth over the past 2 decades. Health care in Rwanda is predominantly delivered through public hospitals and is emerging in the private sector. More than 80% of patients are covered by community-based health insurance (Mutuelle de Santé). The cancer unit at the Rwanda Biomedical Center (a branch of the Ministry of Health) is responsible for setting and implementing cancer care policy. Rwanda has made progress with human papillomavirus (HPV) and hepatitis B vaccination. Recently, the cancer unit at the Rwanda Biomedical Center launched the country's 5-year National Cancer Control Plan. Over the past decade, patients with cancer have been able to receive chemotherapy at Butaro Cancer Center, and recently, the Rwanda Cancer Center was launched with 2 linear accelerator radiotherapy machines, which greatly reduced the number of referrals for treatment abroad. Palliative care services are increasing in Rwanda. A cancer registry has now been strengthened, and more clinicians are becoming active in cancer research. Despite these advances, there is still substantial work to be done and there are many outstanding challenges,

including the need to build capacity in cancer awareness among the general population (and shift toward earlier diagnosis), cancer care workforce (more in-country training programs are needed), and research.

46. COVID-19 and type 1 diabetes: Challenges and actions

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ABSTRACT

In response to the Coronavirus Disease 2019 (COVID-19) pandemic caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV 2), as of May 2020, almost all nations have enforced strict measures to contain the spread of the virus. These include countrywide lockdowns, whereby internal travel has been restricted and borders have been closed. These measures have severe negative impacts on national economies.
COVID-19 is challenging all diabetes services, but the situation is particularly perilous for people with type 1 diabetes (T1D) in Low-and-middle income countries (LMICs). Even in non-pandemic times, access to insulin, blood glucose monitoring, and expert clinical care is often challenging to maintain due to lack of affordable and available provision [[1]]. Continual access to these components is essential to prevent serious acute complications and deaths.
The authors of this commentary are involved in the care of T1D in LMICs and see services in such settings suffering in three major ways from the impacts of COVID-19. These include the immediate impact of lockdowns and restrictions on international transport; the need for accurate information for patients, carers and health professionals; and the medium-to long-term impacts on health budgets. Using country examples known to us, these challenges and their evolving responses are described below.

47. Benefits of Technology in the Age of COVID-19 and Diabetes. . .Mobile Phones From a Rwanda Perspective

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ABSTRACT

We have learned these past few months of the benefits (as well as pitfalls) of technology in the age of coronavirus disease 2019 (COVID-19). Zoom, Microsoft Teams, and WebEx for all those meetings to attend from your new/temporary home office. Seems all the news is always “Breaking now”! Constant updates of the new numbers of cases of COVID-19 in your location”—if you have chosen to have a local TV news station app on your mobile phone. Probably, the one technology that has become the most useful tool/asset in fact is the mobile phone for information, communication, purchasing items, scheduling, and watching Netflix. Telemedicine has now become “virtual” appointments for many individuals, and those mobile phones are assisting in managing diabetes.

We two authors have been discussing how mobile phones have changed the landscape for many around the world regarding diabetes care. Klonoff1 wrote in 2009 “Telemedicine promises to become a novel 21st-century tool for diabetes health care providers to communicate with patients to improve the quality and lower the costs of health care.” The pace of telemedicine has clearly quickened during this pandemic.

The Centre for Evidence-Based Medicine (CEBM2) has recently (2020) looked at nonresource-intensive interventions to optimize self-management of diabetes not requiring face-to-face contact during COVID-19. These interventions generally fall into four categories: (1) text-message; (2) mobile phone app; (3) web or computer-based; and (4) monitoring of blood glucose. The conclusion for now appears to that text messaging is one of the better approaches for managing blood glucose.

48. Suicidal Ideation and Behavior Among Congolese Refugees in Rwanda: Contributing Factors, Consequences, and Support Mechanisms in the Context of Culture

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Front Psychiatry. 2020 Apr 24;11:299. doi: 10.3389/fpsyt.2020.00299. eCollection 2020.

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ABSTRACT

Concern in one of the five camps for Congolese refugees in Rwanda about suicide attempts and death in 2017 as well as research data pointing to a relatively high incidence of suicidal ideation in this and a second camp in the same period provided the impetus for this exploratory qualitative study. The study explored factors contributing to suicidal ideation, attempts and death; existing support and referral mechanisms; and recommendations regarding prevention and care

strategies. Between July and September 2018, 10 focus group discussions were conducted with refugees and representatives of stakeholders working in the camp, and 21 in-depth interviews with refugees who reported suicidal ideations in a previous quantitative survey, two refugees who attempted suicide, and family members of those who reported suicidal ideas, attempted suicide or committed suicide. Findings suggest that while all refugees have suffered from war and violence in Congo and experienced traumatic events before arriving in Rwanda, the pathway to suicidal ideations was often triggered by the circumstances related to their current situation in the context of refugeehood. Almost all respondents who experienced suicide ideations and/or attempted to commit suicide reported poor mental health, a low sense of connectedness/belonging and a high level of perceived burden, which were greater than their desire to live. Family conflicts were found to be an important starting point leading to suicidal ideations and in some cases to suicide attempts and deaths. For the adult population, family conflicts often resulted from the cultural and legal changes experienced after fleeing their home country, misunderstandings of Rwandan gender equality policies, and disagreements about family income management. For youth, a lack of hope for the future was found among boys and girls, and for some girls, suicidal ideations were triggered by poor interpersonal/family relationships due to unwanted pregnancies. Family, community and faith-based support mechanisms were reported as being available but not always culturally sensitive. Psychosocial support services should be improved and expanded to ensure effective psychosocial recovery. Family conflicts related to a lack of family communication and a misconception of gender equality policies should be tackled with attention to the cultural factors involved**.**

49. Functional Health Literacy and Self-Care Behaviors Among Type 2 Diabetic Patients at a University Teaching Hospital in Kigali

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ABSTRACT

Background: Type 2 Diabetes Mellitus (T2DM) is a significant health burden in high-income countries and emerging in sub-Sahara African countries, including Rwanda. Prevention and treatment of T2DM are imperative and need to focus on functional health literacy and self-care practices among people with diabetes.

Objective: To determine if functional health literacy is associated with self-care behaviors among T2DM patients.

Method: This study was a descriptive cross-sectional design conducted at a University Teaching Hospital in Kigali. The sample comprised of 223 T2DM patients recruited from the university outpatient department. The questionnaire was developed from two studies. Descriptive statistics were used to analyse the data.

Results: Results indicated a low-level of functional health literacy, with a wide range of scores from 6.5% to 93.5%, and a mean of 51.66 (SD 15.77).The majority of 123 (55.3%) had inadequate functional health literacy and self-care behaviors. There was a strong association between functional health literacy and self-care behaviors ($p < 0.001$).

Conclusion: The level of functional health literacy among T2DM patients needs to be increased and patients should be highly encouraged to adhere to self-care behaviors. Future research could involve an interventional study to discover the best method to educate T2DM patients.

Keywords: Type 2 diabetes mellitus; functional health literacy; self-care behaviors; patients T2DM; sub-Saharan Africa

50. A cross-sectional study of the prevalence and factors associated with symptoms of perinatal depression and anxiety in Rwanda

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ABSTRACT

BACKGROUND: Perinatal depression and anxiety are increasingly recognized as important public health issues in low and middle-income countries such as Rwanda and may have negative consequences for both mothers and their infants. Maternal mental health may be particularly challenged in Rwanda because of the prevalence of risk factors such as poverty, low education levels, negative life events and marital problems. However, there are limited data about perinatal depression and anxiety symptoms in Rwanda. This study thus aimed to explore the prevalence of symptoms of perinatal depression and anxiety in Rwanda, and factors associated with them.

METHODS: A sample of 165 women in the perinatal period (second and third trimester of pregnancy, up to 1 year postnatal) were interviewed individually over 1 month in October 2013. Women were interviewed at 5 of 14 health centres in the Eastern Province or the affiliated district hospital. Participants answered socio-demographic questions and scales measuring symptoms of perinatal depression (EPDS: Edinburgh Postnatal Depression Scale) and anxiety (SAS: Zung Self-rating Anxiety Scale).

RESULTS: Among women in the antenatal period (N = 85), 37.6% had symptoms indicating possible depression (EPDS ≥10) and 28.2% had symptoms associated with clinical levels of anxiety (SAS > 45). Among women within the postnatal period (N = 77), 63.6% had symptoms of possible depression, whereas 48,1% had symptoms of probable anxiety. Logistic regression showed that symptoms of postnatal depression were higher for respondents who had four or more living children relative to those having their first child (Odds Ratio: 0.07, C.I. = 0.01-0.42), and for those with a poor relationship with their partner (Odds Ratio: .09, C.I. =0.03-0.25). Any lifetime exposure to stressful events was the only predictor of symptoms of postnatal anxiety (Odds Ratio = 0.20, C.I. = 0.09-0.44).

CONCLUSIONS: Symptoms of postnatal depression and anxiety were prevalent in this Rwandan sample and most strongly predicted by interpersonal and social factors, suggesting that social interventions may be a successful strategy to protect against maternal mental health problems in the Rwandan context.

Keywords: Maternal mental health; Perinatal anxiety; Perinatal depression; Rwanda; Social factors of mental health; Social support.

51. Awareness on prostate cancer and screening practices among men attending outpatient at a referral hospital in Kigali, Rwanda: A quantitative study

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ABSTRACT

BACKGROUND: Prostate cancer is estimated to be the second of all under diagnosed cancer and it is ranged the sixth among the cause of cancer mortality worldwide. The sensitization related

to prostate cancer awareness and its screening needs to be encouraged among adult men to avoid late consultation and reduce prostate cancer morbidity and mortality.

PURPOSE OF THE STUDY: To assess prostate cancer awareness and screening practices among adult males attending outpatient department at Kigali university teaching hospital, Rwanda.

METHODOLOGY: A quantitative, descriptive cross-sectional design was used in this study. A systematic random sampling technique was used to select 257 adult males, who participated in the study. Participants were chosen from among the men who consulted urology and general surgery services at University Teaching hospital of Kigali (CHUK) Rwanda, during 8 weeks of the study period.

RESULTS: Among 257 participants in the study, the great proportion (43%) of respondents ranged between 51 and 60. 80% of the respondents were aware of prostate cancer existence and reported the health provider as being the major source of the information. Knowledge on various domains was low and 64% of the respondents were not aware of the risk factors of prostate cancer, 32% did not know the prevention measures of prostate cancer, 64% of the respondents were aware of prostate cancer screening using PSA exam and 49% of the respondents had undergone screening by performing PSA exam. Overall prostate cancer awareness and screening practice was 75% and 49.5% respectively. Having a university level education was significantly associated with P Ca awareness and screening practices ($p < 0.004$), and working in public institutions had a strong correlation to Prostate cancer awareness and screening practice ($p < 0.000$).

CONCLUSION: The level of awareness of prostate cancer was high while knowledge on some areas was low. Screening practices were found to be poor, almost half of participants did not perform PSA test. There is a need to improve health education to the community regarding prostate cancer to enhance knowledge and increase the rate of screening.

52. Knowledge about modifiable risk factors for non-communicable diseases adults living with HIV in Rwanda

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ABSTRACT

BACKGROUND: Non-communicable diseases (NCD) are of international public health concern. Of more concern are people living with HIV (PLHIV), who have the increased risk of developing NCDs, such as hypertension, stroke and diabetes. Research has revealed that there is a relationship between knowledge of NCD risk factors and risk perceptions in the general population. Therefore, an assessment of PLHIV's NCD risk factors knowledge is quite critical, to design effective NCD prevention programmes.

OBJECTIVE: To assess the level of knowledge of modifiable risk factors for NCDs and its associated factors among adults living with HIV in Rwanda.

METHODS: A cross-sectional quantitative design was used to collect the data. The study targeted PLHIV who visited the out-patients' public health centres in three purposively selected provinces of Rwanda. The knowledge assessment questionnaire relating to risk factors for chronic diseases of lifestyle was used to collect the data. Data were analysed using SPSS version 23.

RESULTS: Of the 794 respondents, 64.6% were women, and the mean age was 37.9 (±10.8) years. The results revealed that the majority of the respondents (65.0%) had low levels of knowledge about NCD risk factors, while some (35.6%) were of the opinion that they had a low risk of contracting NCDs. Good knowledge was significantly associated with high educational status, a low CD4+ cell count (< 350 cells/mm3) and normotension.

CONCLUSION: The current study findings highlight the need for comprehensive health education, to raise awareness of non-communicable diseases' risk factors for adults living with HIV in Rwanda.

Keywords: HIV infection; Knowledge; Non-communicable diseases; Risk factors; Rwanda.

53. Depression and Associated Factors Among the Patients with Type 2 Diabetes in Rwanda

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ABSTRACT

BACKGROUND: Various studies have found a greater prevalence of depression among patients having one or more chronic non communicable disease like diabetes mellitus than in the general population. This co-morbidity is linked with serious health consequences such as high mortality and morbidity, debility, low quality of life and increased health costs. The aim was to determine the prevalence of depression among patients with diabetes attending three selected district hospitals in Rwanda. Sociodemographic factors associated with depression were also explored.

METHODS: It was a descriptive cross sectional study. A sample of 385 was selected randomly to participate in the study and 339 complete the questionnaires making a response rate of 88%. The Patient Health Questionnaire-9 (PHQ-9) was used to screen depression. Descriptive and inferential analysis were done.

RESULTS: The majority of respondents 83.8% (n=284) had depression. Among them 17.9% (n=61) had moderately severe to severe depression while 81.9% (n=223) had minimal to moderate depression. A statistically significant association was found between age and depression (p=0.01) also between gender and depression (p=0.02). Significance was determined at P<0.05.

CONCLUSION: we found a high prevalence of depression among patients with diabetes. The regular screening of depression among these patients is recommended.

Keywords: Comorbidity of depression with diabetes; depression; diabetes.

54. Tobacco use and associated factors among Rwandan youth aged 15-34 years: Findings from a nationwide survey, 2013

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ABSTRACT

INTRODUCTION: Use of tobacco and its products are the single most preventable cause of death in the world. The objective of this study was to determine the prevalence of current tobacco use and identify associated factors among Rwandans aged 15-34 years.

METHODS: This study involved secondary analysis of existing data from the nationally representative WHO STEPwise approach to Surveillance of non-communicable diseases (STEPS) conducted in 2013 to explore the prevalence of tobacco use and its associated factors in Rwanda. Data of 3,900 youth participants (15-34 years old) who had been selected using multistage cluster sampling during the survey was analyzed. The prevalence of current smoking along with socio-demographic characteristics of the sample were determined and multivariable logistic regression was employed to identify independent factors associated with current tobacco use.

RESULTS: The prevalence (weighted) of current tobacco use (all forms) was 8% (95%CI: 7.08-9.01). The prevalence was found to be significantly higher among males, young adults aged 24-

34, youth with primary school education or less, those from Southern province, people with income (work in public, private organizations and self-employed) and young married adults. However, geographical location i.e. urban (7%) and rural (8%) settings did not affect prevalence of tobacco use. Factors that were found to be associated with current tobacco use through the multivariate analysis included being male, aged 25 years and above, having an income, and residing in Eastern, Kigali City and Southern Province compared to Western province.

CONCLUSION: The association between smoking and socio-demographic characteristics among Rwandan youth identified in this study provides an opportunity for policy makers to tailor future tobacco control policies, and implement coordinated, high-impact interventions to prevent initiation of tobacco use among the youth.

55. Increasing cancer awareness and prevention in Africa

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ABSTRACT

Cancer awareness in the general population is an absolute essential and the basis on which a cancer-control programme can be constructed. Elements that go into cancer awareness and prevention efforts include knowledge of the problem and its solutions, a group of people who respect and care for the populations they want to serve, and resources. This paper discusses the importance of cancer awareness to cancer control and outlines some successful cancer awareness and control programmes in Africa. There is an audience in North America, Europe and Asia with resources that can be used. Awareness campaigns can also be used to recruit assistance and resources from governments, non-governmental organisations and pharmaceutical companies. Potential funders will provide support if they see a well-defined problem, a solution that is likely to be implemented and likely to work and organisations that can implement that solution.

Keywords: Africa; cancer awareness; cancer control; cancer control implementation; cancer prevention.

56. Kigali Car Free Day: An Innovative Model in the Fight against Non-Communicable Disease Pandemics

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ABSTRACT

Non-communicable diseases (NCDs) remain the leading cause of mortality worldwide and the burden is worsening especially in resource limited countries. Evidence has shown that physical exercise plays an integral role in preventing NCDs. In 2016, the government of Rwanda established a mass sport program in the capital city of Kigali entitled "Kigali Car Free Day" which offers an opportunity for Kigali residents to participate in physical exercise around the city on roads free of vehicles. The program also provides free screening of NCDs for residents. In this paper, we will describe the "Kigali Car Free Day" program and provide scientific insight on how the Car Free Day program in Rwanda can be potentially improved to benefit more people across the globe.

57. Cost of integrated chronic care for severe non-communicable diseases at district hospitals in rural Rwanda

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ABSTRACT

BACKGROUND: Integrated clinical strategies to address non-communicable disease (NCDs) in sub-Saharan Africa have largely been directed to prevention and treatment of common conditions at primary health centres. This study examines the cost of organising integrated nurse-driven, physician-supervised chronic care for more severe NCDs at an outpatient specialty clinic associated with a district hospital in rural Rwanda. Conditions addressed included type 1 and type 2 diabetes, chronic respiratory disease, heart failure and rheumatic heart disease.

METHODS: A retrospective costing analysis was conducted from the facility perspective using data from administrative sources and the electronic medical record systems of Butaro District Hospital in rural Rwanda. We determined initial start-up and annual operating financial cost of the Butaro district advanced NCD clinic for the fiscal year 2013-2014. Per-patient annual cost by disease category was determined.

RESULTS: A total of US$47 976 in fixed start-up costs was necessary to establish a new advanced NCD clinic serving a population of approximately 300 000 people (US$0.16 per capita). The additional annual operating cost for this clinic was US$68 975 (US$0.23 per capita) to manage a 632-patient cohort and provide training, supervision and mentorship to primary health centres. Labour comprised 54% of total cost, followed by medications at 17%. Diabetes mellitus had the highest annual cost per patient (US$151), followed by heart failure (US$104), driven primarily by medication therapy and laboratory testing.

CONCLUSIONS: This is the first study to evaluate the costs of integrated, decentralised chronic care for some severe NCDs in rural sub-Saharan Africa. The findings show that these services may be affordable to governments even in the most constrained health systems.

58. Dissemination and Implementation Program in Hypertension in Rwanda: Report on Initial Training and Evaluation

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ABSTRACT

BACKGROUND: Cardiovascular disease (CVD) is the leading cause of morbidity and mortality worldwide and in low- and middle-income countries, and hypertension (HTN) is a major risk factor for CVD. Although effective evidence-based interventions for control of HTN in high-income countries exist, implementation of these in low- and middle-income countries has been challenging due to limited capacity and infrastructure for late-phase translational research. In Rwanda, the 2015 STEPS NCD (STEPwise Approach to Surveillance of Noncommunicable Diseases) risk survey reported an overall prevalence of HTN of 15% (95% confidence interval [CI]: 13.8 to 16.3) for those ages 15 to 64 years; prevalence increased with increasing age to 39% (95% CI: 35.7 to 43.1) for those ages 55 to 64 years; CVD was the third most common cause of mortality (7%). Suboptimal infrastructure and capacity in Rwanda hinders research and community knowledge for HTN control.

OBJECTIVES: To address the issue of suboptimal capacity to implement evidence-based interventions in HTN, this project was designed with the following objectives: 1) to develop a regional needs assessment of infrastructure for dissemination and implementation (D & I) strategies for HTN-CVD control; 2) to develop HTN-CVD research capacity through creation of countrywide resources such as core research facilities and training in the fields of HTN-CVD, D & I, and biostatistics; and 3) to engage and train multiple stakeholders in D & I and HTN-CVD evidence-based interventions.

METHODS: A weeklong training program in HTN-CVD, biostatistics, and D & I was conducted in Rwanda in August 2018, and pre- and post-D & I training competency questionnaires were administered.

RESULTS: Questionnaire results show a statistically significant increase in D & I knowledge and skills as a result of training (full scale pre- to post-test scores: 2.12 ± 0.78 vs. 3.94 ± 0.42; $p < 0.0001$).

CONCLUSIONS: Using principles of community engagement and train-the-trainer methods, we will continue to adapt guidelines and treatments for HTN-CVD developed in high-income countries to the context of Rwanda with the goal of establishing a sustainable platform to address the burden of disease from HTN-CVD.

59. First Africa non-communicable disease research conference 2017: sharing evidence and identifying research priorities

Kenneth Juma,[1,2] Pamela A Juma,[1] Shukri F Mohamed,[1] Jared Owuor,[4,5,6] ,Ann Wanyoike,[3] David Mulabi,[5,6] George Odinya,[3] Maureen Njeru,[3], Gerald Yonga,[5,6,7], and on behalf of participants for the first Africa NCD research conference 2017 in Nairobi, Kenya

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ABSTRACT

Non-communicable diseases (NCDs) prevalence is rising fastest in lower income settings, and with more devastating outcomes compared to High Income Countries (HICs). While evidence is consistent on the growing health and economic consequences of NCDs in sub-Saharan Africa (SSA), specific efforts aimed at addressing NCD prevention and control remain less than optimum and country level progress of implementing evidence backed cost-effective NCD prevention approaches such as tobacco taxation and restrictions on marketing of unhealthy food and drinks is slow. Similarly, increasing interest to employ multi-sectoral approaches (MSA) in NCD prevention and policy is impeded by scarce knowledge on the mechanisms of MSA application in NCD prevention, their coordination, and potential successes in SSA. In recognition of the above gaps in NCD programming and interventions in Africa, the East Africa NCD alliance (EANCDA) in partnership with the African Population and Health Research Center (APHRC) organized a three-day NCDs conference in Nairobi. The conference entitled "First Africa Non-Communicable Disease Research Conference 2017: Sharing Evidence and Identifying Research Priorities" drew more than one hundred fifty participants and researchers from several institutions in Kenya, South Africa, Nigeria, Cameroon, Uganda, Tanzania, Rwanda, Burundi, Malawi, Belgium, USA and Canada. The sections that follow provide detailed overview of the conference, its objectives, a summary of the proceedings and recommendations on the African NCD research agenda to address NCD prevention efforts in Africa.

60. Prevalence of gestational diabetes mellitus among women attending antenatal care at public health centers in Rwanda

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ABSTRACT

AIM: This study aimed to determine the prevalence of gestational diabetes mellitus (GDM) among women attending public health centers in Rwanda using the World Health Organization (WHO) 2013 diagnostic criteria.

METHODS: A cross-sectional analysis was performed on 281 pregnant women attending antenatal care at urban and rural public health centers. Diagnostic testing was performed between 24 and 32 weeks gestation using a 75 g oral glucose tolerance test. Venous plasma glucose was centrifuged within one hour and measured at one of two laboratories. Descriptive statistics were used.

RESULTS: GDM prevalence was 3.2%, (4.28% urban and 2.13% rural). Women diagnosed with GDM were older, had higher BMI, hypertension, and glycosuria of ≥2+. None with HIV (14/281) had GDM. All women reported birth outcomes. All women with GDM (9/281) had normal glucose values postpartum and therefore it is unlikely that any women had overt diabetes.

CONCLUSION: This study adds important information about the GDM prevalence in Rwanda, which is a resource-limited country. Although the prevalence of 3.2% was low, significant risk factors for GDM were identified. We anticipate that the risk factors for developing GDM will increase in the near future, similar to the global trend of obesity and diabetes, necessitating continued research and education in this important condition that carries a double burden of disease to both mothers and infants.

61. Diabetes health education: nurses' knowledge of essential components at a Rwandan hospital

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ABSTRACT

BACKGROUND: Diabetes mellitus type 2 (T2DM) is the most prevalent form of diabetes that has continued to increase worldwide over the past decades. The cornerstone of T2DM management is education on self-management. Evidence shows that nurses have insufficient knowledge of the content of T2DM patient education.

OBJECTIVE: To assess nurses' knowledge of health education content for T2DM patients, and to establish the relationship between their education and knowledge level of T2DM health education.

METHODS: A descriptive cross-sectional design and total population sampling strategy were used to recruit nursing staff at a medical/surgical unit. Fifty-one nurses at the referral hospital of Rwanda completed the self-administered questionnaire. Descriptive statistics were used for data analysis.

RESULTS: Nurses exhibited poor knowledge of diabetes health education. There was no significant relationship between the nurses' level of education and diabetes health education knowledge (p=0.102).

CONCLUSION: Nurses had good general knowledge of diabetes, though a low level of knowledge of diabetes health education in this low-resource setting. Hospitals equipped with a T2DM protocol and appropriate staff training would likely improve the nurses' knowledge and patient care outcomes.

Keywords: Type 2 diabetes mellitus, nurses, knowledge, patients' self management education

62. Chronic Kidney Disease (CKD): knowledge of risk factors and preventive practices of CKD among students at a University in Rwanda

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ABSTRACT

BACKGROUND: Chronic Kidney Disease (CKD) is a global public health burden. Most people miss the early subtle signs that can develop at any age. CKD has severe complications, including End-stage renal disease.

OBJECTIVE: To assess the knowledge level of CKD risk factors and preventive practices among university students in Rwanda.

METHODS: A cross-sectional study design was used from April to May 2017. A stratified random sampling technique was used to recruit 260 university students. A 36-item questionnaire was selfadministered. Data were analyzed using descriptive and inferential statistics.

RESULTS: The mean age was 29 years and over half were female (53.4%). A great number (44%) had a low knowledge level of CKD and its risk factors, a third (34%) had moderate, and only (22%) had a high knowledge level of CKD risk factors. The majority (50.4%) had low level of preventive practices, nearly half (45%) had moderate and only (4.6%) had high level of preventive practice.

CONCLUSION: CKD knowledge and preventive practices in this study population were low. Knowledge gained and desire for healthy preventive practices may have been a benefit of the study. CKD educational programs should be further developed to prevent this significant problem affecting the Rwandese community.

Keywords: Chronic kidney disease, knowledge, preventive practices, university students

63. The Role of the Sports Policy in Promoting Sport for Health in Rwanda

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ABSTRACT

INTRODUCTION: Physical inactivity is one of the major risk factors of non-communicable diseases that is a threat to public health. While the health benefits of being physically active are

well acknowledged, policy strategies to promote health enhancing physical activity are still a challenge especially in Rwanda. This paper aimed to determine how the Rwanda sports policy influences promotion of sport for health.

METHODS: A qualitative exploratory case study was used to explore the Rwanda sports policy with particular interest on its responsiveness to promoting sport for health. A desktop policy review was done using two policy process models, followed by semi structured in-depth interviews with 13 key stakeholders of the sports policy.
RESULTS: The Rwanda sport policy as well as its stakeholders acknowledge the health benefits that are linked to sports participation. However, the policy lacks specific goals for promoting sport for health, as it largely focuses on professional sports.

CONCLUSION: There is a divergence between policy and practice as well as stakeholder's commitment with regard to the Rwanda sports policy in promoting sports for health. Thus, policy makers need to devise a strategic framework with specific objectives that emphasize promotion of physical activity/sports for health.

Key words: Sports policy, Physical activity, Health, Rwanda

64. Road map for leadership and management in public health: a case study on noncommunicable diseases program managers' training in Rwanda

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ABSTRACT

Ministries of Health (MoHs) and health organizations are compelled to work across sectors and build coalitions, strengthening health systems to abate the rise of noncommunicable diseases (NCDs). A critical element of NCD prevention and control involves significant and difficult changes in attitudes, policies and protective behavior at the population level. The population-level impact of NCD interventions depends on the strength of the health system that delivers them. In particular, low-resource settings are exploring efficiencies and linkages to existing systems or partnerships in ways that may alleviate redundancies and high delivery costs. These entail complex operational challenges, and can only be spearheaded by a competent and passionate workforce. There is a critical need to develop and strengthen the management and leadership skills of public health professionals so that they can take on the unique challenges of NCD prevention and control. An added component must include a shift from the traditional clinical approach to a community-based effort, focusing heavily on health education and community norm change. Strengthening the work-force capacity of program managers at MoHs and other

implementing institutions is key to capturing, analyzing, advocating and communicating information and will, in turn, reinforce the scale-up of interventions fostering a robust health system. This paper summarizes the best practices and lessons learned from the NCD Program Managers short course conducted by the US Centers for Disease Control and Prevention (CDC) in December, 2016 in Rwanda.

65. Understanding the Etiology of Heart Failure Among the Rural Poor in Sub-Saharan Africa: A 10-Year Experience from District Hospitals in Rwanda

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ABSTRACT

BACKGROUND: Heart failure is a significant cause of morbidity and mortality in sub-Saharan Africa. Our understanding of the heart failure burden in this region has been limited mainly to registries from urban referral centers. Starting in 2006, a nurse-driven strategy was initiated to provide echocardiography and decentralized heart failure care within noncommunicable disease (NCD) clinics in rural district hospitals in Rwanda.

METHODS AND RESULTS: We conducted a retrospective review of patients with cardiologist-confirmed heart failure treated at 3 district hospital NCD clinics in Rwanda from 2006 to 2017 to

determine patient clinical characteristics and disease distribution. Over 10 years, 719 patients with confirmed heart failure were identified. Median age was 27 years overall, and 42 years in adults. Thirty-six percent were children (age <18 years), 68% were female, and 78% of adults were farmers. At entry, 39% were in New York Heart Association functional class III-IV. Among children, congenital heart disease (52%) and rheumatic heart disease (36%) were most common. In adults, cardiomyopathy (40%), rheumatic heart disease (27%), and hypertensive heart disease (13%) were most common. No patients were diagnosed with ischemic cardiomyopathy.

CONCLUSIONS: The results of the largest single-country heart failure cohort from rural sub-Saharan Africa demonstrate a persistent burden of rheumatic disease and nonischemic cardiomyopathies.

Keywords: Cardiomyopathy; Epidemiology; Global health; Hypertensive heart disease; Rheumatic heart disease.

66. Prevention of Cervical Cancer in Sub-Saharan Africa: The Advantages and Challenges of HPV Vaccination

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ABSTRACT

Cervical cancer is a critical public health issue in sub-Saharan Africa (SSA), where it is the second leading cause of cancer among women and the leading cause of female cancer deaths. Incidence and mortality rates are substantially higher than in high-income countries with population-based screening programs, yet implementing screening programs in SSA has so far proven to be challenging due to financial, logistical, and sociocultural factors. Human Papillomavirus (HPV) vaccination is an effective approach for primary prevention of cervical cancer and presents an opportunity to reduce the burden from cervical cancer in SSA. With a number of SSA countries now eligible for Global Alliance for Vaccines and Immunization (GAVI) support for vaccine introduction, it is timely to consider the factors that impede and facilitate implementation of vaccine programs in SSA. This article describes epidemiological features of cervical cancer in SSA and the current status of HPV vaccine implementation in SSA countries. Rwanda's experience of achieving high vaccination coverage in their national HPV immunization program is used as a case study to explore effective approaches to the design and implementation of HPV vaccination programs in SSA. Key factors in Rwanda's successful implementation included government ownership and support for the program, school-based delivery, social mobilization, and strategies

for reaching out-of-school girls. These findings might usefully be applied to other SSA countries planning for HPV vaccination.

Keywords: HPV vaccination; cervical cancer; sub-Saharan Africa.

67. Cervical Cancer Prevention Knowledge and Attitudes: Survey of Midwives and Nurses in Rwanda

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ABSTRACT

OBJECTIVE: The plan for cervical cancer control in Rwanda includes expansion of cervical cancer screening via Visual Inspection with Acetic Acid (VIA) into all health clinics and District Hospitals. The initial step of cervical cancer screening is conducted by nurses and midwives within the context of routine health care visits, and positive cases are referred to colposcopy clinics. The aim of this study is to evaluate knowledge, awareness, attitudes and practices of midwives and nurses regarding cervical cancer prevention.

METHODS: A descriptive cross-sectional study was conducted among midwives and nurses working in four hospitals in Kigali City. The study included one tertiary hospital, Centre Hospitalier Universitaire de Kigali (CHUK), and three secondary level hospitals, Muhima, Kibagabaga and Masaka. During a 3-month period, from October 2016 to December 2016 self-administered questionnaires were distributed to nurses and midwives in the department of obstetrics and gynecology at each hospital. The questionnaire comprised 50 true or false questions. This study was conducted with an exhaustive approach. After filling in the hard copy, data entry was done using Epidata3.1 and was exported to SPSS 23 for statistical analysis.

RESULTS: A total number of 587 midwives and nurses were present at selected hospitals during the study period. Among them 527(89.7%)participated in the study and filled in the questionnaire completely. Most of midwives could identify symptoms and risk factors for cervical cancer, however some misidentified IUD (39.1%), poor personal hygiene (35.5%) and use of herbal remedies (19.5%) as risk factors for cervical cancer. Midwives and nurses working at CHUK had better knowledge of symptoms and risk factors of cervical cancer than those working in district hospitals. A quarter of respondents thought HPV vaccine was dangerous for a person's health. About 90% of midwives and nurses would recommend a screening program in their community

though only 32.9% of female respondents had ever been screened for cervical cancer themselves. However, there was no statistical difference in knowledge of preventive methods between screened participants and those who had not been screened.

CONCLUSION: This study showed good knowledge of symptoms and risk factors of cervical cancers in obstetric and gynecologic nurses and midwives at the hospitals studied. However, there are still many misconceptions about risk factors for cervical cancer. If midwives and nurses were sensitized and their knowledge improved, they could play a pivotal role in the fight against cervical cancer since they are the primary health care providers to most of Rwandan population.

Keywords: Acetic acid, Human papilloma virus, Intrauterine device, Human immunodeficiency virus, Lugol's iodine.

68. Non-communicable disease prevention policy process in five African countries

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ABSTRACT

BACKGROUND: The increasing burden of non-communicable diseases (NCDs) in sub-Saharan Africa is causing further burden to the health care systems that are least equipped to deal with the challenge. Countries are developing policies to address major NCD risk factors including tobacco use, unhealthy diets, harmful alcohol consumption and physical inactivity. This paper describes NCD prevention policy development process in five African countries (Kenya, South Africa, Cameroon, Nigeria, Malawi), including the extent to which WHO "best buy" interventions for NCD prevention have been implemented.

METHODS: The study applied a multiple case study design, with each country as a separate case study. Data were collected through document reviews and key informant interviews with national-level decision-makers in various sectors. Data were coded and analyzed thematically, guided by Walt and Gilson policy analysis framework that examines the context, content, processes and actors in policy development.

RESULTS: Country-level policy process has been relatively slow and uneven. Policy process for tobacco has moved faster, especially in South Africa but was delayed in others. Alcohol policy process has been slow in Nigeria and Malawi. Existing tobacco and alcohol policies address the WHO "best buy" interventions to some extent. Food-security and nutrition policies exist in almost all the countries, but the "best buy" interventions for unhealthy diet have not received adequate attention in all countries except South Africa. Physical activity policies are not well developed in any study countries. All have recently developed NCD strategic plans consistent with WHO global NCD Action Plan but these policies have not been adequately implemented due to inadequate political commitment, inadequate resources and technical capacity as well as industry influence.

CONCLUSION: NCD prevention policy process in many African countries has been influenced both by global and local factors. Countries have the will to develop NCD prevention policies but they face implementation gaps and need enhanced country-level commitment to support policy NCD prevention policy development for all risk factors and establish mechanisms to attain better policy outcomes while considering other local contextual factors that may influence policy implementation such as political support, resource allocation and availability of local data for monitoring impacts.

69. Establishing Cancer Treatment Programs in Resource-Limited Settings: Lessons Learned from Guatemala, Rwanda, and Vietnam

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ABSTRACT

PURPOSE: The global burden of cancer is slated to reach 21.4 million new cases in 2030 alone, and the majority of those cases occur in under-resourced settings. Formidable changes to health care delivery systems must occur to meet this demand. Although significant policy advances have been made and documented at the international level, less is known about the efforts to create national systems to combat cancer in such settings.

METHODS: With case reports and data from authors who are clinicians and policymakers in three financially constrained countries in different regions of the world-Guatemala, Rwanda, and Vietnam, we examined cancer care programs to identify principles that lead to robust care delivery platforms as well as challenges faced in each setting.

RESULTS: The findings demonstrate that successful programs derive from equitably constructed and durable interventions focused on advancement of local clinical capacity and the prioritization of geographic and financial accessibility. In addition, a committed local response to the increasing cancer burden facilitates engagement of partners who become vital catalysts for launching treatment cascades. Also, clinical education in each setting was buttressed by international expertise, which aided both professional development and retention of staff. CONCLUSION: All three countries demonstrate that excellent cancer care can and should be provided to all, including those who are impoverished or marginalized, without acceptance of a double standard. In this article, we call on governments and program leaders to report on successes and challenges in their own settings to allow for informed progression toward the 2025 global policy goals.

70. Current strategies are inadequate to curb the rise of tobacco use in Africa

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ABSTRACT

Recently, there have been significant advances in the battle against tobacco use in Africa, with achievements including ratification of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) and the passing of tobacco control legislation in several countries. Many African countries have achieved measured success, while Uganda, South Africa and Mauritius have accomplished significantly more in their efforts to curb tobacco use. Nevertheless, few African countries meet the standards of the individual WHO FCTC articles with regard to comprehensive implementation. Africa has lower rates of tobacco taxation, weaker smoke-free policies and fewer restrictions on tobacco advertising compared with other world regions. These shortcomings have enabled the tobacco industry to expand its markets on the continent by capitalising on economic growth, changing social norms and population demographics. Consequently, tobacco use is increasing in Africa, with smoking prevalence having risen 57% between 1990 and 2009 compared with western Europe, where it decreased substantially during the same period. Rapid smoking uptake in Africa has led to tobacco-related conditions emerging as increasingly important public health problems. African nations are unlikely to meet the 2025 goal of a 30% relative reduction in tobacco use, as advocated by the World Health Assembly in 2013 and identified as the 'most urgent and immediate priority' intervention to reduce non-communicable diseases (NCDs). While there has been some progress, the current commitment of most African countries to the WHO FCTC has not translated into effective delivery of tobacco control policies and programmes. Strong tobacco

control policies, which are among the most effective population-based strategies for NCD prevention, are needed. These include introducing higher tobacco excise taxes, stronger smoke-free policies, graphic warnings on cigarette packages, bans on tobacco advertising, promotion and sponsorship, and anti-smoking mass media campaigns. Furthermore, tobacco industry interference needs to be actively addressed by monitoring its activities and exposing misconducts, thereby changing attitudes to the industry. Technical support, capacity building and adequate financing are needed in Africa to enable countries to competently manage legal challenges to tobacco control and deal with the subversive tactics of the industry. Civil society and the media - major players in holding governments accountable for responsible stewardship - need to educate and pressurise African politicians and governments to implement and enforce effective tobacco control policies. Otherwise, if unchecked, the widespread uptake of tobacco use will be a threat not only to health but also to sustainable human development in Africa.

71. Chronic non-communicable diseases in low- and middle-income countries: concepts and strategies for prevention, control and advocacy

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ABSTRACT

Low- and middle-income countries (LMICs) of Africa, Asia and Latin America bear a significant proportion of the global burden of chronic non-communicable diseases (NCDs). LMICs are unable to respond appropriately to their NCD burden because of a complex blend of epidemiological, demographic, health systems, economic, political and structural challenges There is an urgent need for LMICs to develop practical, culturally appropriate and cost-effective NCD interventions that lower risk at population levels and reduce levels of morbidity and mortality among individuals living with the major NCDs. Countries that have developed practical and sustainable interventions, despite complex resource challenges, offer important models for others to follow. In this paper, we review the evidence on existing interventions, using the World Health Organization (WHO) health systems building blocks model as an analytical framework. We outline interventions that work at community and national levels in 33 countries. We identify three major cross-cutting challenges facing NCD care in these LMICs and consider how the challenges may be addressed drawing on existing best practice responses.

Keywords: Chronic non-communicable diseases, Low- and middle-income countries, Health systems, Prevention and control

72. Management of co-morbidity of depression and chronic non- communicable diseases in Rwanda

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ABSTRACT

BACKGROUND: Chronic non-communicable diseases (NCDs) are a major global health problem of the 21 stcentury. They are now the world's leading cause of disease burden and high mortality. An even more alarming health problem is when depression coexists with chronic NCDs, as is frequently the case. Management of this co-morbidity with collaborative care has become a global topic of interest, with the World Health Organization (WHO) recommending implementation of collaborative care for this purpose. The study investigated existing protocols and/or interventions for managing this co-morbidity in Rwandan district hospitals.

METHODS: The study used an action research design involving a research team of 14 health care professionals to collaboratively identify existing protocols or interventions for managing co-morbidity of depression and NCDs in Rwanda. Focus group discussion using a structured interview guide was used to collect qualitative data, followed by qualitative content analysis using inductive approach.

RESULTS: We found no particular protocols or interventions in place to manage the co-morbidity of depression and chronic NCDs. Depression and chronic NCDs were found to be treated separately, in separate health care settings and by different health professionals.

CONCLUSION: The findings revealed a gap in management of co-morbid depression and chronic NCDs in Rwanda district hospitals. We recommend that health care providers follow the WHO collaborative care advisory for better quality care and better patient improvement in management of this co-morbidity.

Keywords: Chronic NCDs; co-morbidity; depression; management**.**

73. Primary care in the prevention, treatment and control of cardiovascular disease in sub-Saharan Africa

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ABSTRACT

Cardiovascular disease (CVD) is the frontrunner in the disease spectrum of sub-Saharan Africa, with stroke and ischaemic heart disease ranked seventh and 14th as leading causes of death, respectively, on this sub-continent. Unfortunately, this region is also grappling with many communicable, maternal, neonatal and nutritional disorders. Limited resources and the high cost of CVD treatment necessitate that primary prevention should have a high priority for CVD control in sub-Saharan Africa. One major challenge of such an approach is how to equip primary care to respond promptly and effectively to this burden. We present a practical approach on how primary care in sub-Saharan Africa could effectively address the prevention, treatment and control of CVD on the subcontinent. For effective prevention, control and treatment of CVD in sub-Saharan Africa, there should be strategic plans to equip primary care clinics with well-trained allied healthcare workers who are supervised by physicians.

74. A population-based national estimate of the prevalence and risk factors associated with hypertension in Rwanda: implications for prevention and control

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ABSTRACT

BACKGROUND: Hypertension is a leading cause of cardiovascular diseases and a growing public health problem in many developed and developing countries. However, population-based data to inform policy development are scarce in Rwanda. This nationally representative study aimed to determine population-based estimates of the prevalence and risk factors associated with hypertension in Rwanda.

METHODS: We conducted secondary epidemiological analysis of data collected from a cross-sectional population-based study to assess the risk factors for NCDs using the WHO STEPwise approach to Surveillance of non-communicable diseases (STEPS). Adjusted odds ratios at 95% confidence interval were used to establish association between hypertension, socio-demographic characteristics and health risk behaviors.

RESULTS: Of the 7116 study participants, 62.8% were females and 38.2% were males. The mean age of study participants was 35.3 years (SD 12.5). The overall prevalence of hypertension was 15.3% (16.4% for males and 14.4% for females). Twenty two percent of hypertensive participants were previously diagnosed. A logistic regression model revealed that age (AOR: 8.02, 95% CI: 5.63-11.42, p < 0.001), living in semi-urban area (AOR: 1.30, 95% CI: 1.01-1.67, p = 0.040) alcohol consumption (AOR: 1.24, 95% CI: 1.05-1.44, p = 0.009) and, raised BMI (AOR: 3.93, 95% CI: 2.54-6.08, p < 0.001) were significantly associated with hypertension. The risk of having hypertension was 2 times higher among obese respondents (AOR: 3.93, 95% CI: 2.54-6.08, p-value < 0.001) compared to those with normal BMI (AOR: 1.74, 95% CI: 1.30-2.32, p-value < 0.001). Females (AOR: 0.75, 95% CI: 0.63-0.88, p < 0.001) and students (AOR: 0.45, 95% CI: 0.25-0.80, p = 0.007) were less likely to be hypertensive.

CONCLUSION: The findings of this study indicate that the prevalence of hypertension is high in Rwanda, suggesting the need for prevention and control interventions aimed at decreasing the incidence taking into consideration the risk factors documented in this and other similar studies.

Keywords: Epidemiology; Hypertension; Non-communicable diseases; Risk factors; Rwanda.

75. Effects of a lifestyle education program on glycemic control among patients with diabetes at Kigali University Hospital, Rwanda: A randomized controlled trial

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ABSTRACT

AIM: Evidence to show whether lifestyle intervention programs are beneficial for patients with diabetes in resource-limited countries is lacking. The present study assessed the additional efficacy of a structured lifestyle education program, as compared to the current standard of diabetic care in Rwanda.

METHODS: 251 consecutive adult patients attending a tertiary diabetic care practice were randomly assigned to either an intervention group (standard of care plus monthly lifestyle group education sessions of 45min duration) or to a control group. The primary outcome was between-groups difference in glycated hemoglobin (HbA1c) observed after 12-months follow up. Outcome measures in the intervention and control groups were compared using the ANCOVA test with a two-sided significance of 5%.

RESULTS: Of the 251 subjects recruited, 223 were included in the analysis; of whom 115 were assigned to the intervention group, and 108 to the control group. After 12-months, the median HbA1c levels reduced by 1.70 (95% CI: -2.09 to -1.31; p<0.001) in the intervention group; and by 0.52 (95% CI: -0.95 to -0.10; p=0.01) in the control group. The difference in HbA1c reduction between the intervention and control groups was statistically significant (p<0.001) after adjustment for subjects' age, sex, education level, BMI, diabetes duration and diabetic medications.

CONCLUSIONS: This study demonstrated that a structured lifestyle group education program for people with diabetes is an attractive option in a resource-limited setting, as it showed significant benefits in improved glycemic control over a 12-month period.

Trial registration: ClinicalTrials.gov: NCT02032108.

76. Overweight or obesity prevalence, trends and risk factors among women in Rwanda: A cross-sectional study using the Rwanda Demographic and Health Surveys, 2000–2010

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ABSTRACT

OBJECTIVES: Obesity has been a growing concern worldwide and in sub-Saharan Africa in particular. The objective of this study was to explore the prevalence of and secular trends in the rate of being overweight/obese in Rwandan women and the associated socio-demographic risk factors.

DESIGN: The study involved a secondary analysis of data from the Rwanda Demographic and Health Surveys (RDHSs) conducted in 2000, 2005 and 2010. These are countrywide, cross-sectional household studies conducted every five years. A stratified cluster sampling technique was used.

SETTING: A total of 10,421 women in 2000, 11,539 in 2005 and 12,540 in 2010 participated in the population based household surveys in Rwanda.

PRIMARY OUTCOME MEASURE: Participants whose body mass indexes were ≥25 kg/m2 were considered to be overweight/obese.

RESULTS: The prevalence of woman being overweight/obese increased from 13% in 2000 to 16.5% in 2010. The highest prevalence rates in 2010 were found in Kigali city (35%) and other urban areas (31.5%). Women with higher levels of education and from wealthier households were more likely to be overweight/obese. Using multivariable logistic regression analysis in the full model, the area of residence, wealth, religion and the number of household members were found to be significantly associated with being overweight/obese. In the adjusted model only the first three of these were still associated with a significantly increased risk.

CONCLUSION: Being overweight/obese is becoming more common in Rwandan women, especially in those living in urban areas who are wealthy. Being overweight/obese is also associated with being Protestant. The reasons for this association are likely to be complex and require further study. Health awareness campaigns should recognise the importance of over-nutrition, as well as under nutrition, and should promote healthy diets and the importance of physical activity.

77. Diabetes in Rural Rwanda: High Retention and Positive Outcomes after 24 Months of Follow-up in the Setting of Chronic Care Integration

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ABSTRACT

AIMS: This study describes the baseline characteristics and 24 month outcomes of diabetic patients managed in an integrated chronic care program at public facilities in rural Rwanda.

METHODS: Retrospective review of routine electronic medical records of patients treated for diabetes between October 1, 2006 and September 30, 2014 was conducted. Baseline demographic and clinical characteristics are described. Outcomes of HbA1c values, loss to follow-up and death are reported.

RESULTS: Of 544 patients enrolled, 305 (56.1%) were female and twenty-two (4.0%) were younger than 18 years. Of those with adequate documentation, 72.3% were subsistence farmers, 35.8% had baseline BMI ≥ 25, and 5.3% were current smokers. Median HbA1c was 10.3% (IQR: 8.3, 11.9) at baseline and 8.2% (IQR: 6.3, 10.1) at seven to 12 months of follow-up. For 394 patients with at least 24 months between enrollment and study period end, 66 (16.8%) were lost-to-follow-up, 12 (3.0%) died within the first 24 months and 316 (80.2%) were alive and in care.

CONCLUSIONS: Our findings indicate that diabetes can be effectively managed with reasonable outcomes in a rural resource-limited setting. We also found relatively low lifestyle risk factors and comorbidities among our patients compared with those in the United States and Europe.

78. HPV vaccine introduction in Rwanda: Impacts on the broader health system

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ABSTRACT

OBJECTIVES: Rwanda was the first country in Africa to introduce the human papillomavirus (HPV) vaccine. This was achieved through multi-year school-based campaigns. Our study evaluated the impact of the HPV vaccine introduction on the country's immunisation programme and health system.

METHODS: Thirty key informants were interviewed at national and district levels, and in participating schools. Twenty-seven health facilities completed a questionnaire exploring the effects of the new vaccine introduction on six health system building blocks, as defined by the World Health Organization. Routine service activity data were collected during a 90-day period around the introduction.

RESULTS: Routine vaccination activities were not disrupted during the delivery, likely due to a strong Expanded Program on Immunization, appropriate planning and a well-resourced operation. Opportunities were seized to co-deliver other interventions targeted at children and adolescents, such as health promotion. Collaboration with the Ministry of Education was strengthened at national level. Although there were some temporary increases in staff workload, no major negative effects were reported.

CONCLUSION: Despite its delivery through school-based campaigns, the HPV vaccine integrated well into the immunisation programme and health system. The introduction had no major negative effects. Some opportunities were seized to expand services and collaborations.

Keywords: Adolescent health; HPV; Health systems; Rwanda; Vaccination.

79. Help-seeking behaviours, barriers to care and self-efficacy for seeking mental health care: a population-based study in Rwanda

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ABSTRACT

PURPOSE: Mental disorders commonly affect young people but usually go unrecognized and untreated. This study aimed to investigate help-seeking behaviours, barriers to care and self-efficacy for seeking mental health care among young adults with current depression and/or suicidality in a low-income setting.

METHODS: This cross-sectional study used two sub-populations: a sub-sample of those suffering from current depression and/or suicidality (n = 247) and another of those not suffering from these conditions and not suffering from any other mental condition investigated (n = 502). Help-seeking behaviours, barriers to care and self-efficacy for mental health care seeking were measured among those suffering from current depression and/or suicidality (n, %). Logistic regression was used to identify risk factors for experiencing barriers to care. Self-efficacy for seeking mental health care was compared between men and women in the two sub-populations.

RESULTS: Of the 247 men and women with current depression and/or suicidality, 36.0 % sought help at a health care unit and 64.0 % from trusted people in the community. Only six people received help from a mental health professional. The identified barriers were mainly related to accessibility and acceptability of health services. For the population suffering from current depression and/or suicidality, the self-efficacy scale for seeking mental health care suggested a low confidence in accessing mental health care but a high confidence in respondents' ability to successfully communicate with health care staff and to cope with consequences of seeking care.

CONCLUSION: The current study clearly highlights young adults' poor access to mental health care services. To reach universal health coverage, substantial resources need to be allocated to mental health, coupled with initiatives to improve mental health literacy in the general population.

Keywords: Barriers to health care; Depression; Help seeking; Self-efficacy for seeking mental health care; Suicidality.

80. A national framework for breast cancer control: A report on Rwanda's inaugural symposium on the management of breast cancer

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ABSTRACT

Breast cancer (BC) is on the rise and is a leading cause of cancer-related mortality for women globally. A highly treatable and survivable cancer in high-income countries, outcomes for BC in low- and middle-income countries (LMICs) are extremely poor. These inequities are often due to resource limitations within the health care system. Recognizing the gaps in care, the ministry of health and health care providers in Rwanda formed multi-disciplinary, cross-institutional collaborations to strengthen the health care system for BC patients. They implemented Rwanda's inaugural symposium on the management of breast cancer. Training and education, care delivery, patient-centered care, research and technology were underlying themes, which arose from the conference and serve as a framework that is integral in improving clinical outcomes. The multi-disciplinary collaborations, framework that arose from the major themes, and potential solutions that were developed from the symposium may serve as a model for other LMICs as they start to develop their own breast cancer control programs.

81. Mitigation of non-communicable diseases in developing countries with community health workers

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ABSTRACT

Non-communicable diseases (NCDs) are rapidly becoming priorities in developing countries. While developed countries are more prepared in terms of skilled human resources for NCD management, developing the required human resources is still a challenge in developing countries. In this context, mobilizing community health workers (CHWs) for control of NCDs seems promising. With proper training, supervision and logistical support, CHWs can participate in the detection and treatment of hypertension, diabetes, and other priority chronic diseases. Furthermore, advice and support that CHWs can provide about diet, physical activity, and other healthy lifestyle habits (such as avoidance of smoking and excessive alcohol intake) have the

potential for contributing importantly to NCD programs. This paper explores the possibility of involving CHWs in developing countries for addressing NCDs.

82. The knowledge and practice of self-care management among patients attending a diabetes clinic in Kigali, Rwanda

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ABSTRACT

BACKGROUND: Self-care management in diabetic patients is crucial to control and prevent associated complications. Diabetes complications are still highly prevalent and are mostly attributed to the lack of self-care knowledge and practices.

METHODS: A descriptive cross-sectional design approach explored self-care knowledge and practice among 80 participants attending a diabetes clinic in Kigali in 2011. Data were collected using a self-administered questionnaire that assessed 4 levels of diabetes self-care knowledge and practices which are respectively diet, blood glucose monitoring, physical activities and foot care.

RESULTS: Participants had a self-care knowledge gap in some areas of diabetes self-management. As many as 54.9% (n=44) of participants did not know the frequency of blood sugar testing; 63.7% (n=51) did not know the importance of snack/meal before exercising and 70% (n=56) among them were not taking a snack/meal before exercising. The participants experienced some complications: feet problems 88.7% (n=71); retinopathy 15% (n=12); hypertension 23.7% (n=19) and kidney diseases 8.7% (n=7).

CONCLUSION: There were self-care knowledge and practice gaps in some areas of diabetes self-care management. Health care providers, particularly nurses should play a key role in providing with accurate information on diabetes self-care.

Key words: Diabetes, Self-care knowledge, self-care management

83. Mobile Health Approaches to Non-Communicable Diseases in Rwanda

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ABSTRACT

Rwanda is affected by a substantial dual burden of a rapid epidemiological rise in non-communicable diseases (NCDs) against the backdrop of high infectious disease rates. The Global Burden of Disease study showed that premature deaths due to NCDs such as diabetes and hypertension are increasing, accounting for 30% of all deaths in Rwanda in 2010. The usefulness of mHealth interventions has been shown for reducing adverse effects of diabetes and hypertension. Because Rwanda RapidSMS system is already successfully operating in maternal, neonatal and child health, it would be cost-effective to leverage this infrastructure and adapt it for the NCD domain. However, rigorous evaluations of the efficacy of mHealth intervention in the area of NCDs are limited. Hence, developing a robust mHealth intervention study is urgent through a contextual combination of quantitative and qualitative study designs.This paper highlights the significance of the problem of NCDs, usefulness of mHealth interventions for stemming diabetes and hypertension, and an urgent need for research on using mHealth interventions for prevention of NCDs in Rwanda. Carefully conducted research on the efficacy and effectiveness of mHealth intervention will have ramifications for the evidence based policy, decision making, practice and research in other LMICs.

Keywords: NCDs, Diabetes, Hypertension, mHealth intervention, Africa, Rwanda

84. Prevalence and risk factors for cervical cancer and pre-cancerous lesions in Rwanda

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ABSTRACT

INTRODUCTION: Cervical cancer prevalence in Rwanda has not been well-described. Visual inspection with acetic acid or Lugol solution has been shown to be effective for cervical cancer screening in low resource settings. The aim of the study is to understand the prevalence and risk factors for cervical cancer and pre- cancerous lesions among Rwandan women between 30 and 50 old undergoing screening.

METHODS: This cross-sectional analytical study was done in 3 districts of Rwanda from October 2010 to June 2013. Women aged 30 to 50 years screened for cervical cancer by trained doctors, nurses and midwives. Prevalence of pre-cancerous and cancerous cervical lesions was determined. Bivariate and multivariate logistic regressions were used to assess risk factors associated with cervical cancer.

RESULTS: The prevalence of pre-cancer and invasive cervical cancer was 5.9% (95% CI 4.5, 7.5) and 1.7% (95% CI 0.9, 2.5), respectively. Risk factors associated with cervical cancer in multivariate analysis included initiation of sexual activity at less than 20 years (OR=1.75; 95% CI=(1.01, 3.03); being unmarried (single, divorced and widowed) (OR=3.29; 95% CI=(1.26, 8.60)); Older age of participants (OR= 0.52; 95% CI= (0.28, 0.97)), older age at the first pregnancy (OR=2.10; 95% CI=(1.20, 3.67) and higher number of children born (OR=0.42; 95%CI =(0.23, 0.76)) were protective.

CONCLUSION: Cervical cancer continues to be a public health problem in Rwanda, but screening using VIA is practical and feasible even in rural settings.

Keywords: Rwanda; VIA; cervical cancer; screening.

85. Noncommunicable Diseases In East Africa: Assessing The Gaps In Care And Identifying Opportunities For Improvement

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ABSTRACT

The prevalence of noncommunicable diseases in East Africa is rising rapidly. Although the epidemiologic, demographic, and nutritional transitions are well under way in low-income countries, investment and attention in these countries remain focused largely on communicable diseases. We discuss existing infrastructure in communicable disease management as well as linkages between noncommunicable and communicable diseases in East Africa. We describe gaps in noncommunicable disease management within the health systems in this region. We also discuss deficiencies in addressing noncommunicable diseases from basic science research and medical training to health services delivery, public health initiatives, and access to essential medications in East Africa. Finally, we highlight the role of collaboration among East African governments and civil society in addressing noncommunicable diseases, and we advocate for a robust primary health care system that focuses on the social determinants of health.

Keywords: Chronic Care; Determinants Of Health; Disparities; Health Promotion/Disease Prevention; International/global health studies

86. Employees' modifiable risk factors for cardiovascular disease: the case of an African University

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African Journal for Physical Health Education, Recreation and Dance. 2015 Sep 1;21(3.2):905-12.

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ABSTRACT

The importance of determining the prevalence of modifiable health risk behaviours among specific populations for effective preventive and therapeutic measures has been emphasized in literature. Worksites have been identified as strategic locations for the delivery of interventions to decrease the prevalence of chronic diseases of lifestyle among adult populations. The aim of this study was to determine the prevalence of modifiable risks factors for cardiovascular diseases of employees at an urban university in Kigali, Rwanda. Physical activity levels were assessed by the International Physical Activity Questionnaire (IPAQ). Body mass index was computed from weight

and height measurements. Blood pressure readings were taken and hypertension for the study was defined as ≥140/90 for systolic and diastolic respectively. A total of 36 participants were classified as being hypertensive. Both systolic blood pressure ($r=0.627$; $p<0.05$) and diastolic blood pressure ($r=0.598$; $p<0.05$) significantly correlates with age. A total of 41% of the participants were classified as either overweight or obese and 28% as physically inactive. Factors found to be significantly associated with hypertension was current smoking, current alcohol use, self-reported diabetes mellitus, physical inactivity and overweight and obesity. This study confirms the high prevalence of modifiable risk factors for cardiovascular diseases among adults employed at an urban university in Kigaili, Rwanda. These findings further highlight the need for health promoting initiatives at the work place and specifically the benefits of such initiatives at institutions of higher education.

87. Capacity building for oncology programmes in sub-Saharan Africa: the Rwanda experience

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ABSTRACT

Despite an estimated 456,000 deaths caused by cancer in sub-Saharan Africa in 2012 and a cancer burden that is predicted to double by 2030, the region accounts for only 0·3% of worldwide medical expenditure for cancer. Challenges to cancer care in sub-Saharan Africa include a shortage of clinicians and training programmes, weak healthcare infrastructure, and inadequate supplies. Since 2011, Rwanda has developed a national cancer programme by designing comprehensive, integrated frameworks of care, building local human resource capacity through partnerships, and delivering equitable, rights-based care. In the 2 years since the inauguration of Rwanda's first cancer centre, more than 2500 patients have been enrolled, including patients from every district in Rwanda. Based on Rwanda's national cancer programme development, we suggest principles that could guide other nations in the development of similar cancer programmes.

88. A Systematic Review of Tobacco Smoking Prevalence and Description of Tobacco Control Strategies in Sub-Saharan African Countries; 2007 to 2014

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ABSTRACT

OBJECTIVE: To systematically review current smoking prevalence among adults in sub-Saharan Africa from 2007 to May 2014 and to describe the context of tobacco control strategies in these countries.

DATA SOURCES: Five databases, Medline, Embase, Africa-wide Information, Cinahl Plus, and Global Health were searched using a systematic search strategy. There were no language restrictions.

STUDY SELECTION: 26 included studies measured current smoking prevalence in nationally representative adult populations in sub-Saharan African countries.

DATA EXTRACTION: Study details were independently extracted using a standard datasheet. Data on tobacco control policies, taxation and trends in prices were obtained from the Implementation Database of the WHO FCTC website.

RESULTS: Studies represented 13 countries. Current smoking prevalence varied widely ranging from 1.8% in Zambia to 25.8% in Sierra Leone. The prevalence of smoking was consistently lower in women compared to men with the widest gender difference observed in Malawi (men 25.9%, women 2.9%). Rwanda had the highest prevalence of women smokers (12.6%) and Ghana had the lowest (0.2%). Rural, urban patterns were inconsistent. Most countries have implemented demand-reduction measures including bans on advertising, and taxation rates but to different extents.

CONCLUSION: Smoking prevalence varied widely across sub-Saharan Africa, even between similar country regions, but was always higher in men. High smoking rates were observed among countries in the eastern and southern regions of Africa, mainly among men in Ethiopia, Malawi, Rwanda, and Zambia and women in Rwanda and rural Zambia. Effective action to reduce smoking across sub-Saharan Africa, particularly targeting population groups at increased risk remains a pressing public health priority.

89. Traumatic episodes and mental health effects in young men and women in Rwanda, 17 years after the genocide

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ABSTRACT

OBJECTIVES: To investigate mental health effects associated with exposure to trauma in Rwanda during the 1994 genocide period, and over the lifetime, in Rwandan men and women aged 20-35 years.

SETTING: This was a cross-sectional population-based study conducted in the southern province of Rwanda. Data was collected during December 2011 to January 2012.

PARTICIPANTS: A total population of 917 individuals were included, 440 (48%) men and 477 (52%) women aged 20-35 years. Number of households for inclusion in each village was selected proportional to the total number of households in each selected village. The response rate was 99.8%. Face-to-face interviewing was done by experienced and trained clinical psychologists, following a structured questionnaire.

RESULTS: Women were slightly less exposed during the genocide period (women 35.4% and men 37.5%; p=0.537), but more women than men were exposed to traumatic episodes over their lifetime (women 83.6%, n=399; men 73.4%, n=323; p<0.001). Current major depressive episodes (MDE) were twice as prevalent in women as in men. Traumatic episodes experienced in the genocide period severely affected men's current mental health status with relative risk (RR) 3.02 (95% CI 1.59 to 5.37) for MDE past and with RR 2.15 (95% CI 1.21 to 3.64) for suicidality. Women's mental health was also affected by trauma experienced in the genocide period but to an even higher extent, by similar trauma experienced in the lifetime with RR 1.91 (95% CI 1.03 to 3.22) for suicidality and RR 1.90 (95% CI 1.34 to 2.42) for generalised anxiety disorder, taking spousal physical/sexual violence into consideration.

CONCLUSIONS: Depression, post-traumatic stress disorder, anxiety and suicidal attempts are prevalent in Rwanda, with rates twice as high in women compared with men. For women, exposure to physical and sexual abuse was independently associated with all these disorders. Early detection of gender-based violence through homes and community interventions is important.

90. Bringing cancer care to the poor: experiences from Rwanda

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ABSTRACT

The knowledge and tools to cure many cancer patients exist in developed countries but are unavailable to many who live in the developing world, resulting in unnecessary loss of life. Bringing cancer care to the poor, particularly to low-income countries, is a great challenge, but it is one that we believe can be met through partnerships, careful planning and a set of guiding principles. Alongside vaccinations, screening and other cancer-prevention efforts, treatment must be a central component of any cancer programme from the start. It is also critical that these programmes include implementation research to determine programmatic efficacy, where gaps in care still exist and where improvements can be made. This article discusses these issues using the example of Rwanda's expanding national cancer programme.

91. Cervical cancer in developing countries: effective screening and preventive strategies with an application in Rwanda

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ABSTRACT

In this article we explore literature regarding cervical cancer screening methods available in developing countries. Cervical cancer is a preventable and curable disease, but it continues to threaten the lives of many women. Eighty-five percent of cases and the majority of deaths occur in developing countries. Cytology via Papinicolaou (Pap) smear is not generally a suitable method of screening in low-resource regions. Alternative methods include visual inspection by acetic acid (VIA), human papillomavirus-deoxyribonucleic acid (HPV-DNA), and careHPV-DNA. Education is needed for health care providers and women about preventive immunization and screening. A Rwandan project is described to demonstrate effective program planning and implementation.

92. Communities' knowledge and perceptions of type two diabetes mellitus in Rwanda: a questionnaire survey

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ABSTRACT

AIMS AND OBJECTIVES: To explore the level of knowledge and perceptions of T2DM among people in the Rwamagana district.

BACKGROUND: Diabetes is one of the leading causes of death in the world. Knowledge of type 2 diabetes mellitus (T2DM) can assist in early detection of the disease and reduce the incidence of complications. Therefore, a descriptive study was conducted to determine the level of knowledge and perceptions of T2DM among people in the Rwamagana district, Rwanda.

DESIGN: The study used a cluster multistage sampling technique to obtain a representative sample. The clusters were provinces, districts, sectors, household clusters and sample units selection. The Kigabiro sector was studied, and a sample size of 355 respondents was calculated using Raosoft Sample Size Calculator (Raosoft, Inc 2004, http://www.raosoft.com/samplesize.html).

METHODS: A descriptive method, using questionnaires, was used for data collection. Data were analysed using descriptive statistics, contingency tables and chi-square test. The target population comprised 4556 people (women and men aged between 15-65 years) living in a sampled sector of Kigabiro.

RESULTS: The level of knowledge of respondents was inadequate. Few respondents got a high score on questions intended to explore the knowledge of definition, signs, causes and risk factors of diabetes.

CONCLUSION: The perceptions were also poor and inadequate. The recommendations focused on education campaigns by the Kigabiro sector authorities.

RELEVANCE TO CLINICAL PRACTICE: If people are knowledgeable on managing long-term conditions such as diabetes, there will be less expenditure on curative care. The healthcare services will have fewer burdens, and the focus will be on specific and relevant ailments.

Keywords: Rwanda; communities' knowledge; diabetes mellitus; knowledge of type 2 diabetes mellitus; perception of diabetes

27 citations

(Sorted by Partner State)

South Sudan

1. Cervical Cancer Screening in Resource-Poor Settings of South Sudan: Access, Coverage, Associated Factors and Health System Interventions

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ABSTRACT

BACKGROUND: The burden of cervical cancer remains a major challenge, particularly in resource-poor regions like South Sudan, where access to preventive measures is limited. Despite the availability of modern therapy options, the associated side effects are life threatening and do not significantly prolong disease-free survival. Therefore, prevention through screening is crucial, especially for adult women. A lack of screening puts women at risk of advanced cervical cancer, which is alarming in South Sudan and accounts for up to 12% of the disease burden in women. This underscores the need to assess the extent of access, coverage, correlated factors, and health system interventions for cervical cancer screening in South Sudan. Therefore, this study aimed to examine the above factors to understand cervical cancer screening better and to identify effective interventions to increase coverage in under resourced settings.

METHOD: The study design was a community-based cross-sectional survey that aimed to assess cervical cancer screening behaviour among women of reproductive age in five counties of South Sudan. The study population included women aged between 26 and 65 years, with a sample size of 575. The sampling process took place in four stages, with a simple random sample conducted in each stratum, targeting half of the Payams in each county. Structured interviews were used to collect primary data, and in-depth and key informant interviews were conducted to collect qualitative data. Data were analysed using descriptive statistics and log-binomial regression models. The study area comprised Torit, Magwi, Terekeka, Raja, and Aweil North counties, with Torit located in the Eastern Equatoria state. The study targeted women of reproductive age as they are at risk of HPV infection. The study was community-based to prevent bias that might result from sampling women from healthcare settings. The study findings are expected to inform policy and practice to improve cervical cancer screening behaviour in South Sudan.

RESULTS: The study found that only 11.5% of women in South Sudan had been screened for cervical cancer. Factors associated with cervical cancer screening rates included belief that screening should occur by age 18 (aPR=2.83 [CI=1.50-5.34]), belief that cervical cancer is a curse from God (aPR=2.83 [CI=1.35-5.96]), belief that screening is accurate (aPR=1.86 [CI=1.02-3.39]) and women who reported shorter waiting times for medical services (aPR=3.47 [CI=1.69-7.14]), received HPV vaccination (aPR=4.71 [CI=3.04-7.31]), kind and caring health workers (aPR=3.35 [CI=1.47-7.63]), and integrated cervical screening facilities (aPR=2.28 [CI=1.45-3.60]) had higher

screening rates. However, the study found little evidence of community or institutional interventions aimed at increasing cervical cancer screening rates.

CONCLUSION: Based on the findings, cervical cancer screening coverage for women in South Sudan is very low, at only 11.5%. However, certain factors were found to be associated with higher screening prevalence, including beliefs that women should be screened for cervical cancer by age 18, that cervical cancer is a curse of God, and that screening can be done accurately. Additionally, having received the HPV vaccine was strongly associated with higher screening rates. Other factors such as shorter wait times, caring and kind health workers, and integrated screening facilities were also associated with higher screening prevalence. It is concerning that there were virtually no interventions at the community and institutional level to increase screening rates. These findings suggest the need for targeted interventions aimed at increasing awareness, addressing cultural beliefs and misconceptions, improving access to screening services, and strengthening health systems to increase cervical cancer screening coverage in South Sudan

Keywords: Cervical Cancer Screening, Access, Coverage, Associated Factors, Health System Interventions, South Sudan

2. Assessment of the WHO non-communicable diseases kit for humanitarian emergencies in South Sudan: a retrospective, prospective, observational study

Ahmad Hecham Alani [1 2], Laura Miller [3], Bhavika Darji [3], Isaac Waweru [4], Aston Benjamin Atwiine [5], Marcello Tonelli [6], Joseph Lou Kenyi Mogga [7], Ali Adams [8], Lilian Ndinda [8], Said Jongo [8], Lilian Kiapi [9]

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ABSTRACT

BACKGROUND: The WHO Non-Communicable Diseases Kit (NCDK) was developed to support care for non-communicable diseases (NCDs) in humanitarian settings. Targeting primary healthcare, each kit contains medicines and supplies that are forecasted to meet the needs of 10,000 people for 3 months. This study aimed to evaluate the NCDK deployment process, contents, usage, and limitations, and to explore its acceptability and effectiveness among healthcare workers (HCWs) in South Sudan.

METHODS: This mixed-method observational study captured data from pre-and-post NCDK deployment. Six data collection tools included: (i) contextual analysis, (ii) semi-structured interviews, in addition to surveys measuring/assessing (iii) healthcare workers' knowledge about NCDs, and healthcare workers' perceptions of: (iv) health facility infrastructure, (v) pharmaceutical supply chain, and (vi) NCDK content. The pre- and post-deployment evaluations were conducted in four facilities (October-2019) and three facilities (April-2021), respectively. Descriptive statistics were used for quantitative data and content analysis for open-ended questions. A thematic analysis was applied on interviews findings and further categorized into four predetermined themes.

RESULTS: Compared to baseline, two of the re-assessed facilities had improved service availability for NCDs. Respondents described NCDs as a growing problem that is not addressed at a national level. After deployment, the same struggles were intensified with the COVID-19 pandemic. The delivery process was slow and faced delays associated with several barriers. After deployment, poor communications and the "push system" of inventories were commonly perceived by stakeholders, leading to expiry/disposal of some contents. Despite being out-of-stock at baseline, at least 55% of medicines were found to be unused post-deployment and the knowledge surveys demonstrated a need for improving HCWs knowledge of NCDs.

CONCLUSIONS: This assessment further confirmed the NCDK role in maintaining continuity of care on a short-term period. However, its effectiveness was dependent on the health system supply chain in place and the capacity of facilities to manage and treat NCDs. Availability of medicines from alternative sources made some of the NCDK medicines redundant or unnecessary for some health facilities. Several learnings were identified in this assessment, highlighting barriers that contributed to the kit underutilization.

Keywords: Conflict; Emergency kits; Humanitarian settings; Noncommunicable diseases; South Sudan.

3. Prostate cancer in patients with suspected benign prostate hypertrophy in Juba, South Sudan: A retrospective study

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ABSTRACT

INTRODUCTION: Prostate cancer carries a high morbidity and mortality especially when not diagnosed early. Patients in resource limited countries tend to be diagnosed late and hence delayed surgery for benign prostate hypertrophy (BPH).

Method: This was a retrospective study, from 1st January 2019 to 31st December 2020, on patients who underwent prostatectomy. Demographic and clinical data were extracted from their medical records.

RESULTS: This study involved 101 patients who had had simple open prostatectomy. Ages ranged from 49 to 98 years, mean 68 +/- 8.98 years. The largest group (37.6%) was aged 71- 80 years, p=0.001. Two thirds (66%), presented with urinary retention, p=0.03. Histopathological examination showed that 49.5% had BPH. Prostate cancer was found in 28.8%, p=0.082. Almost half (49.5%) were diagnosed histopathologically as having BPH. Prostate cancer made up 28.8% with most patients in the age range 61-80 years, p= 0.456.

CONCLUSION: The prevalence of prostate cancer remains high among patients undergoing prostatectomy for suspected BPH. A national awareness campaign coupled with targeted screening of patients above 40 years could increase early detection of prostate cancer and reduce morbidity and mortality.

Keywords: Benign prostate hypertrophy, histopathology, prostate cancer, Juba Teaching Hospital

4. Glycaemic control and associated factors in adult patients with diabetes mellitus, South Sudan, 2021

Joseph Lou K. Mogga [1, 2], Stephen Loro [2], Stephen Gai [2], Moses Anyit [2], Robert Awu [2], Shaza Hadija [2], Jorum Aliti [2], Lawrence Biriwo [2] and David Ameh [2]

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ABSTRACT

INTRODUCTION: Many patients with diabetes mellitus are not attaining optimal glycaemic control, although the rate is unknown in South Sudan. Maintaining adequate glycaemic control is the most effective means of preventing complications associated with diabetes. This record review assesses the proportion of patients with diabetes on follow-up not adequately controlled using glycated haemoglobin (HbA1c) and describes associated factors.

METHOD: This is retrospective cross-sectional review of electronic patient records from a private for-profit health facility in Juba, South Sudan. The study assesses follow-up HbA1c levels of type I (T1DM) and type II (T2DM) patients with diabetes 18 years and older. An HbA1c value of less

than 7% was regarded as reflecting adequate control. Logistic regression was used to assess factors associated with inadequate control. From an unadjusted analysis, variables were retained for the adjusted analysis that were significant at the 95% confidence level. Crude and adjusted odds ratios (AOR) were reported.

RESULTS: Of the 291 patients assessed, 62.2% were male, mean age was 54 (SD =12.6) years, and the median body mass index (BMI) was 27.2 (IQR=24.5-30). Those with hypertension were 28.5% and 35% had medical insurance. Overall, 60 patients (20.6%) achieved target HbA1c levels of <7%. One hundred patients had HbA1c levels between 7-10% and 131 had values of >10%. Independent predictors of non-achievement of target HbA1c were female gender, adjusted prevalence ratio, PR (95% CI) =1.18 (1.01-1.32); normal BMI, adjusted PR (95% CI) =1.41 (1.07-1.83) and having no medical insurance cover, adjusted PR (95%CI) =1.13 (1.10-1.29).

CONCLUSION: About 80% of patients did not attain target HbA1c levels. Diagnosis of diabetes, care, and treatment of patients with diabetes is not well organised in South Sudan leading to poor outcomes even in private clinics. Women and those without medical insurance cover are at greater disadvantage. We recommend better diagnosis and classification of patients with diabetes as well as reorganisation of care and treatment. We also recommend initiatives that will increase coverage of services to women and putting more people on medical insurance cover.

Key Words: glycated haemoglobin, diabetes, South Sudan

5. The prevalence of road traffic accidents in Juba City, 2018, South Sudan

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ABSTRACT

BACKGROUND: Road traffic accidents remains as one of the leading causes of death and life-long disability worldwide.

OBJECTIVES: This study aimed to determine the prevalence and associated risk factors for road traffic accidents in Juba, South Sudan.

Methods and materials: This are a retrospective study using data from registers at Juba Teaching Hospital and Directorate of Traffic police between 1st January to 31st December 2018. Data were collected, cleaned, and entered into a computer database. Statistical analysis was performed

using SPSS Version 21 Software. A variable with a p value of <0.05 was considered statistically significant.

RESULTS: Out of 7862 patients were recorded in the OPD at Juba Teaching Hospital (JTH), 7.3 % (575/7862) were road traffic accident (RTA) cases. This is at rate of 7313 per 100,000 of the population. Of all the 575 cases of RTA in JTH, 82% (472/575) were males and 18% (103/575) females with age ranging from 9 months to 97yrs and a mean age of 26.9yrs, SD+/-12.53. Most of the patients 37 % (214/575) were of age group 31-40years, with majority 36% (207/575) coming from an unidentified location. Munuki block had the highest 25.2% (145/575) within Juba city council, while areas outside Juba city council had the least 7.5% (43/575).

Interestingly most of the patients 44 % (253/575) presented to the OPD at night, while 19 % (111/575) presented in the morning. Most 20 % (113/575) presented to the OPD in May 4 % (23/575). There were no cases in June. Out of 1081 drivers involved in RTA, age group 31-40yrs (37%), 21-30yrs (37%), 21-30yrs (36%), 31-40yrs (42%) and 31-40yrs (31%) had an outcome of car accidents causing death, severe injuries, slight injuries, damage and influenced by alcohol respectively with p=0.015. It was noted that 81% (926/1141) drivers had driving licenses, while 19% (215/1141) driving without licenses. Private cars were associated with the highest outcome;56% causing death, 50% causing slight injuries and 42% causing severe injuries with p=0.01. Unfortunately, 82% of drivers driving under alcohol influence were drivers driving private cars as the highest with p=0.000. Out of the 1472 cars registered, majority were private cars 38% (27/71), 36% (134/373), 47% (222/475) and100% (11/11) were involved in accidents causing death, severe injuries, damage to property and driven under influence of alcohol respectively with p=0.003. Motorcycles reminded leading cause of slight injuries, 39 % (214/542) but also the second leading in causing severe injury 35 % (190/542) as well as damage to property 20 % (96/475). Most of the cars 22% (13/58) caused accidents resulting to death as well as slight injuries 16.8% (67/404) in March; severe injuries 13.3% (39/291) seen in November, whereas damage to the property 13.6% (40/296) in February. Accidents due alcohol intoxication 50% (16/32) were seen in January but p=0.58.

CONCLUSION: Road traffic accidents still remain a public health problem in Juba with younger age drivers involved in accidents.

Keywords: Road traffic accidents; Juba teaching hospital; Directorate of traffic police; South Sudan

6. Musculoskeletal Injuries at the Chinese Peacekeeping Level II Hospital in Wau, South Sudan, 2018-2022

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Military Medicine, 188 (7-8), 2023, p e1869–e1873, https://doi.org/10.1093/milmed/usad032

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ABSTRACT

INTRODUCTION: Musculoskeletal injuries (MSIs) are common among U.N. military personnel and cause a substantial toll, but little is known about the actual risks and changes of MSIs. The Chinese level II hospital (CHN L2H) was the highest-level hospital in the Western Sector of the U.N. Mission in South Sudan (UNMISS). This study reviewed and analysed the MSIs managed by the CHN L2H in UNMISS.

METHODS: Medical records of MSIs in CHN L2H from September 2018 to July 2022 were identified. We analysed all the MSIs and treatment procedures.

RESULTS: A total of 857 patients from more than 40 countries were included (86.8% men, average age of 37.83 years), consisting of 457 troop-contributing country, 231 U.N. local, and 169 U.N. international personnel. The most common injury was lumbar muscle strain (14.2%). Sports-related mechanism (29.2%) was the most frequent cause of MSIs. The most significant proportions of anatomical regions were the lumbar spine (22.52%), hand (13.77%), and foot (10.97%). No-steroid anti-inflammatory drugs (43.99%), physical therapy (20.54%), and immobilization (11.32%) were the most used treatments.

CONCLUSIONS: MSIs are common diseases in the CHN L2H in the Western Sector of UNMISS. The universality and complexity of MSIs demonstrate the urgent need to improve prevention, treatment, and rehabilitation.

Keywords: Musculoskeletal Injuries, Chinese Peacekeeping Level II Hospital, Wau, South Sudan

7. Analysis of HIV-1 integrase genotypes and polymorphisms among integrase inhibitors-based antiretroviral treatment naïve patients in South Sudan

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ABSTRACT

HIV-1 genetic diversity and drug resistance mutations remain public health challenges especially in regions where treatment is limited. The aim of this study was to characterize the HIV-1 integrase (IN) subtype and the possible occurrence of drug-resistance mutations or polymorphisms in resource-poor settings in South Sudan. Dried blood spots from integrase inhibitor treatment (Integrase strand transfer inhibitor [INSTI]) naïve HIV-1 infected patients were subjected to DNA amplification and direct sequencing of integrase genes. The sequences were interpreted for drug resistance according to the Stanford algorithm and the International AIDS Society-USA guidelines. Phylogenetic analysis revealed that HIV-1 subtype D, C, G, A1, and recombinant forms accounted for 40%, 10%, 13.3%, 23.4%, and 13.3%, respectively. Furthermore, inter-subtype recombinants were interspersed within viral strains sampled in other African countries, highlighting complex transmission dynamics within a mobile host population. A total of 78 of 288 (27%) amino acid IN positions presented at least one polymorphism each. Major INSTI resistance mutations were absent, however, polymorphic accessory mutations at positions M50ILR (26.6%) and L74I (3.3%) were detected. Despite the limited size of the study population, our findings underscore the need for monitoring minor and natural polymorphisms that may influence the outcome of treatment regimens.

Keywords: HIV-1 genotyping; INSTIs; Naïve patients; South Sudan; integrase; resistance mutations.

8. The measurement of war-related trauma amongst internally displaced men and women in South Sudan: Psychometric analysis of the Harvard Trauma Questionnaire

Manasi Sharma [1], Karestan C Koenen [2], Christina P C Borba [3], David R Williams [4], David K Deng [5]

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ABSTRACT

BACKGROUND: Studies from armed conflict settings, including South Sudan, have revealed the deleterious mental health impact of exposure to war atrocities. However, there is little consensus on what is meant by war trauma, how it should be measured, and how levels of trauma vary across men and women.

METHODS: We used psychometric analyses to measure war trauma among 1178 internally displaced adults (mean age = 39 years, 50% women) in the Malakal region of South Sudan. We used cross-sectional survey data and applied classical test theory, factor analysis, item response theory, and differential item functioning with the war events subscale (17 items) of the Harvard Trauma Questionnaire (HTQ).

RESULTS: We found good validity and internal consistency reliability for the HTQ. We found evidence for unidimensionality using factor analyses, and item response theory models showed that some war events (like witnessing the killing of family or friends) were more sensitive to the underlying 'war-related trauma' trait than others (like abduction). Differential item functioning analyses revealed that the measure performed differently for men and women, indicating the need for sex-stratified analysis in the measurement of trauma. Limitations: The use of self-report may lead to recall and response bias, and the study sample may not be representative of the broader population in South Sudan.

CONCLUSION: This study emphasizes the need for cultural adaptation and psychometric evaluation of commonly used measurement instruments, especially in humanitarian settings where survey data are used to set priorities for mental health and psychosocial support services.

Keywords: Armed conflict; Item response theory; Mental health; Psychometrics; South Sudan; Trauma.

9. An Evaluation of Students' Perspective on Availability and Appropriateness of Mental Health Care Services in University of Juba, South Sudan

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ABSTRACT

INTRODUCTION: This paper explores the quantitative and qualitative nature of services available in University of Juba (UOJ) to students with mental health issues. The study focused on identifying whether students in UOJ were aware of the meaning of mental illness, what caused it, what services were available for the university students with such conditions, where did they get alternative support, the relationship between mental health and academic performance, challenges faced by students with mental issues and how they could be handled.

METHOD: This was a case study that used only University of Juba (UOJ) out of the five public universities in the Republic of South Sudan. UOJ was identified on basis of its strategic position in the capital city of the country and also the largest with wider admission of students from all the ten states and the two administrative areas of South Sudan. The study considered students' perspectives; therefore, data collected only confirms students living with disability views on the subject. The study used 20 respondents who were identified using purposive sampling and they were the ones identified through the help of the Deanship of Students' Affairs (DSA). Data was collected using an open-ended questionnaire and data was largely analysed and presented in qualitative form and presentation was done using a descriptive approach as well as a basic quantitative method; this included tables, graphs, percentages, and graphic expressions.

RESULTS: Findings suggest that UOJ students have knowledge of mental illness and can identify the affected students by symptoms. However, findings show that from the students' perspective, they have limited services within the university, and some prefer to seek help elsewhere other than the university. The study has found out thin university mental health responders are inadequately prepared to help students with mental health partly due to their low level of professional training on disabilities and also due to high level of stigmatization and negative attitude toward them.

CONCLUSION: The main implications of the study are the need for a more elaborate referral system so that the UOJ can send students for further services from external agencies. This should come even after the university has identified, trained, and recruited and placed qualified staff in the DSA to assist students with mental health issues. The study recommended that UOJ should set aside a budget to help in streamlining the DSA in order to be able to respond to mental health issues among students. Further, the university administration should work closely with external service providers to be able to help refer the students with mental health difficulties for specialized treatment. Finally, the study suggested areas that require further research like doing a similar study to other levels of education like high schools and also widening the study to include the opinion of service providers like students, university Students' counsellors and other personnel under DSA in public universities.

Keywords: Mental Health, Stress, Anxiety, Depression, Mental Disorders, Post-Traumatic Stress Disorder (PTSD)

10. Surveillance for Onchocerciasis-Associated Epilepsy and Ov16 IgG4 Testing of Children 6-10 Years Old Should Be Used to Identify Areas Where Onchocerciasis Elimination Programs Need Strengthening (vol 11, 281, 2022)

Jada, SR[1] ; Dusabimana, A[2] ; Abd-Elfarag , G[3] ; Okaro, S[4] ; Brusselaers, N[5] ; Carter, JY[3] ; Logora, MY[2] ; Rovarini, JM[3] ; Newton, CR[4] ; Colebunders, R[5]

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ABSTRACT

A two-phase survey of epilepsy was conducted in selected villages in Mundri West and East Counties (26 June-8 July, 2021), an onchocerciasis-endemic area in Western Equatoria State in South Sudan. In the first phase, households were visited by a trained research team to identify persons suspected to have epilepsy. In the second phase, persons suspected to have epilepsy were interviewed and examined by a clinician to confirm the diagnosis. A total of 364 households agreed to participate in the survey, amounting to 2588 individuals. The epilepsy screening questionnaire identified 91 (3.5%) persons with suspected epilepsy, of whom the diagnosis of epilepsy was confirmed by a clinician in 86 (94.5%). The overall prevalence of confirmed epilepsy was 3.3% (95% CI: 2.7-4.1%), and of nodding syndrome was 0.9% (95% CI: 0.6-1.4%). In 61 (16.8%) households there was at least one person with epilepsy. Only 1212 (46.9%) of 2583 people took ivermectin during the last distribution round in 2021. The annual epilepsy incidence was 77.3/100,000 (95% CI: 9.4-278.9/100,000) and the annual epilepsy mortality was 251.2/100,000 (95% CI: 133.8-428.7/100,000). In conclusion, a high prevalence and incidence of epilepsy was observed in villages in Mundri. Urgent action is needed to prevent children from developing onchocerciasis-associated epilepsy by strengthening the local onchocerciasis-elimination programme.

Keywords: onchocerciasis Onchocerca volvulus epilepsy nodding syndrome ivermectin Plus Maridi County Villages

11. The Prevalence of Onchocerciasis-Associated Epilepsy in Mundri West and East Counties, South Sudan: A Door-to-Door Survey

Jada, SR[1]; Dusabimana, A[2] ; Abd-Elfarag, G[3] ; Okaro, S[4] ; Brusselaers, N[5] ; Carter, JY[2] ; Logora, MY[3] ; Rovarini, JM[3]; Newton, CR[4] ; Colebunders, R[5]

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ABSTRACT

A two-phase survey of epilepsy was conducted in selected villages in Mundri West and East Counties (26 June-8 July, 2021), an onchocerciasis-endemic area in Western Equatoria State in South Sudan. In the first phase, households were visited by a trained research team to identify persons suspected to have epilepsy. In the second phase, persons suspected to have epilepsy were interviewed and examined by a clinician to confirm the diagnosis. A total of 364 households agreed to participate in the survey, amounting to 2588 individuals. The epilepsy screening questionnaire identified 91 (3.5%) persons with suspected epilepsy, of whom the diagnosis of epilepsy was confirmed by a clinician in 86 (94.5%). The overall prevalence of confirmed epilepsy was 3.3% (95% CI: 2.7-4.1%), and of nodding syndrome was 0.9% (95% CI: 0.6-1.4%). In 61 (16.8%) households there was at least one person with epilepsy. Only 1212 (46.9%) of 2583 people took ivermectin during the last distribution round in 2021. The annual epilepsy incidence was 77.3/100,000 (95% CI: 9.4-278.9/100,000) and the annual epilepsy mortality was 251.2/100,000 (95% CI: 133.8-428.7/100,000). In conclusion, a high prevalence and incidence of epilepsy was observed in villages in Mundri. Urgent action is needed to prevent children from developing onchocerciasis-associated epilepsy by strengthening the local onchocerciasis-elimination programme.

Keywords: onchocerciasis Onchocerca volvulus epilepsy nodding syndrome ivermectin

Plus Maridi County Villages

12. Development of the South Sudan Mental Health Assessment Scale

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ABSTRACT

This study developed and validated a measure that captures variation in common local idioms of distress and mental health problems experienced by women in South Sudan, a country which has experienced over 50 years of violence, displacement, and political, social, and economic insecurity. This measure was developed during a randomized controlled trial of the Adolescent Girls Initiative (AGI) and used qualitative Free Listing (n = 102) and Key Informant interviews (n = 27). Internal reliability and convergent validity were assessed using data from 3,137 randomly selected women (ages 14-47) in 100 communities in South Sudan. Test-retest and inter-rater reliability were assessed using responses from 180 women (ages 15-58) who completed the measure once, and 129 of whom repeated the measure an average of 12 days (SD = 8.3) later. Concurrent validity was assessed through the ratings of 22 AGI leaders about the presence or absence of mental health symptoms in the 180 women in the test-retest sample. The study resulted in the development of the South Sudan Mental Health Assessment Scale, a 24-item measure assessing six idioms of distress. The scale consisted of one factor and had excellent internal, test-retest, and interrater reliability. The scale also demonstrated good convergent and concurrent validity and performed well psychometrically. Moreover, its development provides an example for other organizations, working in environments where mental health measures have not yet been developed and validated, to create and validate measures relevant to their populations. In this way, the role of mental health in development settings can be more rapidly assessed.

Keywords: South Sudan; mental health; psychometrics; trauma; validation.

13. Community perception of epilepsy and its treatment in onchocerciasis-endemic villages of Maridi county, western Equatoria state, South Sudan

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ABSTRACT

OBJECTIVE: To assess the community's perception of epilepsy and its treatment in onchocerciasis-endemic villages of Maridi County, Western Equatoria State, South Sudan. The study was conducted prior to the setting up of a community-based intervention to manage the important disease burden caused by onchocerciasis-associated epilepsy in these villages.

METHOD: Five focus group discussions (FGD) were conducted with community leaders and with persons with epilepsy (PWE) and their families between November and December 2019.

RESULTS: Villages close to the Maridi dam were considered to be most affected by epilepsy. Misconceptions about the cause and treatment of epilepsy were identified. Most people believed that epilepsy is caused by bad spirits and is contagious, transmitted through saliva, air, and contact with PWE. Very few participants were aware of the link between onchocerciasis and epilepsy. Persons with epilepsy are restricted in their day-to-day activities and children with epilepsy are often denied going to school. Persons with epilepsy are stigmatized and seen as unfit for marriage. Most participants considered both traditional and medical treatment as ineffective. Uninterrupted anti-seizure treatment continuously was unaffordable for most families with one or more PWE.

CONCLUSION: There is a need to establish a comprehensive epilepsy treatment program which addresses misconceptions about epilepsy and reduces epilepsy-related stigma. Explaining the link between onchocerciasis and epilepsy could lead to a reduction in epilepsy-related stigma. (C) 2021 The Author(s). Published by Elsevier Inc.

Keywords: Onchocerciasis Epilepsy Nodding syndrome Community Misconceptions Focus group discussions. Plus Sub-Saharan Africa treatment Gap high prevalencestigmacareinterventionsknowledgeattitudesstudentspeoplee

14. Aeromedical evacuation: experiences from the UK military level 2 hospital in Bentiu, South Sudan, during Op TRENTON

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ABSTRACT

INTRODUCTION: Aeromedical Evacuation (AE) is a vital role of the Defence Medical Services (DMS). With a far-reaching defence global footprint, an AE capability is crucial to enable movement of patients in the fastest, safest and least stressful way that meets or exceeds the level of care an injured or ill person may expect to receive in the UK. Operation (Op) TRENTON is a UK military humanitarian operation in support of the United Nations (UN) Mission in South Sudan.

METHODS: A retrospective analysis was carried out of all patients who underwent AE from the UK level 2 hospital at Bentiu during Op TRENTON over a 17-month period from June 2017 to October 2018.

RESULTS**:** 14 patients underwent AE. The median age was 36 (22-64) years and all patients were male. 21% of AEs were for UK personnel and 79% were for UN personnel. 29% of AEs were due to non-battle injury with the remainder due to disease. Musculoskeletal was the largest diagnostic group (n=4) followed by respiratory (n=3), cardiovascular (n=2), undifferentiated febrile illness (n=2), neurology (n=1), renal medicine (n=1) and psychiatry (n=1).

CONCLUSIONS: Patients requiring AE from the level 2 hospital at Bentiu mostly had musculoskeletal and medical pathology, a stark contrast to the trauma patient cohort from operations in the past. The majority of patients had definitive care under the medical team highlighting the requirement for DMS physicians and the AE team, to be trained in acute, general and aviation medicine. The majority of AE moves were for UN personnel and on UN airframes, highlighting the importance of a sound understanding of the nations we are working with.

Keywords: aviation medicine; general medicine (see internal medicine); internal medicine.

15. High Prevalence of Epilepsy in an Onchocerciasis-Endemic Area in Mvolo County, South Sudan: A Door-To-Door Survey

Raimon, S[1] ; Dusabimana, A[2] ; Abd-Elfarag, G[3] ; Okaro, S[4] ; Carter, J[5] ; Newton, CR[3] ; Logora, MY[4] ; Colebunders, R2

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ABSTRACT

In June 2020, a door-to-door household survey was conducted in Mvolo County, an onchocerciasis-endemic area in South Sudan. A total of 2357 households containing 15,699 individuals agreed to participate in the study. Of these, 5046 (32.1%, 95% CI: 31.4-32.9%) had skin itching and 445 (2.8%, 95% CI: 2.6-3.1%) were blind. An epilepsy screening questionnaire identified 813 (5.1%) persons suspected of having epilepsy. Of them, 804 (98.9%) were seen by

a medical doctor, and in 798 (98.1%) the diagnosis of epilepsy was confirmed. The overall epilepsy prevalence was 50.8/1000 (95% CI: 47.6-54.4/1000), while the prevalence of nodding syndrome was 22.4/1000 (95% CI: 20.1-24.9/1000). Younger age, being male, skin itching, blindness, and living in a neighborhood or village close to the Naam River were risk factors for epilepsy. The annual incidence of epilepsy was 82.8/100,000 (95% CI: 44.1-141.6/100,000). Among children 7-9 years old without epilepsy, 34% were Ov16 seropositive, suggesting high ongoing Onchocerca volvulus transmission, but only 41.9% of them took ivermectin during the last mass distribution. In conclusion, a high prevalence and incidence of epilepsy was observed in Mvolo, South Sudan. Strengthening of the onchocerciasis elimination programme is urgently needed in order to prevent epilepsy in this region.

Keywords: onchocerciasis Onchocerca volvulus epilepsy nodding syndrome prevalence ivermectin. Plus NODDING SYNDROMEMARIDI COUNTYVILLAGESVOLVULUS

16. Cytokines and Onchocerciasis-Associated Epilepsy, a Pilot Study and Review of the Literature

Vieri, MK[1]; Hotterbeekx, A[2] ; Raimon, S[3] ; Abd-Elfarag, G[4] ; Mukendi, D[5] ; Carter, JY[4] ; Kumar-Singh, S[4] (Kumar-Singh, Samir) ; Colebunders, R[4]

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ABSTRACT

Neuro-inflammation may be associated with onchocerciasis-associated epilepsy (OAE) but thus far very few immunological studies have been performed in children with this form of epilepsy. In a pilot study we measured the cytokine levels in cerebrospinal fluid (CSF) of persons with OAE from Maridi, South Sudan, and from Mosango, Democratic Republic of the Congo (DRC) and compared these results with cytokine levels in CSF of Africans with non-OAE neurological disorders, and Europeans with epilepsy or other neurological conditions. The following cytokines were studied: IL-6, TNF-alpha, IL1-beta, IL-5, IL-4, IL-13, CCL3 (Mip-1 alpha), VEGF-C, VCAM-1. No cytokine was significantly associated with OAE, although a lower IL-13 level was observed in CSF of persons with OAE compared to African controls. Observed cytokine profiles and neuro-inflammation may be the consequence of long-standing epilepsy, concomitant infections and malnutrition. Ideally cytokine levels should be determined in a prospective study in serum and CSF collected at the time of onset of the first seizures.

Keywords: onchocerciasis-associated epilepsy cerebrospinal fluidcytokines

PlusVOLVULUSMICROFILARIAEIVERMECTINCOMPLEMENTRESPONSESIL-13

17. Effect of Ivermectin Treatment on the Frequency of Seizures in Persons with Epilepsy Infected with Onchocerca volvulus

Dusabimana, A[1] ; Wafula, ST[2] ; Raimon, SJ [3] ; Fodjo, JNS[4] ; Bhwana, D[5] ; Tepage, F[1] ; Abd-Elfarag, G [1] ; Hotterbeekx, A[1] ; Abrams, S[3] ; Colebunders, R[1]

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ABSTRACT

A clinical trial performed in the Democratic Republic of Congo (DRC), among persons with epilepsy (PWE) infected with Onchocerca volvulus treated with anti-seizure medication suggested that ivermectin reduces the seizure frequency. We assessed the effect of ivermectin treatment on seizure frequency in PWE with and without anti-seizure medication in three onchocerciasis endemic areas (Maridi, South Sudan; Aketi, DRC; and Mahenge, Tanzania). Pre- and 3-5 months post-ivermectin microfilariae densities in skin snips and seizure frequency were assessed. After ivermectin, the median (IQR) percentage reduction in seizure frequency in the study sites ranged from 73.4% (26.0-90.0) to 100% (50.0-100.0). A negative binomial mixed model showed that ivermectin significantly reduced the seizure frequency, with a larger decrease in PWE with a high baseline seizure frequency. Mediation analysis showed that ivermectin reduced the seizure frequencies indirectly through reduction in microfilariae densities but also that ivermectin may have a direct anti-seizure effect. However, given the short half-life of ivermectin and the fact that ivermectin does not penetrate the healthy brain, such a direct anti-seizure effect is unlikely. A randomized controlled trial assessing the ivermectin effect in people infected with O. volvulus who are also PWE on a stable anti-seizure regimen may be needed to clarify the causal relationship between ivermectin and seizure frequency.

Keywords: epilepsy ivermectin onchocerciasis seizures

18. Fighting non-communicable diseases in East Africa: assessing progress and identifying the next steps assessing progress and identifying the next steps

Kraef C [1 2 3 4], Juma PA [5 6], Mucumbitsi J [4 7 8], Ramaiya K [4 9 10], Ndikumwenayo F [4 11 12], Kallestrup P [13 3 4], Yonga G [4 6 14]

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ABSTRACT

Sub-Saharan Africa has seen a rapid increase in non-communicable disease (NCD) burden over the last decades. The East African Community (EAC) comprises Burundi, Rwanda, Kenya, Tanzania, South Sudan and Uganda, with a population of 177 million. In those countries, 40% of deaths in 2015 were attributable to NCDs. We review the status of the NCD response in the countries of the EAC based on the available monitoring tools, the WHO NCD progress monitors in 2017 and 2020 and the East African NCD Alliance benchmark survey in 2017. In the EAC, modest progress in governance, prevention of risk factors, monitoring, surveillance and evaluation of health systems can be observed. Many policies exist on paper, implementation and healthcare are weak and there are large regional and subnational differences. Enhanced efforts by regional and national policy-makers, non-governmental organisations and other stakeholders are needed to ensure future NCD policies and implementation improvements.

Keywords: control strategies; health policy; other study design; public Health.

19. Mental disorders among young war affected adults in post-war communities in The Republic of South Sudan: Case study Greater Bahr El Ghazal State.

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Ahfad Journal. Jun2020, 37 (1) , p30-39. 10p.

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ABSTRACT

INTRODUCTION: This is a cross-sectional study, aimed to identify the general features of mental disorders (depressive disorder, agoraphobia, alcohol dependence disorder and psychotic disorder), war trauma and general health among young adults living in Greater Bahr El Ghazal State after the Peace Agreement.

METHOD: The study population was comprised of a randomized sample of population in the following area capturing the rural and urban continuum in Greater Bahr El Ghazal region. The study sample consisted of (869) young Adults selected randomly out of the study population. The General Health Questionnaire (GHQ-28), the Harvard Trauma Questionnaire (HTQ) and the International Neuropsychiatric Interview (MINI) were used as tools for measuring the mental health of the respondents. Data analysis was conducted using SPSS 19.0.

RESULTS: The young adults in the post-war community in Bahr El Ghazal State have higher levels of mental disorders compared with general international indicators, except for psychotic disorder lifetime. General health among young adults in the post-war community in Bahr El Ghazal State tends to be high. The general health among young adults in the post-war community in Bahr El Ghazal State is better after war.

CONCLUSION: The study concludes that the issue of mental health among young adult in Bahr El Ghazal State requires extensive awareness programs among the affected group, to inform them about the nature of what they were subjected to during the war and how to cope with these situations so as to enable self-management for these problems.

20. The Role of the Maridi Dam in Causing an Onchocerciasis-Associated Epilepsy Epidemic in Maridi, South Sudan: An Epidemiological, Sociological, and Entomological Study

Lakwo, TL[1] Raimon, S[2] ; Tionga, M[3] ; Fodjo, JNS[4] ; Alinda, P[5] ; Sebit, WJ[5] ; Carter, JY [4] ; Colebunders, R[3]

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ABSTRACT

Background: An epilepsy prevalence of 4.4% was documented in onchocerciasis-endemic villages close to the Maridi River in South Sudan. We investigated the role of the Maridi dam in causing an onchocerciasis-associated epilepsy epidemic in these villages. Methods: Affected communities were visited in November 2019 to conduct focus group discussions with village elders and assess the OV16 seroprevalence in 3- to 9-year-old children. Entomological assessments to map blackfly breeding sites and determine biting rates around the Maridi River were conducted. Historical data regarding various activities at the Maridi dam were obtained from the administrative authorities. Results: The Maridi dam was constructed in 1954-1955. Village elders reported an increasing number of children developing epilepsy, including nodding syndrome, from the early 1990s. Kazana 2 (the village closest to the dam; epilepsy prevalence 11.9%) had the highest OV16 seroprevalence: 40.0% among children 3-6 years old and 66.7% among children 7-9 years old. The Maridi dam spillway was found to be the only Simulium damnosum breeding site along the river, with biting rates reaching 202 flies/man/h. Conclusion: Onchocerciasis transmission rates are high in Maridi. Suitable breeding conditions at the Maridi dam, coupled with suboptimal onchocerciasis control measures, have probably played a major role in causing an epilepsy (including nodding syndrome) epidemic in 5the Maridi area.

Keywords: Onchocerciasis epilepsy nodding syndrome damvector control elimination blackflies. Plus SIMULIUM-DAMNOSUM THEOBALDVILLAGESCOUNTY

21. Onchocerca volvulus is not detected in the cerebrospinal fluid of persons with onchocerciasis-associated epilepsy

Hotterbeekx, A [1] ; Raimon, S [2] ; Abd-Elfarag, G [3] ; Carter, JY [3] ; Sebit, W [4] ; Suliman, A[5] ; Fodjo, JNS [5]; De Witte, P[1] ; Logora, MY [2] ; Colebunders, R [4];

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ABSTRACT

OBJECTIVES: Epidemiological evidence links onchocerciasis with the development of epilepsy. The aim of this study was to detect Onchocerca volvulus microfilariae or its bacterial endosymbiont, Wolbachia, in the cerebrospinal fluid (CSF) of persons with onchocerciasis-associated epilepsy (OAE).

METHODS: Thirteen persons with OAE and O. volvulus skin snip densities of >80 microfilariae were recruited in Maridi County (South Sudan) and their CSF obtained. Cytospin centrifuged preparations of CSF were examined by light microscopy for the presence of O. volvulus microfilariae. DNA was extracted from CSF to detect O. volvulus (O-150 repeat) by quantitative real-time PCR, and Wolbachia (FtsZ gene) by standard PCR. To further investigate whether CSF from onchocerciasis-infected participants could induce seizures, 3- and 7-day old zebrafish larvae were injected with the CSF intracardially and intraperitoneally, respectively. For other zebrafish larvae, CSF was added directly to the larval medium.

RESULTS: No microfilariae, parasite DNA, or Wolbachia DNA were detected in any of the CSF samples by light microscopy or PCR. All zebrafish survived the procedures, and none developed seizures.

CONCLUSIONS: The absence of O. volvulus in the CSF suggests that OAE is likely not caused by direct parasite invasion into the central nervous system, but by another phenomenon triggered by O. volvulus infection. (c) 2019 The Author(s). Published by Elsevier Ltd on behalf of the International Society for Infectious Diseases. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Onchocerciasis-associated epilepsy Nodding syndrome Microfilariae Disabilities Seizures Autoimmunity South Sudan. Plus Nodding Syndrome high Prevalence Maridi County microfilariae diagnosis toxicity villages area

22. Characterization of HIV-1 Subtypes Among South Sudanese Patients

Alessandra Lo Presti [1], Stefania Farcomeni [2], Lucia Fontanelli Sulekova [3], Stefania Grieco [3], Leonardo Sernicola [2], Michela Baesso [2], Maria T Maggiorella [2], Silvia Angeletti [4], Brian Foley [5], Massimo Ciccozzi [4], Gloria Taliani [3], Alessandra Borsetti [2]

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ABSTRACT

There is scarce data on circulation of genetic subtypes of HIV-1 in South Sudan due to decades of civil war. In this study, phylogenetic analysis of 10 strains collected from HIV-1-infected South Sudanese patients was performed. Partial *pol* and *env* viral gene analysis classified sequences as subtype C (*n* = 4), subtype D (*n* = 4), and partially unclassifiable recombinants (*n* = 2), interspersed within the phylogenetic tree with those from other African countries. These results indicate an exchange of viral strains between South Sudan and both neighboring and distant territories. The movements of populations across Sudan's borders during the civil war have probably played an important role in circulation of subtypes not only in South Sudan but also in other African states.

Keywords: Africa; HIV; South Sudan; diversity; dried blood spot.

23. Feasibility of Training Clinical Officers in Point-of-Care Ultrasound for Pediatric Respiratory Diseases in Aweil, South Sudan

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ABSTRACT

Lower respiratory tract infections (LRTIs) are the leading cause of deaths in children < 5 years old worldwide, particularly affecting low-resource settings such as Aweil, South Sudan. In these settings, diagnosis can be difficult because of either lack of access to radiography or clinical algorithms that overtreat children with antibiotics who only have viral LRTIs. Point-of-care ultrasound (POCUS) has been applied to LRTIs, but not by nonphysician clinicians, and with limited data from low-resource settings. Our goal was to examine the feasibility of training the mid-level provider cadre clinical officers (COs) in a Médecins Sans Frontières project in South Sudan to perform a POCUS algorithm to differentiate among causes of LRTI. Six COs underwent POCUS training, and each subsequently performed 60 lung POCUS studies on hospitalized pediatric patients < 5 years old with criteria for pneumonia. Two blinded experts, with a tiebreaker

expert adjudicating discordant results, served as a reference standard to calculate test performance characteristics, assessed image quality and CO interpretation. The COs performed 360 studies. Reviewers rated 99.1% of the images acceptable and 86.0% CO interpretations appropriate. The inter-rater agreement (κ) between COs and experts for lung consolidation with air bronchograms was 0.73 (0.63-0.82) and for viral LRTI/bronchiolitis was 0.81 (0.74-0.87). It is feasible to train COs in South Sudan to use a POCUS algorithm to diagnose pneumonia and other pulmonary diseases in children < 5 years old.

24. Scurvy Outbreak Among South Sudanese Adolescents and Young Men - Kakuma Refugee Camp, Kenya, 2017-2018

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MMWR Morb Mortal Wkly Rep 2019 Jan 25;68(3):72-75. doi: 10.15585/mmwr.mm6803a4.

ABSTRACT

Scurvy is a relatively rare micronutrient deficiency disease that can occur among refugees dependent on food aid (1). Inadequate access to fresh fruits and vegetables in refugee camps can result in scurvy (2,3). Kakuma Refugee Camp in Kenya's Turkana District is home to 148,000 refugees, mostly from Somalia and South Sudan, who receive food assistance. In August 2017, a number of South Sudanese adolescent and young adult male refugees were evaluated at a health clinic in the camp for calf pain, chest pain, and gingival swelling. Because the symptoms were nonspecific, no diagnosis was made, and some patients received antibiotics and analgesics. All were managed as outpatients, but symptoms did not improve. During subsequent months, more young men with similar symptoms were reported. On January 20, 2018, the United Nations High Commissioner for Refugees (UNHCR) was informed and conducted clinical examinations. Signs and symptoms included lower limb pain and swelling (in some cases involving joints), lethargy, fatigue, gingival swelling and pain, hyperkeratotic skin changes, and chest pain. Based on these clinical findings, micronutrient deficiency, particularly vitamin C deficiency (scurvy), was considered a possible diagnosis, and an investigation of a possible outbreak was conducted. The suspected scurvy cases all occurred in young men from South Sudan who were living and cooking together in one geographic section of the camp. All patients who received treatment with vitamin C noted improvement of symptoms within <1 week. Patients were provided with food and cash assistance, the latter to allow dietary diversification (i.e., fresh fruits and vegetables). However, both forms of assistance were inadequate to allow access to sufficient amount of calories and the dietary diversification needed for intake of micronutrients, such as vitamin C. It is important to consider these needs when determining the amount of food or cash assistance provided to adolescents and young adult male refugees.

Keywords: Nutrition deficiency, scurvy, outbreak, and malnutrition

25. Factors associated with common mental health problems of humanitarian workers in South Sudan

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ABSTRACT

BACKGROUND: The latest data on major attacks against civilian aid operations have identified South Sudan as the most dangerous country for aid workers globally. Exposure to other traumatic events and chronic stress is also common in this population. No research exists on the mental health of humanitarian workers in South Sudan.

OBJECTIVES: This study examined symptom burden and predictors of posttraumatic stress disorder (PTSD), depression, anxiety, hazardous alcohol consumption, and burnout among humanitarian workers in South Sudan.

Method: We conducted a cross-sectional online survey with humanitarian workers (national and international staff, consultants, United Nations volunteers). We applied validated measures useful for this setting. We applied Least Absolute Shrinkage and Selection Operator (LASSO) regression to fit models with high prediction accuracy for each outcome and used ordinary least squares (OLS) regression to obtain final coefficients and perform inference.

RESULTS: A total of 277 humanitarian workers employed by 45 organizations completed the survey (a response rate in the order of 10%). We estimated prevalence of PTSD (24%), depression (39%), anxiety disorder (38%), hazardous alcohol consumption in men (35%) and women (36%), and the burnout components emotional exhaustion (24%) and depersonalization (19%). Chronic stress exposure was positively associated with PTSD ($p < .001$), depression ($p < .001$), anxiety ($p < .001$), emotional exhaustion ($p < .01$), and depersonalization ($p < .001$). We found no significant association between emotion focused and problem focused coping and mental health outcomes. Associations between dysfunctional coping and depression ($p < .001$) and anxiety ($p < .01$) were positive. Higher levels of spirituality were associated with lower risk of hazardous alcohol consumption ($p < .001$). Contrary to expectations, working directly with humanitarian aid beneficiaries was significantly associated with lower risk for emotional exhaustion ($p < .01$).

CONCLUSION: Our results suggest that humanitarian workers in South Sudan experience substantial levels of mental ill-health. This study points to the need for staff support strategies that effectively mitigate humanitarian workers' chronic stress exposure. The dynamics between coping and mental health among humanitarian workers require further study.

Keywords: Mental health, depression, work stress and humanitarian workers

26. Tele dermatology in Low-Resource Settings: The MSF Experience with a Multilingual Tele-Expertise Platform

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ABSTRACT

INTRODUCTION**:** In 2010, Médecins Sans Frontières (MSF) launched a tele-expertise system to improve the access to specialized clinical support for its field health workers. Among medical specialties, dermatology is the second most commonly requested type of tele-expertise. The aim of the present study was to review all MSF tele-dermatology cases in the first 4 years of operation. Our hypothesis was that the review would enable the identification of key areas for improvement in the current MSF tele-dermatology system.

METHODS**:** We carried out a retrospective analysis of all dermatology cases referred by MSF field doctors through the MSF platform from April 2010 until February 2014. We conducted a quantitative and qualitative analysis based on a survey sent to all referrers and specialists involved in these cases.

RESULTS: A total of 65 clinical cases were recorded by the system and 26 experts were involved in case management. The median delay in providing the first specialist response was 10.2 h (IQR 3.7-21.1). The median delay in allocating a new case was 0.96 h (IQR 0.26-3.05). The three main countries of case origin were South Sudan (29%), Ethiopia (12%), and Democratic Republic of Congo (10%). The most common topics treated were infectious diseases (46%), inflammatory diseases (25%), and genetic diseases (14%). One-third of users completed the survey. The two main issues raised by specialists and/or referrers were the lack of feedback about patient follow-up and the insufficient quality of clinical details and information supplied by referrers.

DISCUSSION: The system clearly delivered a useful service to referrers because the workload rose steadily during the 4-year study period. Nonetheless, user surveys and retrospective analysis

suggest that the MSF tele-dermatology system can be improved by providing guidance on best practice, using pre-filled referral forms, following-up the cases after teleconsultation, and establishing standards for clinical photography.

Keywords: LMICs; dermatology; low-resource settings; telehealth; telemedicine.

27. Nodding syndrome in Mundri county, South Sudan: environmental, nutritional and infectious factors

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ABSTRACT

BACKGROUND: Nodding Syndrome is a seizure disorder of children in Mundri County, Western Equatoria, South Sudan. The disorder is reported to be spreading in South Sudan and northern Uganda. Objective: To describe environmental, nutritional, infectious, and other factors that existed before and during the de novo 1991 appearance and subsequent increase in cases through 2001.

METHODS: Household surveys, informant interviews, and case-control studies conducted in Lui town and Amadi village in 2001-2002 were supplemented in 2012 by informant interviews in Lui and Juba, South Sudan.

RESULTS: Nodding Syndrome was associated with Onchocerca volvulus and Mansonella perstans infections, with food use of a variety of sorghum (serena) introduced as part of an

emergency relief program and was inversely associated with a history of measles infection. There was no evidence to suggest exposure to a manmade neurotoxic pollutant or chemical agent, other than chemically dressed seed intended for planting but used for food. Food use of cyanogenic plants was documented, and exposure to fungal contaminants could not be excluded.

CONCLUSION: Nodding Syndrome in South Sudan has an unknown etiology. Further research is recommended on the association of Nodding Syndrome with onchocerciasis/mansonelliasis and neurotoxins in plant materials used for food.

Keywords: Epilepsy, filariasis, sorghum, neurotoxins, neurotoxins, Moru,

61 citations

(Sorted by Partner State)

Tanzania

1. The effect of airtime incentives to improve participation in non-communicable disease interactive voice response surveys: randomized controlled trials in Colombia and Tanzania

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ABSTRACT

OBJECTIVE: We assessed whether airtime incentives can improve cooperation and response rates for a non-communicable disease (NCD) interactive voice response (IVR) survey in Colombia and Tanzania.

METHODS: Participants were randomized to four arms: a) no incentive; b) 1X incentive, where X equals to 5,000 Colombian Pesos (US$1.35) or 3,000 Tanzanian Shillings (US$1.29); 3) 2X incentive; or 4) lottery incentive of 50,000 COP (US$18.90) or 50,000 TZS (US$21.50) where the odds of winning the lottery were 1:20. Adults aged 18years and older who possessed a functioning mobile phone were sampled using random digit dialing. We analyzed the primary outcomes, cooperation and response rates, using a log-binomial regression model as computed by the American Association of Public Opinion Research.

RESULTS: In Colombia, between October 15 to November 13, 2018, 125,745 phone calls were made. In Tanzania, 67,800 RDD phone calls were made from August 9 to 28, 2018. In Colombia, we observed significantly higher cooperation rates in the 1X, 2X and lottery incentive groups compared to control. Additionally, response rates were significantly higher in the 1X and 2X incentive groups but were significantly lower in lottery group compared to control. In Tanzania, both cooperation and response rates were significantly higher in the 1X, 2X and lottery incentive groups compared to control.

CONCLUSION: Except for the lottery incentive arm in Colombia, which yielded a response rate lower than the control, the introduction of airtime incentives significantly improved cooperation and response rates in Colombia and Tanzania, with no notable variations between the incentive arms.

Keywords: Airtime incentives, non-communicable disease, Tanzania

2. Metformin for the prevention of diabetes among people with HIV and either impaired fasting glucose or impaired glucose tolerance (prediabetes) in Tanzania: A Phase II randomised placebo-controlled trial.

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ABSTRACT

AIMS/HYPOTHESIS: In sub-Saharan Africa (SSA), 5% of adults are living with type 2 diabetes and this is rising sharply, with a greater increase among people with HIV. Evidence on the efficacy of prevention strategies in this cohort is scarce. We conducted a Phase II double-blind placebo-controlled trial that aimed to determine the impact of metformin on blood glucose levels among people with prediabetes (defined as impaired fasting glucose [IFG] and/or impaired glucose tolerance [IGT]) and HIV in SSA.

METHODS: Adults (≥18 years old) who were stable in HIV care and found to have prediabetes (IFG and/or IGT) and who were attending hospitals in Dar es Salaam, Tanzania, were randomised to receive sustained-release metformin, 2000 mg daily, or matching placebo between 4 November 2019 and 21 July 2020. Randomisation used permuted blocks. Allocation was concealed in the trial database and made visible only to the Chief Pharmacist after consent was taken. All participants, research and clinical staff remained blinded to the allocation. Participants were provided with information on diet and lifestyle and had access to various health information following the start of the coronavirus disease 2019 (COVID-19) pandemic. Participants were followed up for 12 months. The primary outcome measure was capillary blood glucose measured 2 h following a 75 g glucose load. Analyses were by intention-to-treat.

RESULTS: In total, 364 participants (182 in each arm) were randomised to the metformin or placebo group. At enrolment, in the metformin and placebo arms, mean fasting glucose was 6.37 mmol/l (95% CI 6.23, 6.50) and 6.26 mmol/l (95% CI 6.15, 6.36), respectively, and mean 2 h glucose levels following a 75 g oral glucose load were 8.39 mmol/l (95% CI 8.22, 8.56) and 8.24 mmol/l (95% CI 8.07, 8.41), respectively. At the final assessment at 12 months, 145/182 (79.7%) individuals randomised to metformin compared with 158/182 (86.8%) randomised to placebo indicated that they had taken >95% of their medicines in the previous 28 days (p=0.068). At this

visit, in the metformin and placebo arms, mean fasting glucose levels were 6.17 mmol/l (95% CI 6.03, 6.30) and 6.30 mmol/l (95% CI 6.18, 6.42), respectively, and mean 2 h glucose levels following a 75 g oral glucose load were 7.88 mmol/l (95% CI 7.65, 8.12) and 7.71 mmol/l (95% CI 7.49, 7.94), respectively. Using a linear mixed model controlling for respective baseline values, the mean difference between the metformin and placebo group (metformin–placebo) was −0.08 mmol/l (95% CI −0.37, 0.20) for fasting glucose and 0.20 mmol/l (95% CI −0.17, 0.58) for glucose levels 2 h post a 75 g glucose load. Weight was significantly lower in the metformin arm than in the placebo arm: using the linear mixed model adjusting for baseline values, the mean difference in weight was −1.47 kg (95% CI −2.58, −0.35). In total, 16/182 (8.8%) individuals had a serious adverse event (Grade 3 or Grade 4 in the Division of Acquired Immunodeficiency Syndrome [DAIDS] adverse event grading table) or died in the metformin arm compared with 18/182 (9.9%) in the placebo arm; these events were either unrelated to or unlikely to be related to the study drugs.

CONCLUSIONS/INTERPRETATION: Blood glucose decreased over time in both the metformin and placebo arms during the trial but did not differ significantly between the arms at 12 months of follow up. Metformin therapy was found to be safe for use in individuals with HIV and prediabetes. A larger trial with longer follow up is needed to establish if metformin can be safely used for the prevention of diabetes in people who have HIV.

Keywords: HIV, Metformin, Prediabetes, Prevention, Tanzania

3. Patient trust and positive attitudes maximize non-communicable diseases management in rural Tanzania

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ABSTRACT

OBJECTIVES: The objectives of this study were to identify difficulties and their related contexts non-communicable disease (NCD) patients in rural Tanzania experienced, examine how patients managed the situation by seeking better treatment of the diseases, and propose a realistic

approach for optimizing disease management with long-term perspectives in resource-limited settings, based on views of patients (PTs), health-care providers (HPs), and health volunteers (HVs).

METHODS: Nine focus group discussions were performed with 56 participants of PTs, HPs, and HVs in three district hospitals in the Dodoma region. Their views and self-care practices were extracted, and the verbatim data were analyzed to derive codes and categories.

RESULTS: The types of NCDs reported by the PTs were hypertension (HT), diabetes mellitus (DM), and HT/DM comorbidity. Reported barriers to disease management included discontinuation of treatment due to various factors and a lack of positive messages regarding disease management in NCD care. The following points were addressed in relation to the improved management of NCDs: (i) positive attitudes and coping skills, (ii) support from family members, (iii) good communication between PTs and HPs, and (iv) trustworthy relationships with HVs.

CONCLUSIONS: The findings suggest that to gain the trust of PTs in optimizing disease control in overstretched health-care systems, patient support systems should be strengthened by empowering positive attitudes.

Keywords: Non-communicable diseases, trust, positive attitudes, mutual relationships, supportive message

4. Implementing Innovative Approaches to Improve Health Care Delivery Systems for Integrating Communicable and Non-Communicable Diseases Using Tuberculosis and Diabetes as a Model in Tanzania

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ABSTRACT

BACKGROUND: Many evidence-based health interventions, particularly in low-income settings, have failed to deliver the expected impact. We designed an Adaptive Diseases Control Expert Programme in Tanzania (ADEPT) to address systemic challenges in health care delivery and examined the feasibility, acceptability and effectiveness of the model using tuberculosis (TB) and diabetes mellitus (DM) as a prototype.

METHODS: This was an effectiveness-implementation hybrid type-3 design that was implemented in Dar es Salaam, Iringa and Kilimanjaro regions. The strategy included a stepwise training approach with web-based platforms adapting the Gibbs' reflective cycle. Health facilities with TB services were supplemented with DM diagnostics, including glycated hemoglobin A1c (HbA1c). The clinical audit was deployed as a measure of fidelity. Retrospective and cross-sectional designs were used to assess the fidelity, acceptability and feasibility of the model.

RESULTS: From 2019–2021, the clinical audit showed that ADEPT intervention health facilities more often identified median 8 (IQR 6–19) individuals with dual TB and DM, compared with control health facilities, median of 1 (IQR 0–3) (p = 0.02). Likewise, the clinical utility of HbA1c on intervention sites was 63% (IQR:35–75%) in TB/DM individuals compared to none in the control sites at all levels, whereas other components of the standard of clinical management of patients with dual TB and DM did not significantly differ. The health facilities showed no difference in screening for additional comorbidities such as hypertension and malnutrition. The stepwise training enrolled a total of 46 nurse officers and medical doctors/specialists for web-based training and 40 (87%) attended the workshop. Thirty-one (67%), 18 nurse officers and 13 medical doctors/specialists, implemented the second step of training others and yielded a total of 519 additional front-line health care workers trained: 371 nurses and 148 clinicians. Overall, the ADEPT model was scored as feasible by metrics applied to both front-line health care providers and health facilities.

CONCLUSIONS: It was feasible to use a stepwise training and clinical audit to support the integration of TB and DM management and it was largely acceptable and effective in differing regions within Tanzania. When adapted in the Tanzania health system context, the model will likely improve quality of services.

Keywords: Integration, communicable and non-communicable diseases, tuberculosis, diabetes

5. Development and Field-Testing of Proposed Food-Based Dietary Guideline Messages and Images amongst Consumers in Tanzania

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ABSTRACT

In this paper we report on the development and field-testing of proposed food-based dietary guideline (FBDG) messages among Tanzanian consumers. The messages were tested for cultural appropriateness, consumer understanding, acceptability, and feasibility. In addition, comprehension of the messages was assessed using culturally representative images for low literacy audiences. Focus group discussions were used as method for data collection. Results indicate that the core meaning of the proposed FBDG messages and images were understood and acceptable to the general population. However, participants felt that nutrition education would be required for improved comprehension. Feasibility was affected by some cultural differences, lack of nutrition knowledge, time constraints, and poverty. Suggestions were made for some rewording of certain messages and editing of certain images. It is recommended that the field-tested messages and images, incorporating the suggested changes, should be adopted. Once adopted, the FBDGs can be used to inform and engage various stakeholders, including parents, caregivers, healthcare providers and educators on appropriate nutritional practices for children and adults. They can also be used to guide implementation of relevant policies and programs to contribute towards the achievement of sustainable healthy diets and healthy dietary patterns.

Keywords: food-based dietary guidelines, messages, images, pre-testing, Tanzania; nutrition education

6. Prevalence and predictors of uncontrolled hypertension, diabetes, and obesity among adults with HIV in northern Tanzania,

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ABSTRACT

INTRODUCTION: HIV is associated with increased risk of cardiovascular disease, but there has been less study of cardiovascular comorbidities among people with HIV in sub-Saharan Africa.

METHODS: In a cross-sectional observational study, Tanzanian adults presenting for outpatient HIV care completed a questionnaire and underwent weight, height, blood pressure, and blood glucose measurement. Hypertension was defined by blood pressure ≥140/90 mmHg or self-reported hypertension. Uncontrolled hypertension was defined as measured blood pressure ≥140/90 mmHg. Diabetes was defined by fasting glucose ≥126 mg/dl, random glucose ≥200 mg/dl, or self-reported diabetes. Obesity was defined by body mass index ≥30 kg/m^2. Multivariate logistic regression was performed to identify predictors of uncontrolled hypertension.

RESULTS: Among 500 participants, 173 (34.6%) had hypertension, 21 (4.2%) had diabetes, and 99 (19.8%) were obese. Of those with hypertension, 116 (67.1%) were unaware of their hypertension, and 155 (89.6%) had uncontrolled hypertension. In multivariate analysis, uncontrolled hypertension was associated with older age (OR 1.07, 95% CI: 1.05–1.10, $p < 0.001$) and higher body mass index (OR 1.17, 95% CI: 1.11–1.22, $p < 0.001$). CONCLUSION: Interventions are needed to improve screening and treatment for hypertension, diabetes, and obesity among Tanzanians with HIV.

Keywords: Diabetes mellitus, HIV, hypertension, obesity, Sub-Saharan Africa, Tanzania

7. Developing a sustainable cardiovascular disease research strategy in Tanzania through training: leveraging from the East African Centre of Excellence in cardiovascular sciences project

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ABSTRACT

INTRODUCTION: Cardiovascular disease (CVD) contribute the largest mortality burden globally, with most of the deaths (80% of all deaths) occurring in low and middle-income countries (LMICs), including Tanzania. Despite the increasing burden, to date, CVD research output is still limited in Tanzania, as it is for many sub-Saharan Africa (SSA) countries. This trend hinders the establishment of locally informed CVD management and policy changes. Here, we aim to review the existing gaps while highlighting the available opportunities for a sustainable CVD research strategy in Tanzania.

METHODS: A rapid review of available literature on CVD research in SSA was conducted, with emphasis on the contribution of Tanzania in the world literature of CVD. Through available literature, we identify strategic CVD research priorities in Tanzania and highlight challenges and opportunities for sustainable CVD research output.

FINDINGS: Shortage of skilled researchers, inadequate research infrastructure, limited funding, and lack of organized research strategies at different levels (regional, country, and institutional) are among the existing key bottlenecks contributing to the low output of CVD research in Tanzania. There is generally strong global, regional and local political will to address the CVD epidemic. The establishment of the East African Centre of Excellence in Cardiovascular Sciences (EACoECVS) offers a unique opportunity for setting strategies and coordinating CVD research and training for Tanzania and the East African region.

CONCLUSION: There is a light of hope for long-term sustainable CVD research output from Tanzania, taking advantage of the ongoing activities and plans for the evolving EACoECVS. The Tanzanian experience can be taken as a lesson for other SSA countries.

Keywords: East Africa, cardiovascular diseases, political will, training, Tanzania

8. A peer-facilitated psychological group intervention for perinatal women living with HIV and depression in Tanzania Healthy Options: A cluster-randomized controlled trial.

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ABSTRACT

BACKGROUND: Perinatal women living with HIV (PWLH) have a greater risk of depression compared to other women; however, there are limited specialized mental health services available to them. We aimed to determine whether a stepped-care intervention facilitated by trained lay providers can improve mental health outcomes postpartum for PWLH.

METHODS AND FINDINGS: Healthy Options is a cluster-randomized controlled study conducted in 16 government-managed antenatal care clinics that provided HIV care for pregnant women in urban Tanzania. Recruitment occurred from May 2015 through April 2016, with the final round of data collection completed in October 2017. Participants included a consecutive sample of pregnant women under 30 weeks of gestation, living with HIV and depression, and attending the study clinics. Control sites received enhanced usual care for depression (EUDC). Intervention sites received EUDC plus the Healthy Options intervention, which includes prenatal group sessions of problem-solving therapy (PST) plus cognitive behavioral therapy (CBT) sessions for individuals showing depressive symptoms at 6 weeks post-delivery. We assessed depressive symptoms comparable to major depressive disorder (MDD) using the Patient Health Questionnaire-9 (PHQ-9) with a locally validated cut-off at 9 months and 6 weeks postpartum. The primary time point is 9 months postpartum. We examined differences in outcomes using an intent-to-treat analysis with a complete case approach, meaning those with data at the relevant time point were included in the analysis. We used generalized estimating equations accounting for clustering. Of 818 women screened using the PHQ-9, 742 were determined eligible and enrolled (395 intervention; 347 control); 649 women (87.5%) participated in the first follow-up and 641 women (86.4%) in the second. A majority (270, 74.6%) of women in the intervention arm attended 5 or more PST sessions. Women enrolled in Healthy Options demonstrated a 67% (RR 0.33; 95% CI: 0.22, 0.51; p value: <0.001; corresponding to a 25.7% difference in absolute risk) lower likelihood of depressive symptoms than women in control clusters at 6 weeks postpartum. At 9 months postpartum, women enrolled in Healthy Options demonstrated a non-significant 26% (RR 0.74; 95% CI: 0.42, 1.3; p-value: 0.281; corresponding to a 3.2% difference in absolute risk) lower likelihood of depressive symptoms than women in control clusters. Study limitations include not using diagnostic interviews to measure depression and not blinding data collectors to intervention status during follow-up.

CONCLUSIONS: The Healthy Options intervention did not demonstrate reduction in depressive symptoms at 9 months postpartum, the primary outcome. Significant reductions were seen in depression symptoms at 6 weeks postpartum, the secondary outcome. Stepped-care interventions may be relevant for improving outcomes in the critical early postpartum window.

Keywords: psychological group intervention, perinatal women, HIV, depression, Tanzania, healthy options

9. Awareness and screening practices for gestational diabetes mellitus among pregnant women in Arusha Urban, Tanzania

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ABSTRACT

INTRODUCTION: Awareness is an important aspect for seeking self-prevention, diagnosis, and management of gestational diabetes mellitus.

OBJECTIVE: This study aimed to assess awareness and history of screening practices for gestational diabetes mellitus among pregnant women in Arusha Urban District of Arusha City Council, Tanzania.

METHODS: A cross-sectional study was conducted in 2018, among 468 randomly selected pregnant women attending antenatal clinics at Ngarenaro and Kaloleni Health Centers in urban areas of Arusha District. Data collection was done through face-to-face interviews using a structured questionnaire and analysed using SPSSTM version 20.

RESULTS: Almost 60% of the participants completed primary school and were self-employed (55.8%) basically in small business. Few women were aware of the existence of gestational diabetes mellitus (10.7%). Among the aware women, 36, 23, 26 and 30% knew the meaning, effects, symptoms and risk factors for gestational diabetes mellitus respectively. Twelve (24%) of these women, obtained this information from the antenatal clinic while 38(76%) from different media. Awareness was positively associated with post-secondary (AOR 13.7, 95% CI: 4.07-46.15) and secondary education levels (AOR 5.5, 95% CI: 1.78-16.76). About 8.2% of the women were screened for gestational diabetes mellitus in their previous pregnancy in urine whereby 13.2% reported to have high urine glucose and provided with nutrition counselling without further follow up from the antenatal care.

CONCLUSION: Awareness and screening practices for gestational diabetes mellitus are insufficient in the study area which may be attributed to low prioritization and limited resources.

Keywords: Awareness, diabetes mellitus, pregnancy, prevention, screening, Tanzania

10. Is the FINDRISC Tool Useful in Screening Type 2 Diabetes and Metabolic Syndrome in an African Setting? Experience among Young Adults in Urban Tanzania

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ABSTRACT

BACKGROUND: Simple and less costly screening tools are needed to combat the rising non-communicable diseases epidemic.

OBJECTIVES: This study aimed to evaluate the utility of The Finnish Diabetes Risk Score (FINDRISC) as a screening tool for prediabetes, T2D, and metabolic syndrome (MetS) in a population of young adults in urban Mwanza, Tanzania.

METHODS: A cross-sectional community-based study was conducted among participants aged 18–35 years. The FINDRISC questionnaire was used to collect data and compute the FINDRISC scores for each participant. Socio-demographic, anthropometric, blood glucose, and lipid profiles data were collected accordingly.

RESULTS: A total of 259 participants were recruited into the study. The median age was 21 years (IQR 19–27), and more than half 60.2% (156) were females. In total, 32.8% (85) of the participants had at least a slightly elevated risk of developing T2D in 10 years' time. Compared to the Oral Glucose Tolerance Test (OGTT), FINDRISC had a sensitivity and specificity of 39.1% and 69.2%, respectively (aROC = 0.5). The FINDRISC score significantly correlated with MetS (p = 0.001).

CONCLUSION: In this study, FINDRISC has shown low sensitivity and specificity in the screening of pre-diabetes/T2D. However, it has potential utility in the screening of MetS in a young-adult population.

Keywords: FINDRISC, prediabetes, diabetes, metabolic syndrome, young-adults

11. Insects as Diet and Therapy: Perspectives on Their Use for Combating Diabetes Mellitus in Tanzania

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ABSTRACT

More than 450 million people worldwide are suffering from diabetes and this number is expected to increase. In developing countries, such as Tanzania, the number of patients suffering from diabetes and associated diseases is increasing as well. Up to 80% of the Tanzanian people rely on traditional medicines for their health care services. The nature of Tanzanian is very rich in different plant and insect species, and this could be exploited through their implementation in preventive and/or curative approaches in the battle against diabetes. The implementation of healthy insects in the diets of people may help in the prevention of obesity, which is a risk factor in the etiology of diabetes, while the identification of small molecules in insects may help in the discovery of potential new drugs that can be used in the treatment of diabetes. In this paper, an overview on the potential implementation of insects against diabetes is presented.

Keywords: Traditional medicine, entomotherapy, entomophagy, diabetes, insects

12. Do conditional cash transfers improve mental health? Evidence from Tanzania's Governmental social protection program

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ABSTRACT

PURPOSE: Cash transfer interventions broadly improve the lives of the vulnerable, making them exceedingly popular. However, evidence of impacts on mental health is limited, particularly for conditional cash transfer (CCT) programs. We examined the impacts of Tanzania's government-run CCT program on depressive symptoms of youth aged 14–28.

METHODS: We utilized cluster randomized controlled trial data of 84 communities (48 intervention; 36 control). The intervention administered bimonthly CCTs to eligible households, while control communities were assigned to delayed intervention. The analysis included youth

with measurements of depression (10-item Centre for Epidemiological Studies Depression Scale) at baseline and 18 months later. We determined impacts using analysis of covariance models, adjusting for youth characteristics (including baseline depression), district-level fixed effects, and community-level random effects. Differential effects by sex and baseline social support were also estimated.

RESULTS: Although no evidence was found to suggest that the intervention impacted depressive symptoms among the full sample (n = 880) (effect −.20, 95% confidence interval [CI] −.88 to .48, *p* = .562), subsample results indicated that depressive symptoms were reduced 1.5 points among males (95% CI −2.56 to −.04, *p* = .007) and increased 1.1 points among females (95% CI .11–2.09, *p* = .029). Females 18+ years old (effect 1.55, 95% CI .27–2.83, *p* = .018) and females with children (effect 1.32, 95% CI −.13 to 2.78, *p* = .074) drove this negative impact. Social support did not moderate impacts.

CONCLUSIONS: Despite no overall intervention effects, results suggest that receiving a CCT has differential effects on mental health by sex. Although males benefited from the intervention, conditions which rely on stereotypically female roles may result in negative consequences among women.

Keywords: Mental health, Conditional cash transfers, Tanzania, Youth and adolescents

13. Prioritizing health-sector interventions for non-communicable diseases and injuries in low- and lower-middle income countries: national NCDI poverty commissions

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ABSTRACT

Health sector priorities and interventions to prevent and manage non-communicable diseases and injuries (NCDIs) in low- and lower-middle-income countries (LLMICs) have primarily adopted elements of the World Health Organization Global Action Plan for NCDs 2013-2020. However, there have been limited efforts in LLMICs to prioritize among conditions and health-sector interventions for NCDIs based on local epidemiology and contextually relevant risk factors or that incorporate the equitable distribution of health outcomes. The *Lancet* Commission on Reframing Non-Communicable Diseases and Injuries for the Poorest Billion supported national NCDI Poverty Commissions to define local NCDI epidemiology, determine an expanded set of priority NCDI conditions, and recommend cost-effective, equitable health-sector interventions. Fifteen national commissions and 1 state-level commission were established from 2016-2019. Six commissions completed the prioritization exercise and selected an average of 25 NCDI conditions; 15 conditions were selected by all commissions, including asthma, breast cancer, cervical cancer, diabetes mellitus type 1 and 2, epilepsy, hypertensive heart disease, intracerebral hemorrhage, ischemic heart disease, ischemic stroke, major depressive disorder, motor vehicle road injuries, rheumatic heart disease, sickle cell disorders, and subarachnoid hemorrhage. The commissions prioritized an average of 35 health-sector interventions based on cost-effectiveness, financial risk protection, and equity-enhancing rankings. The prioritized interventions were estimated to cost an additional US$4.70-US$13.70 per capita or approximately 9.7%-35.6% of current total health expenditure (0.6%-4.0% of current gross domestic product). Semi-structured surveys and qualitative interviews of commission representatives demonstrated positive outcomes in several thematic areas, including understanding NCDIs of poverty, informing national planning and implementation of NCDI health-sector interventions, and improving governance and coordination for NCDIs. Overall, national NCDI Poverty Commissions provided a platform for evidence-based, locally driven determination of priorities within NCDIs.

Keywords: health-sector interventions, non-communicable diseases, low- and lower-middle income countries, national NCDI poverty commissions

14. State-led efforts to reduce environmental impacts of artisanal and small-scale mining in Tanzania: Implications for fulfilment of the sustainable development goals

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ABSTRACT

improved environmental management is key to several of the sustainable development goals (SDGs). This paper focuses on the interaction between formalization of the Artisanal and Small-scale Mining (ASM) sector in Tanzania, and the regulation of negative environmental impacts. Key environmental impacts associated with ASM in Tanzania include: deforestation, use of mercury and cyanide in gold processing, dust and noise pollution, generalized water pollution, soil contamination, and failure to properly reclaim mining areas, and/or secure or fill-in mine shafts. Previous studies found that the Tanzanian regulatory framework was not well suited to the needs of the ASM sector, governance of ASM environmental issues was overly centralized, and environmental awareness amongst miners was low. Over the past five years, the Tanzanian government has reformed environmental regulations in the mining sector and has attempted to formalize ASM. It has also aligned some of its development targets to the SDGs. This paper describes current environmental regulations and policies, discusses actual and potential linkages to formalization initiatives, and assesses the capacities of different stakeholders to regulate and reduce environmental impacts, in the context of the SDGs.

Keywords: State-led development, Formalization, Artisanal and small-scale mining, Environmental degradation, Tanzania, SDGs

15. Implementation of human papillomavirus video education for women participating in mass cervical cancer screening in Tanzania

Emma C. Cooper,[1] Justine A. Maher,[1] Ariana Naaseh,[1] Elizabeth W. Crawford,[1] Justine O. Chinn,[1] Ava S. Runge,[1] Alexa N. Lucas,[1] Danielle C. Zezoff,[1] Kevin R. Bera,[1] Andreea I. Dinicu,[1] Kayla M. White,[1] Sujata E. Tewari,[4] Anjali Hari,[3] Megan Bernstein[3], Jenny Chang,[2] Argyrios Ziogas,[2] Diana C. Pearre,[5] Krishnansu S. Tewari[4,5]

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ABSTRACT

BACKGROUND: Because the global disease burden of cervical cancer is greatest in Africa, the World Health Organization has endorsed visual inspection with acetic acid screening with cryotherapy triage for the screen-and-treat approach. With the lowest doctor-to-patient ratio worldwide (1:50,000), Tanzania has nearly 10,000 new cases of cervical cancer and 7000 deaths annually.

OBJECTIVE: We report on the feasibility of visual inspection with acetic acid in the severely resource-limited Mwanza district and on the impact of intervening education on baseline human papillomavirus and cervical cancer knowledge.

STUDY DESIGN: Two 5-day free visual inspection with acetic acid (VIA) clinics in urban Buzuruga and rural Sangabuye on the shores of Lake Victoria were approved by our university institutional review board and local Tanzanian health authorities. Participants completed a demographic survey and a 6-question (1 point per question) multiple choice test written in Kiswahili to assess baseline knowledge. A 15-minute educational video in Kiswahili (Medical Aid Films: Understanding screening, treatment, and prevention of cervical cancer) was followed by repeated assessment using the same test, visual inspection with acetic acid screening, and optional HIV testing. Pre- and post-video scores and change of score were analyzed via t test, analysis of variance, and multivariate regression. Significance was considered at P<.05.

RESULTS: From July 2, 2018 to July 6, 2018, 825 women were screened, and 207 women (25.1%) were VIA positive (VIA+). One hundred forty-seven VIA+ nonpregnant women received same-day cryotherapy. Seven hundred sixty women participated in an educational intervention—61.6% of whom were from an urban site and 38.2% from a rural site. The mean age was 36.4 (standard deviation, 11.1). Primary languages were Kiswahili (62.2%) and Kisukuma (30.6%). Literacy was approximately 73%, and average education level was equivalent to the seventh grade (United States). Less than 20% of urban and rural women reported access to healthcare providers. Mean score of the participants before watching the video was 2.22 (standard deviation, 1.76) and was not different between VIA+ and VIA negative groups. Mean score of the participants after watching the video was 3.86 (standard deviation, 1.78). Postvideo scores significantly improved regardless of age group, clinic site, primary language, education level, literacy, or access to healthcare provider (P<.0001). Change of score after watching the video was significantly greater in participants from urban areas (1.99±2.07) than in those from rural areas (1.07±1.95) (P<.0001). Multivariate analysis identified urban site as an independent factor in change of score (P=.0211).

CONCLUSION: Visual inspection with acetic acid screening for cervical cancer is feasible and accepted in northern Tanzania. Short video-based educational intervention improved baseline knowledge on the consequences of human papillomavirus infection in the studied populations. The impact was greater in the urban setting than in the rural setting.

Keywords: Africa, cervical cancer, global health, human papilloma virus, patient education, visual inspection with acetic acid

16. Tanzanian women´s knowledge about Cervical Cancer and HPV and their prevalence of positive VIA cervical screening results. Data from a Prevention and Awareness Campaign in Northern Tanzania, 2017 – 2019

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ABSTRACT

BACKGROUND: 14.9 million women (≥15 years) in Tanzania are at risk of developing cervical cancer. Limited cancer care facilities, prevention programs and sparse knowledge among community members and healthcare workers contribute to late-stage presentation leading to a high mortality rate.

OBJECTIVE: This study aims to scientifically accompany prevention and awareness campaigns (PrevACamp) in northern Tanzania in its real-world settings to obtain (1) a better understanding about cervical cancer and HPV knowledge amongst female PrevACamp participants and (2) to determine the prevalence of pre-cancerous lesions among women undergoing cervical cancer VIA screening.

METHOD: Cross-sectional survey among PrevACamp attendees in two regions in Northern Tanzania. Two data collections tools were used: Questionnaires and clinical data from VIA screening. Data were collected from October 2017 to March 2019.

RESULTS: 2,192 PrevACamp attendees were interviewed and 2,224 received VIA screening. There was significant nescience on cervical cancer regardless of education level, resident status, or number of children as well as nescience on HPV in all age groups, especially in urban areas and misconceptions about cancer. Screening revealed VIA positivity rate of 3.1%.

CONCLUSION: There is an alarming lack of knowledge about cervical cancer and, to a lesser Extent, about HPV among the study participants. Having health insurance influenced the level of knowledge significantly. Outreach programs in rural areas appear to target the population in need of health education. Low positive VIA screening results are paralleled with lower HIV rates among the women. We assume that the high density of primary health care coverage in northern Tanzania contributes to these findings.

Keywords: cervical cancer, cancer prevention, VIA screening, HPV, Tanzania

17. Proceedings from the CIH[LMU] occupational safety and health symposium 2019 "Protecting workers' health: global challenges and opportunities in work-related respiratory diseases"

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ABSTRACT

The international CIH[LMU] Occupational Safety and Health Symposium 2019 was held on 16th March, 2019 at the Ludwig-Maximilians-Universität Munich, Germany. About 60 participants from around the world representing occupational health and safety professionals, students, instructors from several institutions in Germany and abroad, attended the symposium. The main objective of the symposium was to create awareness on global challenges and opportunities in work-related respiratory diseases. One keynote lecture and six presentations were made. While the keynote lecture addressed issues on occupational diseases in the twenty-first century, the six presentations were centered on: Prevention and control of work-related respiratory diseases, considerations; Occupational health and safety in Mining: Respiratory diseases; The prevention of TB among health workers is our collective responsibility; Compensation and prevention of occupational diseases and discussion on how artificial intelligence can support them: Overview of international approaches; Work-related Asthma: Evidence from high-income countries; and The role of imaging in the diagnosis of work- related respiratory diseases. A panel discussion was conducted following the presentations on the importance and challenges of data acquisition which is needed to have a realistic picture of the occupational safety and health status of workers at different levels. The current summary is an attempt to share the proceedings of the symposium.

Keywords: Occupational diseases; Occupational safety; Protecting workers; Work-related respiratory diseases.

18. The past, present and future impact of HIV prevention and control on HPV and cervical disease in Tanzania: A modelling study.

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ABSTRACT

BACKGROUND: Women with HIV have an elevated risk of HPV infection, and eventually, cervical cancer. Tanzania has a high burden of both HIV and cervical cancer, with an HIV prevalence of 5.5% in women in 2018, and a cervical cancer incidence rate among the highest globally, at 59.1 per 100,000 per year, and an estimated 9,772 cervical cancers diagnosed in 2018. We aimed to quantify the impact that interventions intended to control HIV have had and will have on cervical cancer in Tanzania over a period from 1995 to 2070.

METHODS: A deterministic transmission-dynamic compartment model of HIV and HPV infection and natural history was used to simulate the impact of voluntary medical male circumcision (VMMC), anti-retroviral therapy (ART), and targeted pre-exposure prophylaxis (PrEP) on cervical cancer incidence and mortality from 1995–2070.

FINDINGS: We estimate that VMMC has prevented 2,843 cervical cancer cases and 1,039 cervical cancer deaths from 1995–2020; by 2070 we predict that VMMC will have lowered cervical cancer incidence and mortality rates by 28% (55.11 cases per 100,000 women in 2070 without VMMC, compared to 39.93 with VMMC only) and 26% (37.31 deaths per 100,000 women in 2070 without VMMC compared to 27.72 with VMMC), respectively. We predict that ART will temporarily increase cervical cancer diagnoses and deaths, due to the removal of HIV death as a competing risk, but will ultimately further lower cervical cancer incidence and mortality rates by 7% (to 37.31 cases per 100,000 women in 2070) and 5% (to 26.44 deaths per 100,000 women in 2070), respectively, relative to a scenario with VMMC but no ART. A combination of ART and targeted PrEP use is anticipated to lower cervical cancer incidence and mortality rates to 35.82 and 25.35 cases and deaths, respectively, per 100,000 women in 2070.

CONCLUSIONS: HIV treatment and control measures in Tanzania will result in long-term reductions in cervical cancer incidence and mortality. Although, in the near term, the life-extending capability of ART will result in a temporary increase in cervical cancer rates, continued efforts towards HIV prevention will reduce cervical cancer incidence and mortality over the longer term. These findings are critical background to understanding the longer-term impact of achieving cervical cancer elimination targets in Tanzania.

Keywords: HIV, HPV, prevention, control, cervical disease, Tanzania

19. Cervical Cancer Prevention in Tanzania (CONCEPT) study: Cohort profile.

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ABSTRACT

PURPOSE: Cervical cancer is a major cause of death among women in Eastern Africa, and the distribution of human papillomavirus (HPV) according to HIV status is inadequately characterised in this region. In order to guide future cervical cancer preventive strategies that involve HPV testing, the Comprehensive Cervical Cancer Prevention in Tanzania (CONCEPT) study was established in 2015. The CONCEPT cohort aims to investigate the natural history of HPV and determine acquisition and persistence patterns of high-risk (HR) HPV among HIV-positive and HIV-negative women. Further, the influence of lifestyle and sexual/reproductive factors will be investigated.

OBJECTIVES: The main objective of this article is to describe how the CONCEPT cohort was established. Participants Women aged 25–60 years were enrolled from cervical cancer screening clinics in Dar-es-Salaam and Moshi, Tanzania.

METHODS: Data were collected at baseline, at 14 months (first follow-up) and at 28 months (second follow-up). Biological samples included two cervical swabs for HPV DNA testing, cytology, Hybrid Capture 2, genotyping and blood samples for HIV. Visual inspection with acetic acid was performed, and sociodemographic, lifestyle and sexual/reproductive characteristics were collected through a standardised questionnaire.

RESULTS: Findings to date 4043 women were included in the cohort from August 2015 to May 2017. At baseline, 696 (17.1%) women were HR HPV positive, and among these, 31.6% were HIV positive; 139 women (3.4%) had highgrade squamous intraepithelial lesions. 3074 women (81%) attended the first follow-up. The majority attended after receiving a phone call reminder (35%) or from home via self-samples (41%). At first follow-up, 438 (14.4%) were HR HPV positive and 30.4% of these were HIV positive. Future plans A second follow-up is underway (17 December 2018–October 2020).

CONCLUSION: We plan to integrate our data with a previous cross-sectional HPV study from Tanzania to increase the power of our findings. Researchers interested in collaborating are welcomed, either by extracting data or jointly requesting further investigation from the cohort

Keywords: Cervical cancer, prevention, Tanzania

20. Factors influencing the uptake of cervical cancer screening services in Tanzania: A health system perspective from national and district levels

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ABSTRACT

AIM: This study aimed at examining factors influencing uptake of cervical cancer screening services among women in Tanzania.

METHODS: In-depth interviews were used to obtain information from 10 key Informants. Of these, three were officials (policy makers) from the Reproductive Health-Cancer Unit of Ministry of Health and Community Development, Gender, Elderly and Children (MoHCDGEC), three were health managers working at Kinondoni Municipal health system reproductive and child health section and four were health workers from the Ocean Road Cancer Institute (ORCI). The study participants were purposively selected since they hold the responsibility of planning, coordinating and implementing the Tanzania cervical cancer prevention strategies at different levels of health system. The qualitative data analysis was done manually using thematic analysis.

RESULTS: The national health system factors influencing the early uptake of cervical cancer screening services include poor flow of information from national to lower level and inadequate availability of tools and instruments and shortage of skilled and competent staff. The district level health systems factors influencing uptake of cervical cancer screening services include inadequate number of partners, poor flow of information, poor collaboration with the private sector, no adequate provision of cervical cancer screening services due to lack of prioritization, poor creation of awareness and failure to use the health information system effectively.

Keywords: cervical cancer, national and district health system, nurses, nursing, screening, uptake

21. The best thing is that you are doing it for yourself – perspectives on acceptability and feasibility of HPV self-sampling among cervical cancer screening clients in Tanzania: a qualitative pilot study.

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ABSTRACT

BACKGROUND: Cervical cancer is the most common type of cancer in sub-Saharan Africa, and it is also the cancer disease that most women die from. The high mortality rate is partly due to low attendance rates to screening services and low sensitivity of visual inspection with acetic acid, which is the standard screening method used in screening programs in sub-Saharan Africa. In order to overcome of the burden of disease new screening strategies and methods are warranted. This study aims to explore the acceptability and feasibility of HPV self-sampling compared to provider-based sampling among cervical cancer screening clients living in Dar es Salaam.

METHODS: Women attending cervical cancer screening at Ocean Road Cancer Institute in Dar es Salaam, Tanzania between February – April 2017 were invited into the study. The participants had (1) a provider-collected sample, and (2) a self-sample for HPV on top of the regular cervical cancer screening. 50% of the participants conducted the self-sample after receiving a written instruction guide of how to collect the sample (written). The other 50% received both the written and an oral introduction to self-sampling (written+). All participants could ask for nurse assistance during self-sample collection if needed. Individual semi-structured interviews were conducted with the participants post sample collection. Data collection stopped when saturation was reached. Data were analysed using a thematic content analysis.

RESULTS: Twenty-one women participated in the study. Regardless of how women were introduced to the self-sample (written or written+), there was a high demand for nurse presence as they felt uncertain of their personal capabilities to collect the self-sample correctly. However, as long as nurse assistance was an option most women perceived self-sampling as easy and comfortable though few experienced bleeding and pain. The majority of women preferred self-sampling over provider-sampling primarily due to the method being more private than the provider-sampling.

CONCLUSIONS: HPV self-sampling was well-perceived and accepted, however, for the method to be feasible a nurse needed to be present. HPV Self-sampling may be an alternative method to increase uptake of cervical cancer screening. Larger quantitative studies are recommended to support the study findings.

Keywords: acceptability, feasibility, HPV self-sampling, cervical cancer, screening Tanzania

22. Prevalence, Awareness, Treatment, and Control of Hypertension among Young and Middle-Aged Adults: Results from a Community-Based Survey in Rural Tanzania

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ABSTRACT

BACKGROUND: Hypertension, which is the single most important risk factor for CVDs, is increasing at an alarming rate in most developing countries. This study estimated the prevalence, awareness, treatment, and control of hypertension among young and middle-aged adults in rural Morogoro, Tanzania. Furthermore, it explored factors associated with both prevalence and awareness of hypertension.

METHODS: A cross-sectional survey was conducted as part of the cluster randomized controlled study of community health workers (CHWs) interventions for reduction of blood pressure in a randomly selected sample of young and middle-aged population in rural Morogoro. Sociodemographic, lifestyle-related factors, history of diagnosis, and treatment for hypertension were collected using a questionnaire adopted from the STEPS survey tool. Blood pressure, height, and weight were measured at home following standard procedures. Descriptive statistics were used to estimate prevalence, awareness, treatment, and control of hypertension. Multiple logistic regression models were used to assess determinants of hypertension and awareness.

RESULT: The prevalence of hypertension was 29.3% (95% CI: 27.7–31.0). Among individuals with hypertension, only 34.3% were aware of their hypertension status. Only around one-third (35.4%) of those who were aware of their hypertension status were currently on antihypertensive medication. Hypertension control was attained in only 29.9% among those on medications. Older age (P<0.001), use of raw table salt (P<0.001), and being overweight/obese (P<0.001) were associated with hypertension. Predictors of awareness of hypertension status were older age, being a female, higher socioeconomic status, use of raw table salt, a history of diabetes, and overweight/obesity (all P<0.001). Alcohol drinking was associated with low awareness for hypertension status (P<0.001).

CONCLUSION: There is high prevalence of hypertension with low rates of awareness, treatment, and control among young and middle-aged adults in rural Tanzania. Community-level health promotion and screening campaigns for hypertension and other CVD risk factors should be intensified.

Keywords: hypertension, screening campaigns, cardiovascular disease, risk factors, Tanzania

23. Fighting non-communicable diseases in East Africa: assessing progress and identifying the next steps.

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ABSTRACT

Sub-Saharan Africa has seen a rapid increase in non-communicable disease (NCD) burden over the last decades. The East African Community (EAC) comprises Burundi, Rwanda, Kenya, Tanzania, South Sudan and Uganda, with a population of 177 million. In those countries, 40% of deaths in 2015 were attributable to NCDs. We review the status of the NCD response in the countries of the EAC based on the available monitoring tools, the WHO NCD progress monitors in 2017 and 2020 and the East African NCD Alliance benchmark survey in 2017. In the EAC, modest progress in governance, prevention of risk factors, monitoring, surveillance and evaluation of health systems can be observed. Many policies exist on paper, implementation and healthcare are weak and there are large regional and subnational differences. Enhanced efforts by regional and national policy-makers, non-governmental organizations and other stakeholders are needed to ensure future NCD policies and implementation improvements

Keywords: Non-communicable diseases, EAC, Sudan, Burundi, Rwanda, Kenya, Tanzania, South Sudan, Uganda

24. Public knowledge of risk factors and warning signs for cardiovascular disease among young and middle-aged adults in rural Tanzania.

Alfa J. Muhihi,[1,2,3] Amani Anaeli,[4] Rose N. M. Mpembeni, Bruno F. Sunguya,[1] Germana Leyna,[5] Deodatus Kakoko[6], Anna Tengia Kessy,[1] Mary Mwanyika Sando,[2] Marina Njelekela[7,8] & David P. Urassa[1]

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ABSTRACT

BACKGROUND: Improving cardiovascular health requires public knowledge and reduction of modifiable cardiovascular disease (CVD) risk factors. This study assessed knowledge of risk factors and warning signs for CVDs among young and middle-aged adults in Morogoro, Tanzania.

METHODS: We conducted a community-based survey as part of cluster randomized controlled study of community health workers (CHWs) intervention for reduction of blood pressure among young and middle-aged adults in rural Morogoro. Information on socio-demographic characteristics, knowledge of risk factors and warning signs for CVDs was collected using an interviewer administered questionnaire. Knowledge was assessed using open-ended questions followed by closed-ended questions. Descriptive statistics were used to describe knowledge of risk factors and warning signs. Logistic regression analysis was used to investigate factors associated with adequate knowledge of risk factors and warning signs for CVDs.

RESULTS: Two-thirds (65.7%) of the participants had heard about CVDs. The main sources of information were mainly relatives/ neighbors (64.8%) and radio (53.0%). Only 28.3% of the participants reported health care providers as source of information about CVDs. More than half of the participants (52.4%) did not mention even one risk factor spontaneously while 55.2% were unable to mention any warning sign. When asked to select from a list, 6.9% were unable to correctly identify any risk factor whereas 11.8% could not correctly identify even a single warning sign. Quarter of participants (25.4%) had good knowledge score of risk factors, 17.5% had good knowledge score of warning signs and 16.3% had overall good knowledge of both risk factors and warning signs. Residing in Ulanga, having higher education level, having ever checked blood pressure and being overweight/obese predicted adequacy of knowledge score for both risk factors and warning signs.

CONCLUSION: Knowledge of risk factors and warning signs in this rural population of young and middle-aged adults was generally low. Health care providers were less likely to provide health education regarding risk factors and warning signs for CVDs. Health promotion interventions to increase population knowledge of risk factors and warning signs should be implemented for successful reduction of CVDs in Tanzania.

Keywords: Public knowledge, health education, warning signs, cardiovascular disease, Tanzania.

25. Smartphone-Enhanced Training, QA, Monitoring, and Evaluation of a Platform for Secondary Prevention of Cervical Cancer: Opportunities and Challenges to Implementation in Tanzania

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ABSTRACT

PURPOSE: Until human papillomavirus (HPV)–based cervical screening is more affordable and widely available, visual inspection with acetic acid (VIA) is recommended by the WHO for screening in lower-resource settings. Visual inspection will still be required to assess the cervix for women whose screening is positive for high-risk HPV. However, the quality of VIA can vary widely, and it is difficult to maintain a well-trained cadre of providers. We developed a smartphone-enhanced VIA platform (SEVIA) for real-time secure sharing of cervical images for remote supportive supervision, data monitoring, and evaluation.

METHODS: We assessed programmatic outcomes so that findings could be translated into routine care in the Tanzania National Cervical Cancer Prevention Program. We compared VIA positivity rates (for HIV-positive and HIV-negative women) before and after implementation. We collected demographic, diagnostic, treatment, and loss-to-follow-up data.

RESULTS: From July 2016 to June 2017, 10,545 women were screened using SEVIA at 24 health facilities across 5 regions of Tanzania. In the first 6 months of implementation, screening quality

increased significantly from the baseline rate in the prior year, with a well-trained cadre of more than 50 health providers who “graduated” from the supportive-supervision training model. However, losses to follow-up for women referred for further evaluation or to a higher level of care were considerable.

CONCLUSION: The SEVIA platform is a feasible, quality improvement, mobile health intervention that can be integrated into a national cervical screening program. Our model demonstrates potential for scalability. As HPV screening becomes more affordable, the platform can be used for visual assessment of the cervix to determine amenability for same-day ablative therapy and/or as a secondary triage step, if needed.

Keywords: HPV screening, Smartphone-Enhanced Training, QA, Platform for Secondary Prevention, Cervical Cancer, Tanzania

26. Knowledge, Perceived Risk and Utilization of Prostate Cancer Screening Services among Men in Dar Es Salaam, Tanzania

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ABSTRACT

BACKGROUND: Late diagnosis of prostate cancer is common in low and middle income countries and contributes to high morbidity and mortality of the disease. Utilization of prostate cancer screening services plays a major role in prevention of adverse outcomes. However, there is limited information on the knowledge about, the perceived risk of, and the utilization of prostate cancer screening in Tanzania.

OBJECTIVE: To determine knowledge and perceived risk of prostate cancer, and the utilization of prostate cancer screening services, and associated factors, among men in Dar es Salaam, Tanzania.

METHODOLOGY: A population-based cross-sectional study involving men aged 40 years and above living in Dar es Salaam was conducted between May and August, 2018. Participants were recruited through multistage random sampling and took part in structured face-to-face interviews. Categorical variables were summarized using proportions while continuous variables were summarized as medians and inter-quarterly range (IQR). Chi square test was used to compare differences between proportions, and logistic regression modelling was used to determine factors associated with utilization of prostate cancer screening. Both crude and adjusted odds ratios

(OR), with corresponding 95% confidence intervals, are reported. All analyses were two-tailed and the significance level set at 5%.

RESULTS: A total of 388 men with a median age of 53 years (IQR 44–55) participated. Half (52.1%) had poor knowledge about prostate cancer and prostate cancer screening. A third (32.3%, n=125) perceived the risk of prostate cancer to be low. Only 30 respondents (7.7%) had ever been screened for prostate cancer. Utilization of prostate cancer screening services was independently associated with age above 60 years [AOR = 21.46, 95% CI: 6.23, 73.93], monthly income above 305 US Dollars [AOR = 15.68, 95% CI: 4.60, 53.48], the perceived risk of prostate cancer [AOR = 16.34, 95% CI: 7.82, 14.92] and knowledge about prostate cancer [AOR = 67.71, 95% CI: 8.20, 559.57].

CONCLUSIONS: Knowledge about prostate cancer and prostate cancer screening services was low among men in Dar es Salaam with a third perceiving themselves to be at no risk for the disease. Utilization of screening services was low and associated with low income, younger age, low perceived risk of prostate cancer and low knowledge about the disease. Intervention measures aiming to increase knowledge about prostate cancer and screening services, and affordable provision of services, are urgently called for.

Keywords: Knowledge, Perceived Risk, Prostate Cancer Screening, Tanzania

27. Cervical cancer in Tanzania: A systematic review of current challenges in six domains

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ABSTRACT

Cervical cancer is the most common cancer in Tanzania. After excluding human immunodeficiency virus, lower respiratory infections, malaria, diarrheal diseases, and tuberculosis, cervical cancer kills more women than any other form of illness in the country. Unfortunately, Tanzania has a low doctor-to-patient ratio (1: 50,000) and nearly 7000 women die each year from this disease. The clinical problem is further magnified by the country's lack of resources and prevailing poverty, sporadic cervical cancer screening, prevalence of high-risk oncogenic human papillomavirus subtypes, and relatively high rates of human immunodeficiency virus co-infection. In recent years, addressing the cervical cancer problem has become a priority for the Tanzanian government. In this systematic review of 39 peer-reviewed publications that appeared in the PubMed/MEDLINE (NCBI) database from 2013 to 2018, we synthesize the growing body of literature to capture current trends in Tanzania's evolving cervical cancer

landscape. Six domains were identified, including risk factors, primary prevention, barriers to screening, treatment, healthcare worker education, and sustainability. In addition to traditional risk factors associated with sexual behaviour, acetowhite changes observed during visual inspection of the cervix with acetic acid, lower education, rural setting, and HIV positivity also have a noteworthy clinical impact.

Keywords: Visual inspection with acetic acid, VIA, Tanzania, Cervical cancer, HPV, HIV

28. Knowledge, attitudes, and preventative practices regarding ischemic heart disease among emergency department patients in northern Tanzania

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ABSTRACT

OBJECTIVES: The objective of this study is to increase understanding of knowledge, attitudes, and preventative practices regarding ischemic heart disease (IHD) in sub-Saharan Africa in order to develop patient-centered interventions to improve care and outcomes.

METHODS: Adult patients presenting with chest pain or shortness of breath to an emergency department in northern Tanzania were enrolled. A questionnaire was adapted from existing knowledge attitude and practice surveys regarding cardiovascular disease and the WHO STEPS instrument. Individual five-year risk of cardiovascular event was determined by validated models based on age, sex, systolic blood pressure, body mass index, diabetes, and smoking status. An IHD knowledge score was calculated by giving one point for each correct response to the knowledge-related items, with a maximum score of 10. Associations between IHD knowledge and patient characteristics were assessed by Welch's t-test.

RESULTS: A total of 349 patients were enrolled, with median interquartile range (IQR) age 60 (45, 72) years. Of participants, 259 (74.2%) had hypertension, and 228 (65.3%) had greater than 10% five-year risk of cardiovascular event. The mean (SD) knowledge score was 4.8 (3.3). The majority of respondents (224, 64.2%) recognized obesity as a risk factor for heart attack, while a minority (34, 9.7%) knew that a daily aspirin could reduce the risk of cardiovascular event. Greater IHD knowledge was associated with younger age ($P = 0.045$) and higher levels of education ($P < 0.001$) but not higher risk of cardiovascular disease ($P = 0.123$). Most respondents expressed a willingness to diet to improve their health (322, 92.3%) and a preference for treatment from a physician rather than a traditional healer for a heart attack (321, 92.0%). A

minority of patients reported exercising regularly (88, 25.2%) or seeing a doctor routinely for checkups (100, 28.7%).

CONCLUSIONS**:** High-risk emergency department patients in northern Tanzania have moderate knowledge regarding IHD but do not consistently engage in healthy preventive practices. Patient-centered interventions are needed to improve IHD knowledge and practices in high-risk populations.

Keywords: Ischemic heart disease, Knowledge, Attitudes, Practices, Sub-Saharan Africa

29. Developing an integrated intervention to address intimate partner violence and psychological distress in Congolese refugee women in Tanzania.

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ABSTRACT

BACKGROUND: Multi-sectoral, integrated interventions have long been recommended for addressing mental health and its social determinants (e.g., gender-based violence) in settings of ongoing adversity. We developed an integrated health and protection intervention to reduce psychological distress and intimate partner violence (IPV), and tested its delivery by lay facilitators in a low-resource refugee setting.

METHODS: Formative research to develop the intervention consisted of a structured desk review, consultation with experts and local stakeholders (refugee incentive workers, representatives of humanitarian agencies, and clinical experts), and qualitative interviews (40 free list interviews with refugees, 15 key informant interviews). Given existing efforts by humanitarian agencies to prevent gender-based violence in this particular refugee camp, including with (potential) perpetrators, we focused on a complementary effort to develop an integrated intervention with potential to reduce IPV and associated mental health impacts with female IPV survivors. We enrolled Congolese refugee women with elevated psychological distress and past-year histories of IPV ($n = 60$) who received the intervention delivered by trained and supervised lay refugee facilitators. Relevance, feasibility and acceptability of the intervention were evaluated through quantitative and qualitative interviews with participants. We assessed instrument test-retest reliability ($n = 24$), inter-rater reliability ($n = 5$ interviews), internal consistency, and construct validity ($n = 60$).

RESULTS: We designed an 8-session intervention, termed Nguvu ('strength'), incorporating brief Cognitive Processing Therapy (focused on helping clients obtaining skills to overcome negative thoughts and self-perceptions and gain control over the impact these have on their lives) and Advocacy Counseling (focused on increasing autonomy, empowerment and strengthening linkages to community supports). On average, participants attended two-thirds of the sessions. In qualitative interviews, participants recommended adaptations to specific intervention components and provided recommendations regarding coordination, retention, safety concerns and intervention participation incentives. Analysis of the performance of outcome instruments overall revealed acceptable reliability and validity.

CONCLUSIONS: We found it feasible to develop and implement an integrated, multi-sectoral mental health and IPV intervention in a refugee camp setting. Implementation challenges were identified and may be informative for future implementation and evaluation of multi-sectoral strategies for populations facing ongoing adversity.

Keywords: Intimate partner violence, Mental health, Psychological distress, Refugees, Tanzania, Democratic Republic of the Congo, Cognitive processing therapy, Advocacy, Empowerment

30. Knowledge towards cervical cancer prevention and screening practices among women who attended reproductive and child health clinic at Magu district hospital, Lake Zone Tanzania: a cross-sectional study

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ABSTRACT

BACKGROUND: Cervical cancer is a global leading cause of morbidity and mortality, attributable to the death of approximately 266,000 women every year. Majority (87%) of cervical cancer deaths occur in developing countries including Tanzania. Though knowledge of cervical cancer is an important determinant of women's participation in prevention and screening for cervical cancer, little is known about this topic in Tanzania.

OBJECTIVES: This study aimed to determine the knowledge of cervical cancer prevention services and screening practices among women who attended Reproductive Child Health clinic at a district hospital in Lake Zone, Tanzania. This information is important to help designing appropriate interventions and scaling up cervical cancer control programs, hence accelerate the achievement towards Sustainable Development Goals.

METHODS: A cross-sectional study was conducted from March to June 2017, involving 307 women attending reproductive and child health clinic at Magu district hospital. A questionnaire adopted from the validated Cervical Cancer Awareness Measure was used to collect data from the study participants. Data was analysed using SPSS version 20. Descriptive statistics were summarized using frequencies and percentages for categorical variables while mean and standard deviation was used for continuous variables. Multivariable logistic regressions model was used to estimate Adjusted Odds ratio with 95% CI for factors associated with knowledge.

RESULTS: Knowledge of cervical cancer was low, where 82.7% of the women scored less than 50%. Majority (82.4%) were aware about cervical cancer. Secondary education or higher (OR = 7.77, 95% CI: 1.70-35.48) and "knowing someone who has ever had cervical cancer" (OR = 2.19, 95% CI: 1.16-4.13) were significantly associated with higher knowledge. Only 14.3% of participants practiced cervical cancer screening.

CONCLUSIONS: Majority of women lack comprehensive knowledge of cervical cancer and only few utilize screening services. Strategies for awareness creation about cervical cancer may help to improve knowledge and utilization of cancer screening practices

Keywords: Knowledge, Cervical cancer, Screening, Tanzania

31. Cervical Cancer Awareness among Women in Tanzania: An Analysis of Data from the 2011-12 Tanzania HIV and Malaria Indicators Survey

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ABSTRACT

BACKGROUND: Awareness about cervical cancer is a first step in the process of screening and early treatment. The purpose of this study was to provide better understanding of basic knowledge about cervical cancer among women of reproductive age in Tanzania.

METHOD: Data were analyzed from the 2011-2012 Tanzania HIV and Malaria Indicators Survey (THMIS) and a sample of 5542 sexually active women from 15 to 49 years of age were included in the analysis.

RESULTS: Overall knowledge about cervical cancer was high among interviewed women. Only 30.9% of women had never heard about cervical cancer. The predictors of awareness were having secondary or more level of education (AOR = 3.257, 95% CI 2.328–4.557), residing in urban (AOR = 1.365, 95% CI 1.093–1.705), being affluent (AOR = 2.685, 95% CI 2.009–3.587), having one to four children (AOR = 1.36, 95% CI 1.032–1.793), and age of 30–34 years (AOR = 3.15, 95% CI 2.353–4.220), 35–39 years (AOR = 2.46, 95% CI 1.831–3.308), and 40–44 years (AOR = 3.46, 95% CI 2.497–4.784).

CONCLUSION: While the cervical cancer landscape in Tanzania has evolved since this survey, coverage has not yet been achieved and access to cervical cancer prevention services for rural women and girls remains a concern. Women who were least likely to be aware of cervical cancer were rural women, less affluent women, those with limited education, and those with limited access to the formal economy. Arguably, these are the women who are most at risk for cervical cancer. To close this gap, Tanzania's ongoing efforts to increase access to high-quality cervical cancer prevention services for all women at risk are commendable.

Keywords: Awareness, knowledge, cervical cancer, women, prevention, Tanzania

32. Prevalence, predictors and challenges of gestational diabetes mellitus screening among pregnant women in northern Tanzania

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ABSTRACT

OBJECTIVES: To determine the prevalence and predictors of gestational diabetes mellitus (GDM) as well as acceptability of returning for glucose tolerance testing among pregnant women in Moshi municipality, northern Tanzania.

METHODS: Cross-sectional study from October 2015 to April 2016 among women with gestation age of 24–28 weeks of pregnancy attending at Kilimanjaro Christian Medical Centre (KCMC) referral hospital, Majengo and Pasua Health Centres. Women were interviewed and requested to return the next day (window within a month, depending on gestational age) for fasting plasma glucose (FPG) testing, followed immediately by a 75 g oral glucose tolerance test (OGTT). GDM was diagnosed using the 2013 WHO criteria. Logistic regression was conducted to reveal independent predictors for GDM.

RESULTS: Of 433 interviewed women, 100 (23%) did not return for FPG and OGTT testing. The prevalence of GDM among the 333 screened women was 19.5%, and 3% had diabetes in pregnancy (DIP). GDM was significantly associated with age ≥35 years (adjusted OR 6.75), pre-pregnancy obesity (AOR 2.22) and history of abortion (AOR 2.36).

CONCLUSION: Prevalence of GDM is high in Moshi. We recommend introduction of routine screening for hyperglycemia during pregnancy along with strategies for follow-up to prevent long-term effects of GDM and DIP in women and their children.

Keywords: Gestational diabetes mellitus, glucose tolerance test, routine screening, Kilimanjaro

33. Inequalities in the use of secondary prevention of cardiovascular disease by socioeconomic status: evidence from the PURE observational study

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ABSTRACT

BACKGROUND: There is little evidence on the use of secondary prevention medicines for cardiovascular disease by socioeconomic groups in countries at different levels of economic development.

METHODS: We assessed use of antiplatelet, cholesterol, and blood-pressure-lowering drugs in 8492 individuals with self-reported cardiovascular disease from 21 countries enrolled in the Prospective Urban Rural Epidemiology (PURE) study. Defining one or more drugs as a minimal level of secondary prevention, wealth-related inequality was measured using the Wagstaff concentration index, scaled from −1 (pro-poor) to 1 (pro-rich), standardized by age and sex. Correlations between inequalities and national health-related indicators were estimated.

FINDINGS: The proportion of patients with cardiovascular disease on three medications ranged from 0% in South Africa (95% CI 0–1·7), Tanzania (0–3·6), and Zimbabwe (0–5·1), to 49·3% in Canada (44·4–54·3). Proportions receiving at least one drug varied from 2·0% (95% CI 0·5–6·9) in Tanzania to 91·4% (86·6–94·6) in Sweden. There was significant ($p<0·05$) pro-rich inequality in Saudi Arabia, China, Colombia, India, Pakistan, and Zimbabwe. Pro-poor distributions were observed in Sweden, Brazil, Chile, Poland, and the occupied Palestinian territory. The strongest predictors of inequality were public expenditure on health and overall use of secondary prevention medicines.

INTERPRETATION: Use of medication for secondary prevention of cardiovascular disease is alarmingly low. In many countries with the lowest use, pro-rich inequality is greatest. Policies associated with an equal or pro-poor distribution include free medications and community health programs to support adherence to medications.

Keywords: Secondary prevention, cardiovascular disease, inequality, medications, Tanzania

34. Awareness of Risk Factors and Complications of Hypertension in Southern Tanzania

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ABSTRACT

INTRODUCTION: To assess patients' awareness on the risk factors, complications and prevention of complications of hypertension.

METHODS: This cross-sectional study was carried out on a non-random sample of hypertensive patients attending Songea Regional Referral Hospital, Tanzania using an interview based questionnaire. Data entry and analysis were performed using SPSS v.14. Results are expressed as Mean ± SD for continuous data and proportions for categorical data. Logistic regression was performed to assess the association between variables and patients' awareness on risk factors, complications, and prevention of complications of hypertension.

RESULTS: Four hundred and fifty hypertensive patients with mean age of 57.00 ± 12.60 years were enrolled in the study. Females accounted for 52.90% of the study population. More than one-third (35.60%) of patients had low level of awareness on the risk factors, complications and preventive measures of complication of hypertension. Having higher education level, having a long standing history of hypertension of more than 5 years, and a positive family history of hypertension were all associated with high level of awareness among hypertensive patients.

CONCLUSION: The findings show that a considerable number of hypertensive patients are not aware of the risk factors, complications and preventive measures of hypertension. Assessing patients' awareness of risk factors and complications of hypertension during follow-up visits may improve patients' control of blood pressure and slow down the progression of complications**.**

Keywords: Awareness, Risk Factors, Complications, Hypertension

35. Acceptance of peer navigators to reduce barriers to cervical cancer screening and treatment among women with HIV infection in Tanzania

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ABSTRACT

OBJECTIVE: To identify barriers to cervical cancer screening and treatment, and determine acceptance toward peer navigators (PNs) to reduce barriers.

METHODS: A cross-sectional study was conducted among women with HIV infection aged 19 years or older attending HIV clinics in Dar es Salaam, Tanzania, between May and August 2012. Data for sociodemographic characteristics, barriers, knowledge and attitude toward cervical cancer screening and treatment, and PNs were collected by questionnaire.

RESULTS: Among 399 participants, only 36 (9.0%) reported previous cervical cancer screening. A higher percentage of screened than unscreened women reported being told about screening by someone at the clinic (25/36 [69.4%] vs 132/363 [36.4%]; *P*=0.002), knew that screening was free (30/36 [83.3%] vs 161/363 [44.4%]; *P*<0.001), and obtained "good" cervical screening attitude scores (17/36 [47.2%] vs 66/363 [18.2%]; *P*=0.001). Most women (382/399 [95.7%]) did not know about PNs. When told about PNs, 388 (97.5%) of 398 women said they would like assistance with explanation of medical terms, and 352 (88.2%) of 399 said they would like PNs to accompany them for cervical evaluation and/or treatment.

CONCLUSION: Use of PNs was highly acceptable and represents a novel approach to addressing barriers to cervical cancer screening and treatment.

Keywords: peer navigators, barriers, cervical cancer, screening, treatment, HIV, Tanzania

36. The role of libraries in promoting health literacy for combating non-communicable diseases in Tanzania

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ABSTRACT

INTRODUCTION: Health literacy is an important aspect to every individual in the society. This is due to the fact that a health literate person understands his/her health status, take prevention and control measures of various diseases.

OBJECTIVE: The purpose of this paper was to discuss how health literacy for prevention, control and treatment of non-communicable diseases can be conducted by libraries in Tanzania.

METHODS & RESULTS: The researcher reviewed several literatures and found out that libraries have a big role to play to ensure that community recognize their information needs, search for relevant information and make use of the information to make informed health decisions.

CONCLUSION: The study concluded that because non communicable diseases impose a double burden to the government and her people a call for immediate actions from various stakeholders' such as health libraries is required

Keywords: health literacy, prevention, NCD, libraries, Tanzania

37. Accessibility of women to health information in Tanzania: A case study of Morogoro Region

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Library Review (2017); 66 (6/7):415-429. https://doi.org/10.1108/LR-05-2017-0046

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ABSTRACT

PURPOSE: The aim of this study is to examine accessibility of health information to women in Tanzania with reference to the Morogoro region. The specific objectives of the study were: first, to identify the health information needs of women; second, to determine the accessibility of the needed health information to women in the study area; and third, to determine the preferred sources of information used by women in accessing health information in the study area.

METHODOLOGY: A descriptive survey method – cross-sectional design – was used. Semi-structured questionnaires with both open- and close-ended questions were used to collect data from four wards of Morogoro Municipal Council, Tanzania. Key informant interviews were conducted with 12 women from four wards, 3 women were selected from each ward.

FINDINGS: The findings also indicated that there was a significant relationship between wards and accessibility to certain types of information which were concerning hypertension, family planning, malaria and typhoid. Although information on diabetes and hypertension had lower percentages of accessibility in all four wards, the study findings revealed that medical doctors, pharmacy shops and family were the main sources of information used by women to access health information. Radio and television were rated as preferred sources of information required

by women, whereas internet, local herb hawkers and mobile phones were rated as non-preferable. It is therefore recommended that the government through health-care providers and medical librarians should be proactive in creating awareness and disseminate health information on non-communicable diseases such as hypertension and diabetes to women.

IMPLICATIONS: The paper provides appropriate knowledge that is needed in improving access to health information in Tanzanian communities and in other developing countries communities.

Keywords: Access, health information seeking behaviors, health information, information needs, Tanzania

38. Cost-effectiveness analysis of population-based tobacco control strategies in the prevention of cardiovascular diseases in Tanzania

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ABTRACT

BACKGROUND: Tobacco consumption contributes significantly to the global burden of disease. The prevalence of smoking is estimated to be increasing in many low-income countries, including Tanzania, especially among women and youth. Even so, the implementation of tobacco control measures has been discouraging in the country. Efforts to foster investment in tobacco control are hindered by lack of evidence on what works and at what cost.

AIMS: We aim to estimate the cost and cost-effectiveness of population-based tobacco control strategies in the prevention of cardiovascular diseases (CVD) in Tanzania.

MATERIALS AND METHODS: A cost-effectiveness analysis was performed using an Excel-based Markov model, from a governmental perspective. We employed an ingredient approach and step-down methodologies in the costing exercise following a government perspective. Epidemiological data and efficacy inputs were derived from the literature. We used disability-adjusted life years (DALYs) averted as the outcome measure. A probabilistic sensitivity analysis was carried out with Ersatz to incorporate uncertainties in the model parameters.

RESULTS: Our model results showed that all five tobacco control strategies were very cost-effective since they fell below the ceiling ratio of one GDP per capita suggested by the WHO. Increase in tobacco taxes was the most cost-effective strategy, while a workplace smoking ban was the least cost-effective option, with a cost-effectiveness ratio of US$5 and US$267, respectively.

CONCLUSIONS: Even though all five interventions are deemed very cost-effective in the prevention of CVD in Tanzania, more research on budget impact analysis is required to further assess the government's ability to implement these interventions.

Keywords: Cardiovascular, prevention, budget impact analysis, cost effective, Tanzania

39. Physical activity and associated factors from a cross-sectional survey among adults in northern Tanzania.

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ABSTRACT

BACKGROUND: Insufficient physical activity (PA) is a major contributing factor in the growing problem of non-communicable diseases (NCDs) in urban and rural Sub-Saharan Africa. This study aimed to determine PA and associated factors among adults in Northern Tanzania.

METHODS: We analyzed secondary data from a cross-sectional serological survey nested within the Magu health and demographic sentinel surveillance population in Magu District Northwestern Tanzania. All resident adults aged 15 years and older were invited to participate in the study, and physical activity data were analyzed for 5663 participants. Data were analyzed using Stata version 13.0. We used logistic regression to obtain odds ratios and 95% confidence intervals (CI) for risk factors associated with differences in PA.

RESULTS: In this mainly rural population, 96% reported sufficient PA, with a higher proportion in males (97.3%) compared to females (94.8%). In males the odds of sufficient PA were lower in rural areas compared to urban areas (OR = 0.19; $P < 0.001$; 95% CI = 0.08–0.42), while in females the odds of sufficient PA were higher in rural areas compared to urban areas (OR = 2.27; $P < 0.001$; 95%CI = 1.59–3.24). Leisure-related activity was low compared to work-related and transport-related activity. Farmers had a higher odds of sufficient PA than those in professional jobs in both males (OR = 9.75; $P < 0.001$; 95% CI = 3.68–5.82) and females (OR = 2.83; $P = 0.021$; 95% CI = 1.17–6.86).

CONCLUSION: The prevalence of PA in this population was high. However, there is need for PA programs to maintain the high level of compliance during and following the transition to a more urban-based culture.

Keywords: Physical activities, compliance, non-communicable diseases, Tanzania

40. Physical Activity and Associated Socioeconomic Determinants in Rural and Urban Tanzania: Results from the 2012 WHO-STEPS Survey

Fredirick L. Mashili,[1] Gibson B. Kagaruki,[2] Joseph Mbatia,[3] Alphoncina Nanai,[3] Grace Saguti,[3] Sarah Maongezi,[3] Ayoub Magimba,[3] Janneth Mghamba,[3] Mathias Kamugisha,[4] Eric Mgina,[2] Clement N. Mweya,[2] Ramaiya Kaushik,[5] and Mary T. Mayige [6]

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ABSTRACT

BACKGROUND: Physical inactivity contributes to the rising prevalence of non-communicable diseases (NCDs). Given the rapidly increasing prevalence of NCDs in Low-Income Countries (LICs), comprehensive evaluation and documentation of physical activity (PA) status in this setting are crucial.

METHODS: We examined the demographic and social-economic antecedents of PA among adults (5398) from the 2012 Tanzania STEPS survey data. Statistical significance at the level of 0.05 was used to measure the strength of associations.

RESULTS: Majority of study participants attained the WHO-recommended levels of physical activity (96.7%). Levels were higher among those living in rural than in urban settings (98% versus 92%, $p < 0.0001$) and generally, urban residency, female gender, higher education achievement, and employment were significantly associated with low levels of PA. Participation in the different domains of PA (work, transport, and recreational) varied with living setting, levels of education, and employment status.

CONCLUSION: These results describe PA status and associated social-economic determinants among adults in rural and urban Tanzania. The findings contribute to the growing evidence that implicates urbanization as a key driver for the growing prevalence of physical inactivity in LICs and underscore the need for tailored PA interventions based on demography and social-economic factors

Keywords: Physical activities, non-communicable diseases, STEPS

41. Dietary determinants of serum total cholesterol among middle-aged and older adults: a population-based cross-sectional study in Dar es Salaam, Tanzania

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ABSTRACT

OBJECTIVE: To assess the dietary determinants of serum total cholesterol.

DESIGN: Cross-sectional population-based study was conducted in peri-urban region of Dar es Salaam, Tanzania. A total of 347 adults aged 40 years and older from the Dar es Salaam Urban Cohort Hypertension Study.

RESULTS: Mean serum total cholesterol level was 204 mg/dL (IQR 169–236 mg/dL) in women and 185 mg/dL (IQR 152–216 mg/dL) in men. After adjusting for demographic, socioeconomic, lifestyle and dietary factors, participants who reported using palm oil as the major cooking oil had serum total cholesterol higher by 15 mg/dL (95% CI 1 to 29 mg/dL) compared with those who reported using sunflower oil. Consumption of one or more servings of meat per day (p for trend=0.017) and less than five servings of fruits and vegetables per day (p for trend=0.024) were also associated with higher serum total cholesterol. A combination of using palm oil for cooking, eating more than one serving of meat per day and fewer than five servings of fruits and vegetables per day, was associated with 46 mg/dL (95% CI 16 to 76 mg/dL) higher serum total cholesterol.

CONCLUSIONS: Using palm oil for cooking was associated with higher serum total cholesterol levels in this peri-urban population in Dar es Salaam. Reduction of saturated fat content of edible oil may be considered as a population-based strategy for primary prevention of cardiovascular diseases.

Keywords: Edible oil, primary prevention, cardiovascular diseases, Tanzania

42. The African Guide: One Year Impact and Outcomes from the Implementation of a School Mental Health Literacy Curriculum Resource in Tanzania

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ABSTRACT

Despite the need for improving mental health literacy (MHL) among young people in low- and middle-income countries little research is available. Schools are an ideal location in which to address mental health literacy. A Canadian school-based mental health literacy resource was adapted for application in sub-Saharan Africa called the African Guide (AG). The AG is a classroom ready curriculum resource addressing all aspects of mental health literacy. Herein we provide teacher reported activity impacts and MHL outcomes from the implementation of the AG in Tanzania. Following training, survey data addressing teacher reported AG impact and MHL outcomes was collected at three time points over a one-year period. Over a period of one year, 32 teachers from 29 different schools reported that over: 4,600 students were taught MHL; 150 peer teachers were trained on the AG; 390 students approached teachers with a mental health concern; 450 students were referred to previously trained community care providers for diagnosis and treatment of Depression; and most students were considered to have demonstrated improved or very much improved knowledge, attitudes and help-seeking efficacy, with similar outcomes reported for teachers. Results of this study demonstrate a substantial positive impact on MHL

related activities and outcomes for both students and teachers using the AG resource in Tanzania. Taken together with previously published research on enhancing MHL in both Malawi and Tanzania, if replicated in another setting, these results will provide additional support for the scale up of this intervention across sub-Saharan Africa.

Keywords: mental health literacy, curriculum, African guide, knowledge, attitude, Tanzania

43. Addressing Adolescent Depression in Tanzania: Positive Primary Care Workforce Outcomes Using a Training Cascade Model

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ABSTRACT

BACKGROUND: This is a report on the outcomes of a training program for community clinic healthcare providers in identification, diagnosis, and treatment of adolescent Depression in Tanzania using a training cascade model.

METHODS: Lead trainers adapted a Canadian certified adolescent Depression program for use in Tanzania to train clinic healthcare providers in the identification, diagnosis, and treatment of Depression in young people. As part of this training program, the knowledge, attitudes, and a number of other outcomes pertaining to healthcare providers and healthcare practice were assessed.

RESULTS: The program significantly, substantially, and sustainably improved provider knowledge and confidence. Further, healthcare providers' personal help-seeking efficacy also

significantly increased as well as the clinicians' reported number of adolescent patients identified, diagnosed, and treated for Depression.

CONCLUSION: To our knowledge, this is the first study reporting positive outcomes of a training program addressing adolescent Depression in Tanzanian community clinics. These results suggest that the application of this training cascade approach may be a feasible model for developing the capacity of healthcare providers to address youth Depression in a low-income, low-resource setting.

Keywords: knowledge, training program, community clinics, Tanzania

44. Health education and awareness about diabetic retinopathy among patients attending diabetic clinics in tertiary and regional hospitals in Tanzania.

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ABSTRACT

OBJECTIVE: To assess the level of diabetes education, diabetes eye-care delivery knowledge and awareness about diabetic retinopathy among patients attending diabetes clinics in selected regional and tertiary hospitals in Tanzania.

METHODS: A cross-sectional study was conducted in 6 regional and all 4 zonal tertiary referral hospitals in Tanzania. A semi-structured questionnaire was administered to about 413 systematically sampled patients to explore their demographics, diabetes health education, awareness about diabetic retinopathy and eye-care, and challenges encountered when accessing diabetic eye care services.

RESULTS: A total of 413 patients were recruited. Seventy-one (8.6%) patients were type-1, and 336 (81.3%) type-2. Two hundred and fifty-five (61.8%) had diabetes for 1-10 years. Three hundred and twenty-two (77.9%) had received diabetes education. Receiving diabetes education was significantly associated with level of education ($p<0.0001$), residential region ($p<0.0001$) and occupational status ($p<0.007$). Nurses and doctors were the leading providers of diabetes education reported by 243 (75.5%) and 196 (47.5%) patients. Radio, television, brochures/posters, relatives and friends were the least mentioned sources of diabetes education. Education messages delivered were diabetic diet (390, 94.4%); control of: blood sugar (226, 54.7%), blood-pressure (49, 12%); eye-care (62, 15%), feet-care (62,15%) and 45 (11%) exercise. Twenty-four (5.8%) patients were aware about the need for yearly eye examination.

One hundred and twenty-three (29.8%) had previous eye examination. Shortage of staff in facilities providing diabetes-care; inadequate drugs and equipment for monitoring blood sugar were the main challenges.

CONCLUSIONS: Although diabetes education is provided to most patients attending diabetes clinics in Tanzania, patients have limited awareness about diabetic complications in particular diabetic retinopathy including the need for yearly eye examination which would make strategies to implement health promotion and prevention of diabetic retinopathy blindness difficulty. Strategies to improve diabetes education are required.

Keywords: Diabetes mellitus, Diabetic retinopathy, Diabetes education, Eye-care, Tanzania

45. Cost-effectiveness of medical primary prevention strategies to reduce absolute risk of cardiovascular disease in Tanzania: A Markov modelling study.

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ABSTRACT

BACKGROUND: Cardiovascular disease (CVD) is a growing cause of mortality and morbidity in Tanzania, but contextualized evidence on cost-effective medical strategies to prevent it is scarce.

OBJECTIVES: We aim to perform a cost-effectiveness analysis of medical interventions for primary prevention of CVD using the World Health Organization's (WHO) absolute risk approach for four risk levels.

METHODS: The cost-effectiveness analysis was performed from a societal perspective using two Markov decision models: CVD risk without diabetes and CVD risk with diabetes. Primary provider and patient costs were estimated using the ingredients approach and step-down methodologies. Epidemiological data and efficacy inputs were derived from systematic reviews and meta-analyses. We used disability- adjusted life years (DALYs) averted as the outcome measure. Sensitivity analyses were conducted to evaluate the robustness of the model results.

RESULTS: For CVD low-risk patients without diabetes, medical management is not cost-effective unless willingness to pay (WTP) is higher than US$1327 per DALY averted. For moderate-risk patients, WTP must exceed US$164 per DALY before a combination of angiotensin converting enzyme inhibitor (ACEI) and diuretic (Diu) becomes cost-effective, while for high-risk and very

high-risk patients the thresholds are US$349 (ACEI, calcium channel blocker (CCB) and Diu) and US$498 per DALY (ACEI, CCB, Diu and Aspirin (ASA)) respectively. For patients with CVD risk with diabetes, a combination of sulfonylureas (Sulf), ACEI and CCB for low and moderate risk (incremental cost-effectiveness ratio (ICER) US$608 and US$115 per DALY respectively), is the most cost-effective, while adding biguanide (Big) to this combination yielded the most favorable ICERs of US$309 and US$350 per DALY for high and very high risk respectively. For the latter, ASA is also part of the combination.

CONCLUSIONS: Medical preventive cardiology is very cost-effective for all risk levels except low CVD risk. Budget impact analyses and distributional concerns should be considered further to assess governments' ability and to whom these benefits will accrue.

Keywords: Cardiovascular disease, budget impact analysis, diabetes, primary prevention, Tanzania, willingness to pay.

46. Equity impact analysis of medical approaches to cardiovascular diseases prevention in Tanzania.

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ABSTRACT

INTRODUCTION: Primary medical prevention of cardiovascular disease (CVD) has received low priority in Tanzania, despite evidence of the rising prevalence of CVD risk factors. Different guidelines have been proposed for medical CVD prevention, including the European Society of Cardiology (ESC) and the World Health Organization (WHO) guidelines, which recommend medical prevention for all individuals based on the consideration of single CVD risk thresholds. A third alternative is differentiated risk thresholds according to age.

OBJECTIVES: This paper compares the WHO and the differentiated risk threshold by age approaches against a baseline of no medical CVD prevention and a best scenario identical to the ESC approach in Tanzania. Assuming fixed budgets, we evaluate the guidelines according to three outcome measures, namely: efficiency, inequality and the combination of efficiency and inequality.

METHODS: We ran a Markov analysis for an estimated Tanzanian population at risk of CVD employing a 40 years time horizon to estimate the total expected costs and CVD deaths associated with provision of the different guidelines. The results were then used to calculate three outcomes: life expectancy at age 40 as a proxy for efficiency, the Gini coefficient (a measure of inequality), and the achievement index (which combines concerns of efficiency and inequality).

RESULTS: Our results suggest that higher life expectancy (28.3 vs. 26.6 years) and more equally distributed health (Gini coefficient of 0.22 vs. 0.24) could be attained if medical CVD prevention was based on the differentiated risk threshold approach compared to the WHO single risk threshold, when the total cost of these approaches is the same.

CONCLUSION: Preventing CVD based on differentiating risk thresholds by age seems to be the better alternative when concerns of both efficiency and inequality are considered important. However, further research on the country-specific distribution of CVD risk levels and budget impact analysis are important to assess the feasibility of its implementation.

Keywords: Tanzania, Sub-Sahara Africa, Cardiovascular disease, Equity impact, Efficiency-equity trade off, Primary prevention

47. Reasons for poor follow-up of diabetic retinopathy patients after screening in Tanzania: a cross-sectional study.

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ABSTRACT

BACKGROUND: Diabetes is an emerging public health problem in sub-Saharan Africa. Diabetic retinopathy is the commonest microvascular complication of diabetes and is a leading cause of blindness, mainly in adults of working age. Follow-up is crucial to the effective management of diabetic retinopathy, however, follow-up rates are often poor in sub-Saharan Africa. The aim of this study was to assess the proportion of patients not presenting for follow-up and the reasons

for poor follow-up of diabetic patients after screening for retinopathy in Kilimanjaro Region of Tanzania.

METHODS: All diabetic patients referred to a tertiary ophthalmology hospital after screening for retinopathy in 2012 were eligible for inclusion in the study. A randomly selected group of patients from the community-based diabetic retinopathy screening register were identified; among this group, follow-up was assessed. Interviews were conducted within this group to inform on the reasons for poor follow-up.

RESULTS: Among the 203 patients interviewed in the study 50 patients (24.6 %) attended the recommended referral appointment and 153 (75.4 %) did not. Financial reasons were self-reported by 35.3 % of those who did not attend the follow-up appointment as the reason for non-attendance. Multiple logistic regression analysis showed that the patient report of the clarity of the referral process ($p = 0.014$) and the patient report of whether a healthcare worker told the patient that diabetic retinopathy could be treated ($p = 0.005$) were independently associated with attendance at a follow-up appointment. Income per month was not associated with attendance at a follow-up appointment on multivariate analysis.

CONCLUSIONS: Financial factors are commonly cited as the reason for non-compliance with follow-up recommendations. However, the reasons for poor compliance are likely to be more complicated. This study highlights the importance of health system factors. Improving the clarity of the referral process and frequent reminders to patients that diabetic retinopathy can be treated are practical strategies that should be incorporated into screening programs to increase attendance at subsequent follow-up appointments. The results from this study are applicable to other screening programs as well as those for diabetic retinopathy.

Keywords: Diabetes, diabetic retinopathy, Sub-Saharan Africa, Screening programs, Tanzania

48. A school mental health literacy curriculum resource training approach: effects on Tanzanian teachers' mental health knowledge, stigma and help-seeking efficacy

Stan Kutcher,[1] Yifeng Wei,[2] Heather Gilberds,[3] Omary Ubuguyu,[4] Tasiana Njau,[5] Adena Brown,[6] Norman Sabuni,[7] Ayoub Magimba,[8] and Kevin Perkins[3]

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ABSTRACT

BACKGROUND: Mental health literacy (MHL) is foundational for mental health promotion, prevention, stigma reduction, and care; School supported information pertaining to MHL in sub-Saharan Africa is extremely limited, including in Tanzania. Successful application of a school MHL curriculum resource may be an effective way to increase teacher MHL and therefore help to improve mental health outcomes for students.

METHODS: Secondary school teachers in Tanzania were trained on *the* African Guide (AG) a school MHL curriculum resource culturally adapted from a Canadian MHL resource (*The Guide*) for use in Africa. Teacher training workshops on the classroom application of the AG were used to evaluate its impact on mental health literacy in a sample of Tanzanian Secondary school teachers. Pre-post training assessment of participant knowledge and attitudes was conducted. Help-seeking efficacy for teachers themselves and their interventions for students, friends, family members and peers were determined.

RESULTS: Paired t test (n = 37) results demonstrate highly significant improvements in teacher's overall knowledge ($p < 0.001$; $d = 1.14$), including mental health knowledge, ($p < 0.001$; $d = 1.14$) and curriculum specific knowledge ($p < 0.01$; $d = 0.63$). Teachers' stigma against mental illness decreased significantly following the training ($p < 0.001$; $d = 0.61$). Independent t tests comparing the paired sample against unpaired sample also demonstrated significant differences between the groups for teacher's overall knowledge ($p < 0.001$). Teachers also reported high rates (greater than ¾ of the sample) of positive help-seeking efficacy for themselves as well as for their students, friends, family members and peers. As a result of the training, the number of students' teachers identified for potential mental health care totaled over 200.

CONCLUSIONS: These positive results, when taken together with other research, suggest that the use of a classroom-based resource (the AG) that integrates MHL into existing school curriculum through training teachers may be an effective and sustainable way to increase the MHL (improved knowledge, decreased stigma and positive help-seeking efficacy) of teachers in Tanzania. As this study replicated the results of a previous intervention in Malawi, consideration could be given to scaling up this intervention in both countries and applying this resource and approach in other countries in East Africa.

Keywords: Mental health literacy, School-based intervention, Knowledge, Stigma, Tanzania, Adolescents, Teachers, Mental health, Africa

49. Cervical cancer screening and HPV vaccine acceptability among rural and urban women in Kilimanjaro Region, Tanzania.

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ABSTRACT

OBJECTIVE: To determine cervical cancer screening coverage and the knowledge, attitudes and barriers toward screening tests among women in rural and urban areas of Tanzania, as well as explore how they view the acceptability of the HPV vaccine and potential barriers to vaccination.

METHODS**:** A cross-sectional study using interview-administered questionnaires was conducted using multistage random sampling within urban and rural areas in Kilimanjaro Region, Tanzania. Women aged 18–55 were asked to participate in the survey. The overall response rate was 97.5%, with a final sample of 303 rural and 272 urban dwelling women. Descriptive and simple test statistics were used to compare across rural and urban strata. Multivariate logistic regression models were used to estimate ORs and 95% CIs.

RESULTS: Most women (82%) reported they had heard of cervical cancer, while self-reported cervical cancer screening among women was very low (6%). In urban areas, factors associated with screening were: older age (OR=4.14, 95% CI 1.86 to 9.24 for ages 40–49, and OR=8.38, 95% CI 2.10 to 33.4 for >50 years), having health insurance (OR=4.15, 95% CI 1.52 to 11.4), and having knowledge about cervical cancer (OR=5.81, 95% CI 1.58 to 21.4). In contrast, among women residing in rural areas, only condom use (OR=6.44, 95% CI 1.12 to 37.1) was associated with screening. Women from both rural and urban areas had low vaccine-related knowledge; however, most indicated they would be highly accepting if it were readily available (93%).

CONCLUSIONS: The current proportion of women screened for cervical cancer is very low in Kilimanjaro Region, and our study has identified several modifiable factors that could be addressed to increase screening rates. Although best implemented concurrently, the availability of prophylactic vaccination for girls may provide an effective means of prevention if they are unable to access screening in the future.

Keywords: Cervical cancer, screening, HPV vaccine, Tanzania.

50. Expanding Cervical Cancer Screening and Treatment in Tanzania: Stakeholders' Perceptions of Structural Influences on Scale-Up

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ABSTRACT

Tanzania has the highest burden of cervical cancer in East Africa. This study aims to identify perceived barriers and facilitators that influence scale-up of regional and populationlevel cervical cancer screening and treatment programs in Tanzania. Convenience sampling was used to select participants for this qualitative study among 35 key informants. Twenty-eight stakeholders from public-sector health facilities, academia, government, and nongovernmental organizations completed in-depth interviews, and a seven-member municipal health management team participated in a focus group discussion. The investigation identified themes related to the infrastructure of health services for cervical cancer prevention, service delivery, political will, and sociocultural influences on screening and treatment. Decentralizing service delivery, improving access to screening and treatment, increasing the number of trained health workers, and garnering political will were perceived as key facilitators for enhancing and initiating screening and treatment services. In conclusion, participants perceived that system-level structural factors should be addressed to expand regional and population-level service delivery of screening and treatment.

Keywords: Cervical cancer, Health services research, Service delivery, Screening, treatment

51. Utilization of cervical cancer screening services and its associated factors among primary school teachers in Ilala Municipality, Dar es Salaam, Tanzania.

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ABSTRACT

BACKGROUND: Worldwide cervical cancer is one of the more common forms of carcinoma among women, causing high morbidity and high mortality. Despite being a major health problem in Tanzania, screening services for cervical cancer are very limited, and uptake of those services is low. We therefore conducted a study to investigate utilization of cancer screening services, and its associated factors among female primary school teachers in Ilala Municipality, Dar es Salaam.

METHOD: We conducted a cross-sectional study between May – August 2011 which involved 110 primary schools in Ilala Municipality in Dar es Salaam. Five hundred and twelve female primary school teachers were sampled using a two-stage cluster sampling procedure. Data on utilization of cervical cancer and risk factors were collected using a self-administered questionnaire. Proportional utilization of cervical cancer screening services was identified through a self-report. Risk factors for services utilization were assessed using logistic regression analyses.

RESULTS: Out of 512 female primary school teachers, only 108 (21 %) reported to ever been screened for cervical cancer. Utilization of cervical cancer screening services was 28 % among those aged 20–29, 22 % among married and 24 % among those with higher level of education. Women were more likely to utilize the cancer-screening service if they were multiparous (age-adjusted OR = 3.05, 95 % CI 1.15–8.06, *P* value 0.025), or reported more than one lifetime sexual partner (age-adjusted OR 2.17, 95 % CI 1.04–4.54, *P* value 0.038), or did not involve their spouse in making health decisions (adjusted OR 3.56, 95 % CI 2.05–6.18, *P* value <0.001).

CONCLUSION: The study has demonstrated low level of utilization of cervical cancer screening service among female primary school teachers in Ilala munipality. Female primary school teachers with more than one previous pregnancy and those with more than one life-time sex partners were more likely to report utilization of the service. Spouse or partners support was an important factor in the utilization of cervical cancer screening service amongst the study population.

Keywords: Human Papiloma Virus, Screening, Cervical cancer, Primary school teachers

52. Economic cost of primary prevention of cardiovascular diseases in Tanzania

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ABSTRACT

INTRODUCTION: Tanzania is facing a double burden of disease, with non-communicable diseases being an increasingly important contributor. Evidence-based preventive measures are important to limit the growing financial burden.

OBJECTIVES: This article aims to estimate the cost of providing medical primary prevention interventions for cardiovascular disease (CVD) among at-risk patients, reflecting actual resource use and if the World Health Organization (WHO)'s CVD medical preventive guidelines are implemented in Tanzania. In addition, we estimate and explore the cost to patients of receiving these services.

METHODS: Cost data were collected in four health facilities located in both urban and rural settings. Providers' costs were identified and measured using ingredients approach to costing and resource valuation followed the opportunity cost method. Unit costs were estimated using activity-based and step-down costing methodologies. The patient costs were obtained through a structured questionnaire.

RESULTS: The unit cost of providing CVD medical primary prevention services ranged from US$30–41 to US$52–71 per patient per year at the health centre and hospital levels, respectively. Employing the WHO's absolute risk approach guidelines will substantially increase these costs. The annual patient cost of receiving these services as currently practised was estimated to be US$118 and US$127 for urban and rural patients, respectively. Providers' costs were estimated from two main viewpoints: 'what is', that is the current practice, and 'what if', reflecting a WHO guidelines scenario. The higher cost of implementing the WHO guidelines suggests the need for further evaluation of whether these added costs are reasonable relative to the added benefits. We also found considerably higher patient costs, implying that distributive and equity implications of access to care require more consideration.

CONCLUSION: Facility location surfaced as the main explanatory variable for both direct and indirect patient costs in the regression analysis; further research on the influence of other provider characteristics on these costs is important.

Keywords: Cardiovascular disease, cost analysis, diabetes, hypertension, primary prevention, sub-Saharan Africa, Tanzania.

53. Reducing diabetic limb amputations in developing countries

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ABSTRACT

Among all the diabetes complications, diabetic foot complications are associated with the highest morbidity and mortality. Across the globe, 40–60% of all lower extremity non-traumatic amputations are performed in patients with diabetes. The most important intervention in reducing diabetic limb amputation in developing countries is the education of patients about proper limb care. Cost-effective education should be targeted for both healthcare workers and patients. One of these programs is the *Step by Step Foot Project,* which was piloted and carried out in Tanzania and India. In this review, the author explores the feasible ways of reducing diabetic limb amputation which can be achieved through a trained diabetes workforce working in an effective system of care that focuses on the education of both the healthcare provider and the patient

Keywords: Amputation, developing world, diabetes, diabetic hand, education, foot care, foot ulcer, preventive program.

54. Health policy for sickle cell disease in Africa: experience from Tanzania on interventions to reduce under-five mortality

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ABSTRACT

Tanzania has made considerable progress towards reducing childhood mortality, achieving a 57% decrease between 1980 and 2011. This epidemiological transition will cause a reduction in the contribution of infectious diseases to childhood mortality and increase in contribution from non-communicable diseases (NCDs). Haemoglobinopathies are amongst the most common childhood NCDs, with sickle cell disease (SCD) being the commonest haemoglobinopathy in Africa. In Tanzania, 10 313 children with SCD under 5 years of age (U5) are estimated to die every year, contributing an estimated 7% of overall deaths in U5 children. Key policies that governments in Africa are able to implement would reduce mortality in SCD, focusing on newborn screening and comprehensive SCD care programmes. Such programmes would ensure that interventions such as prevention of infections using penicillin plus prompt diagnosis and treatment of complications are provided to all individuals with SCD.

Keywords: non-communicable diseases, sickle cell disease, children, Tanzania

55. Breast Cancer Knowledge, Beliefs, and Screening Practices among Women Seeking Care at District Hospitals in Dar es Salaam, Tanzania.

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ABSTRACT

BACKGROUND: Limited disease awareness among women may impact breast cancer stage-at-diagnosis in Tanzania, reducing survival. This study assessed breast cancer knowledge, screening practices, and educational preferences among outpatients at Tanzanian government-supported hospitals.

METHODS: A convenience sample of women was surveyed regarding (1) knowledge/beliefs of breast cancer etiology, risk factors, symptoms, treatment, (2) early detection knowledge/practice, and (3) educational preferences.

RESULTS: Among 225 respondents, 98.2% knew of breast cancer; 22.2% knew someone affected by breast cancer. On average, 30% of risk factors and 51% of symptoms were identified. Most accepted one or more breast cancer myths. Among 126 aware of breast self-exam, 40% did not practice it; only 0.9% underwent regular clinical breast examinations despite 68% being aware of the procedure. Among treatments, 87% recognized surgery, 70% radiation, and fewer systemic

therapy. Preferred educational sources were group sessions, television/radio, and meetings with breast cancer survivors.

CONCLUSIONS: This work reveals incomplete breast cancer awareness among Tanzanian women and promises to inform development of user-focused educational resources.

Keywords: Breast Cancer, Knowledge, Beliefs, and Screening Practices, Tanzania.

56. Public policy, health system, and community actions against illness as platforms for response to NCDs in Tanzania: a narrative review

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ABSTRACT

BACKGROUND: Most low- and middle- income countries are facing a rise of the burden of non-communicable diseases (NCDs) alongside the persistent burden of infectious diseases.

OBJECTIVES: This narrative review aims to provide an inventory of how the existing policy environment, health system, and communities are addressing the NCDs situation in Tanzania and identify gaps for advancing the NCD research and policy agenda.

METHODOLOGY: A literature search was performed on PubMed and Google scholar with full text retrieval from HINARI of English language articles published between 2000 and 2012. Documents were read to extract information on what Tanzanian actors were doing that contributed to NCDs prevention, treatment, and control, and a narration was written out of these. Reference lists of all retrieved articles were searched for additional relevant articles. Websites of organizations active in the field of NCDs including the Government of Tanzania and WHO were searched for reports and grey literature.

RESULTS: Lack of a specific and overarching NCD policy has slowed and fragmented the implementation of existing strategies to prevent and control NCDs and their determinants. The health system is not prepared to deal with the rising NCD burden although there are random initiatives to improve this situation. How the community is responding to these emerging

conditions is still unknown, and the current health-seeking behavior and perceptions on the risk factors may not favor control of NCDs and their risk factors.

CONCLUSION AND RECOMMENDATION: There is limited information on the burden and determinants of NCDs to inform the design of an integrative and multi-sectorial policy. Evidence on effective interventions for NCD services in primary care levels and on community perceptions on NCDs and their care seeking is virtually absent. Research and public health interventions must be anchored in the policy, health system, and community platforms for a holistic response.

Keywords: Health system, community platforms, holistic response, NCD, policy

57. Preparedness of Tanzanian health facilities for outpatient primary care of hypertension and diabetes: a cross-sectional survey

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ABSTRACT

BACKGROUND: Historically, health facilities in sub-Saharan Africa have mainly managed acute, infectious diseases. Few data exist for the preparedness of African health facilities to handle the growing epidemic of chronic, non-communicable diseases (NCDs). We assessed the burden of NCDs in health facilities in northwestern Tanzania and investigated the strengths of the health system and areas for improvement with regard to primary care management of selected NCDs.

METHODS: Between November, 2012, and May, 2013, we undertook a cross-sectional survey of a representative sample of 24 public and not-for-profit health facilities in urban and rural Tanzania (four hospitals, eight health centres, and 12 dispensaries). We did structured interviews of facility managers, inspected resources, and administered self-completed questionnaires to 335 health-care workers. We focused on hypertension, diabetes, and HIV (for comparison). Our key study outcomes related to service provision, availability of guidelines and supplies, management and training systems, and preparedness of human resources.

FINDINGS: Of adult outpatient visits to hospitals, 58% were for chronic diseases compared with 20% at health centres, and 13% at dispensaries. In many facilities, guidelines, diagnostic equipment, and first-line drug therapy for the primary care of NCDs were inadequate, and management, training, and reporting systems were weak. Services for HIV accounted for most chronic disease visits and seemed stronger than did services for NCDs. Ten (42%) facilities had guidelines for HIV whereas three (13%) facilities did for NCDs. 261 (78%) health workers showed fair knowledge of HIV, whereas 198 (59%) did for hypertension and 187 (56%) did for diabetes. Generally, health systems were weaker in lower-level facilities. Front-line health-care workers (such as non-medical-doctor clinicians and nurses) did not have knowledge and experience of NCDs. For example, only 74 (49%) of 150 nurses had at least fair knowledge of diabetes care compared with 85 (57%) of 150 for hypertension and 119 (79%) of 150 for HIV, and only 31 (21%) of 150 had seen more than five patients with diabetes in the past 3 months compared with 50 (33%) of 150 for hypertension and 111 (74%) of 150 for HIV.

INTERPRETATION: Most outpatient services for NCDs in Tanzania are provided at hospitals, despite present policies stating that health centres and dispensaries should provide such services. We identified crucial weaknesses (and strengths) in health systems that should be considered to improve primary care for NCDs in Africa and identified ways that HIV programs could serve as a model and structural platform for these improvements.

Keywords: Hypertension, HIV, Diabetes, NCDs, Tanzania

58. We do not do any activity until there is an outbreak': barriers to disease prevention and health promotion at the community level in Kongwa District, Tanzania

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ABSTRACT

BACKGROUND: Little is known about the barriers to disease prevention and health promotion at the community level – within a decentralized health system.

OBJECTIVE: This paper, therefore, presents and discusses findings on barriers (and opportunities) for instituting disease prevention and health promotion activities.

DESIGN: The study was conducted in Kongwa District, Tanzania, using an explorative case study approach. Data were collected through document reviews and in-depth interviews with key informants at district, ward, and village levels. A thematic approach was used in the analysis of the data.

RESULTS: This study has identified several barriers, namely decision-makers at the national and district levels lack the necessary political will in prioritizing prevention and health promotion; the gravity of prevention and health promotion stated in the national health policy is not reflected in the district health plans; gross underfunding of community-level disease prevention and health promotion activities; and limited community participation.

CONCLUSION: In this era, when Tanzania is burdened with both communicable and non-communicable diseases, prevention and health promotion should be at the top of the health care agenda. Despite operating in a neoliberal climate, a stronger role of the state is called for. Accordingly, the government should prioritize higher health-protecting physical, social, and economic environments. This will require a national health promotion policy that will clearly chart out how multisectoral collaboration can be put into practice.

Keywords: Barriers, disease prevention, health promotion, Tanzania

59. Promoters of and barriers to cervical cancer screening in a rural setting in Tanzania

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ABSTRACT

OBJECTIVE: To investigate promoters and barriers for cervical cancer screening in rural Tanzania.

METHODS: We interviewed 300 women of reproductive age living in Kiwangwa village, Tanzania. The odds of attending a free, 2-day screening service were compared with sociodemographic variables, lifestyle factors, and knowledge and attitudes surrounding cervical cancer using multivariable logistic regression.

RESULTS: Compared with women who did not attend the screening service (n = 195), women who attended (n = 105) were older (OR 4.29; 95% CI, 1.61–11.48, age 40–49 years versus 20–29 years), listened regularly to the radio (OR 24.76; 95% CI, 11.49–53.33, listened to radio 1–3 times per week versus not at all), had a poorer quality of life (OR 4.91; CI, 1.96–12.32, lowest versus highest score), had faced cost barriers to obtaining health care in the preceding year (OR 2.24; 95% CI, 1.11–4.53, yes versus no), and held a more positive attitude toward cervical cancer screening (OR 4.64; 95% CI, 1.39–15.55, least versus most averse).

CONCLUSION: Efforts aimed at improving screening rates in rural Tanzania need to address both structural and individual-level barriers, including knowledge and awareness of cervical cancer prevention, cost barriers to care, and access to health information.

Keywords: cervical cancer, screening, rural setting, Tanzania

60. Consumption and acceptability of whole grain staples for lowering markers of diabetes risk among overweight and obese Tanzanian adults.

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ABSTRACT

BACKGROUND: Dietary changes characterized by a reduction in carbohydrate quality are occurring in developing countries and may be associated with a higher prevalence of obesity and chronic diseases such as type 2 diabetes mellitus. We assessed the preferences and acceptability of unrefined whole grain carbohydrate staples (i.e., brown rice, unrefined maize and unrefined sorghum ugali) as substitutes for commonly consumed refined carbohydrates in Tanzania.

METHODS: A questionnaire was used to collect sociodemographic information and dietary habits, and pre-and post-tasting questionnaires were administered for test foods. A 10-point Likert scale was used to rate attributes of the three test foods.

RESULTS: White rice and refined maize ugali were the most commonly consumed carbohydrate staples in this population; 98% and 91%, respectively. Occasional consumption of unrefined maize and sorghum ugali was reported by 32% and 23% of the participants, respectively. All of the test foods were highly rated for smell, taste, color, appearance and texture. Taste was rated highest for unrefined maize ugali. Almost all of the participants were willing to participate in a future dietary intervention involving regular consumption of these unrefined carbohydrates for at least six months' duration.

CONCLUSIONS: These findings suggest that whole grain carbohydrates are highly acceptable, and that there is a promising potential for their use in future dietary intervention studies in Tanzania.

Keywords: Refined carbohydrates, Type 2 diabetes mellitus, dietary intervention, Tanzania

61. Randomized controlled trial evaluating the effect of an interactive group counselling intervention for HIV-positive women on prenatal depression and disclosure of HIV status

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ABSTRACT

The objective of the study was to assess the effectiveness of group counselling, using a problem-solving therapy approach, on reducing depressive symptoms and increasing prenatal disclosure rates of HIV status among HIV-positive pregnant women living in Dar es Salaam, Tanzania. A randomized controlled trial was performed comparing a six-week structured nurse–midwife facilitated psychosocial support group with the standard of care. Sixty percent of women in the intervention group were depressed post-intervention, versus 73% in the control group [Relative Risk (RR) = 0.82, 95% confidence interval (CI): 0.67–1.01, p=0.066]. HIV disclosure rates did not differ across the two study arms. However, among those women who disclosed, there was a

significantly higher level of overall personal satisfaction with the response to disclosure from family and friends among women in the treatment (88%) compared to the control group (62%; p=0.004). The results indicate reductions in the level of depressive symptoms comparable with major depressive disorder (MDD) for HIV-positive pregnant women participating in a group counselling intervention. Although the psychosocial group counselling did not significantly increase disclosure rates, an improvement in the level of personal satisfaction resulting from disclosure was associated with the intervention. This suggests that the counselling sessions have likely reduced the burden of depression and helped clients better manage partner reactions to disclosure. Public agencies and non-governmental organizations working in Tanzania and similar settings should consider offering structured psychosocial support groups to HIV-positive pregnant women to prevent poor mental health outcomes, promote early childhood development, and potentially impact HIV-related disease outcomes in the long term.

Keywords: HIV, depression, disclosure, pregnancy, sub-Saharan Africa, Tanzania

169 citations

(Sorted by Partner State)

Uganda

1. **A 10-Year Risk of Cardiovascular Disease among Patients with Severe Mental Illness at Mbarara Regional Referral Hospital, Southwestern Uganda**

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ABSTRACT

Cardiovascular disease (CVD) is a leading cause of morbidity and mortality worldwide. Patients with severe mental illness (SMI) are at a higher risk for developing CVD and have a higher risk for harboring factors related to CVD. In addition to the effects of antipsychotic medications, unhealthy lifestyle factors, such as poor diet, inadequate physical activity, cigarette smoking, and sedentary behaviors, are known to be risk factors that may contribute to poor cardiovascular health in patients with SMI. Early identification of individuals at elevated risk of CVD is essential so that dietary and lifestyle modifications or pharmacological interventions can be prescribed to alleviate the risk of cardiovascular disease. The objective of the study was to determine the 10-year risk of cardiovascular disease among patients with severe mental illness at Mbarara Regional Referral Hospital, southwestern Uganda. We conducted a cross-sectional study at the outpatient mental health clinic of Mbarara Regional Referral Hospital, between October 2018 and March 2019. We used the Globorisk CVD risk score to estimate the 10-year risk of CVD among patients with SMI, using the online Globorisk calculator. Participants were then assigned to one of three categories depending on their 10-year CVD risk score: 10% (high). We calculated the risk scores of 125 participants aged 40-74 years. Most of the participants were female 75 (60%), had a diagnosis of bipolar disorder 75 (60%), and had mental illness for ≥10 years 57 (46%). Eighty five percent (85%) of the participants had intermediate to high 10-year risk of CVD (64% with intermediate and 21% with high risk). The average risk score was significantly higher in males compared to females, 8.82% versus 6.43%, p = 0:016. We detected a high 10-year risk of CVD in a significant proportion of patients with SMI in southwestern Uganda. We recommend lifestyle modifications and pharmacological interventions to reverse risk or delay progression to CVD in this patient population.

2. A cross-sectional evaluation of five warfarin anticoagulation services in Uganda and South Africa

Jerome Roy SemakulaID[1], Johannes P. MoutonID[2], Andrea Jorgensen[3], Claire Hutchinson[4] , Shaazia Allie[2], Lynn Semakula[1], Neil French[4], Mohammed Lamorde[1], Cheng-Hock Toh[5], Marc Blockman[2], Christine Sekaggya-Wiltshire[1], Catriona Waitt[1,4], Munir Pirmohamed[6], Karen Cohen[2] *

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ABSTRACT

INTRODUCTION: Warfarin is the most commonly prescribed oral anticoagulant in sub-Saharan Africa and requires ongoing monitoring. The burden of both infectious diseases and non-communicable diseases is high and medicines used to treat comorbidities may interact with warfarin. We describe service provision, patient characteristics, and anticoagulation control at selected anticoagulation clinics in Uganda and South Africa.

METHODS: We evaluated two outpatient anticoagulation services in Kampala, Uganda and three in Cape Town, South Africa between 1 January and 31 July 2018. We collected information from key staff members about the clinics' service provision and extracted demographic and clinical data from a sample of patients' clinic records. We calculated time in therapeutic range (TTR) over the most recent 3-month period using the Rosendaal interpolation method.

RESULTS: We included three tertiary level, one secondary level and one primary level anticoagulation service, seeing between 30 and 800 patients per month. Care was rendered by

nurses, medical officers, and specialists. All healthcare facilities had on-site pharmacies; laboratory INR testing was off-site at two. Three clinics used warfarin dose-adjustment protocols; these were not validated for local use. We reviewed 229 patient clinical records. Most common indications for warfarin were venous thrombo-embolism in 112/229 (49%), atrial fibrillation in 74/229 (32%) and valvular heart disease in 30/229 (13%). Patients were generally followed up monthly. HIV prevalence was 20% and 5% at Ugandan and South African clinics respectively. Cardiovascular comorbidity predominated. Furosemide, paracetamol, enalapril, simvastatin, and tramadol were the most common concomitant drugs. Anticoagulation control was poor at all included clinics with median TTR of 41% (interquartile range 14% to 69%). CONCLUSIONS: TTR was suboptimal at all included sites, despite frequent patient follow-up. Strategies to improve INR control in sub-Saharan patients taking warfarin are needed. Locally validated warfarin dosing algorithms in Uganda and South Africa may improve INR control.

3. A digital self-care intervention for Ugandan patients with heart failure and their clinicians: User-centred design and usability study

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ABSTRACT

BACKGROUND: The prevalence of heart failure (HF) is increasing in Uganda. Ugandan patients with HF report receiving limited information about their illness, disease management, or empowerment to engage in self-care behaviors. Interventions targeted at improving HF self-care have been shown to improve patient quality of life and to reduce hospitalizations in high-income countries. However, such interventions remain underutilized in resource-limited settings like Uganda.

OBJECTIVE: To develop a digital health intervention that enables improved self-care amongst HF patients in Uganda.

METHODS: We implemented a user-centred design process to develop a self-care intervention entitled Medly Uganda. The ideation phase comprised a systematic scoping review and preliminary data collection amongst HF patients and clinicians in Uganda. An iterative design process was then used to advance an initial prototype into a fully-functional digital health intervention. The evaluation phase involved usability testing of the developed intervention amongst Ugandan patients with HF and their clinicians.

RESULTS: Medly Uganda is a digital health intervention that is fully integrated within a government operated mobile health platform. The system allows patients to report daily HF symptoms, receive tailored treatment advice, and connect with a clinician when showing signs of decompensation. Medly Uganda harnesses Unstructured Supplementary Service Data technology that is already widely used in Uganda for mobile phone-based financial transactions. Usability testing showed the system to be accepted by patients, caregivers, and clinicians.

CONCLUSIONS: Medly Uganda is a fully-functional and well-accepted digital health intervention that enables Ugandan HF patients to better care for themselves. Moving forward, we expect the system to help decongest cardiac clinics and improve self-care efficacy amongst HF patients in Uganda.

4. A Human-Centered Approach to CV Care Infrastructure Development in Uganda

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ABSTRACT

In this case study, we describe an ongoing approach to develop sustainable acute and chronic cardiovascular care infrastructure in Uganda that involves patient and provider participation. Leveraging strong infrastructure for HIV/AIDS care delivery, University Hospitals Harrington Heart and Vascular Institute and Case Western Reserve University have partnered with U.S. and Ugandan collaborators to improve cardiovascular capabilities. The collaboration has solicited innovative solutions from patients and providers focusing on education and advanced training, penicillin supply, diagnostic strategy (e.g., hand-held ultrasound), maternal health, and community awareness. Key outcomes of this approach have been the completion of formal training of the first interventional cardiologists and heart failure specialists in the country, establishment of 4 integrated regional centers of excellence in rheumatic heart disease care with a national rheumatic heart disease registry, a penicillin distribution and adherence support program focused on retention in care, access to imaging technology, and in-country capabilities to treat advanced rheumatic heart valve disease.

5. A novel Lung Health programme addressing awareness and behaviour-change aiming to prevent chronic lung diseases in rural Uganda: a two-year train-the-trainer programme

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ABSTRACT

Chronic lung disease is a huge, growing, but under-reported problem in Africa. Following a survey in rural Uganda, which found 16% of the adult population had COPD, we developed a lung health programme aiming to raise awareness in the community of the risk factors for developing chronic lung disease and how to reduce the risks.

A two-year train-the-trainer programme was conducted by healthcare workers (HCWs) in Masindi District, Uganda. Strategy and preliminary education materials were co-developed in a series of meetings with stakeholders including clinicians and community members. An initial group of HCWs were trained and further refined the education programme; they then taught other HCWs. Educational materials covered: “What is lung health?”, “How lungs get damaged”, “Smoking cessation” and “Preventing harm by reducing exposure to biomass smoke”. These materials were approved by the Ministry of Health. Local radio messages were designed and broadcasted. We administered knowledge questionnaires before and after training for both HCWs and the community health workers (CHWs).

We trained 12 HCWs who then trained 47 other HCWs, and over 100 community health workers (CHWs). After the programme, knowledge questionnaire scores improved: for HCWs, the percentage of correct answers were 74% before and 89% after training, and for CHWs from 74% to 91%. Over 15,000 people have been educated directly and thousands more through mass media messages. Knowledge questionnaires administered to 1261 people in the community confirmed awareness of lung health.

This novel lung health programme illustrates how communities may be empowered to reduce their risks of developing chronic lung disease and is a model for addressing the rising tide of noncommunicable diseases.

6. A Qualitative Examination of Secondary Prophylaxis in Rheumatic Heart Disease Factors Influencing Adherence to Secondary Prophylaxis in Uganda

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD) is the most common cause of heart disease among Ugandans age 15 to 49 years. Secondary prophylaxis with monthly injection of benzathine penicillin is effective in preventing recurrence of acute rheumatic fever and worsening of RHD, but adherence rates are poor in Uganda.

OBJECTIVES: This study sought to identify health behaviors, attitudes, and health care system factors that influence adherence to RHD secondary prophylaxis.

METHODS: We conducted 5 structured focus groups with 36 participants on monthly penicillin injections for RHD in Kampala, Uganda. Transcripts were analyzed using qualitative description analysis and health behavior models.

RESULTS: Most participants were female (64%), from an urban area (81%), and had family income less than US$1 daily (69%). Ages ranged from 14 to 58 years. Median prophylaxis duration was 1.42 years and 58% were adherent (80% of injections). Key facilitators include perceived worsening of disease with missing injections, personal motivation, a reminder system for injections, supportive family and friends, and a positive relationship with health care providers. Barriers to adherence include lack of resources for transportation and medications, fear of injection pain, poor patient-provider communication, and poor availability of clinics and providers able to give injections.

CONCLUSIONS: We identified key facilitators and barriers to secondary prophylaxis for RHD from the patient perspective framed within the socioecological model. Our findings provide direction for intervention development to improve national RHD secondary prophylaxis.

7. A Qualitative Study of Patients' Experiences, Enablers and Barriers of Rheumatic Heart Disease Care in Uganda

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ABSTRACT

INTRODUCTION: Rheumatic heart disease (RHD) remains a significant public health problem in countries with limited health resources. People living with RHD face numerous social challenges and have difficulty navigating ill-equipped health systems. This study sought to understand the impact of RHD on PLWRHD and their households and families in Uganda. METHODS: In this qualitative study, we conducted in-depth interviews with 36 people living with RHD sampled purposively from Uganda's national RHD research registry, stratifying the sample by geography and severity of disease. Our interview guides and data analysis used a combination of inductive and deductive methods, with the latter informed by the socio-ecological model. We ran thematic content analysis to identify codes that were then collapsed into themes. Coding was done independently by three analysts, who compared their results and iteratively updated the codebook.

RESULTS: The inductive portion of our analysis, which focused on the patient experience, revealed a significant impact of RHD on work and school. Participants often lived in fear of the future, faced limited childbirth choices, and experienced domestic conflict, and suffered stigmatization and low self-esteem. The deductive portion of our analysis focused on barriers and enablers to care. Major barriers included the high out-of pocket cost of medicines and travel to health facilities, as well as poor access to RHD diagnostics and medications. Major enablers included family and social support, financial support within the community, and good relationships with health workers, though this varied considerably by location.

CONCLUSION: Despite several personal and community factors that support resilience, PLWRHD in Uganda experience a range of negative physical, emotional, and social consequences from their condition. Greater investment is needed in primary healthcare systems to support decentralized, patient-centered care for RHD. Implementing evidence-based interventions that prevent RHD at district level could greatly reduce the scale of human suffering. There is need to increase investment in primary prevention and tackling social determinants, to reduce the incidence of RHD in communities where the condition remains endemic.

8. Acceptability of a community cardiovascular disease prevention programme in Mukono and Buikwe districts in Uganda: a qualitative study

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ABSTRACT

BACKGROUND: Cardiovascular diseases (CVDs) are on the rise in many low-and middle-income countries where 80% of related deaths are registered. Community CVD prevention programmes utilizing self-care approaches have shown promise in contributing to population level reduction of risk factors. However, the acceptability of these programmes, which affects their uptake and effectiveness, is unknown including in the sub-Saharan Africa context. This study used the Theoretical Framework of Acceptability to explore the prospective acceptability of a community CVD prevention programme in Mukono and Buikwe districts in Uganda. METHODS: This qualitative descriptive study was conducted in March 2019 among community health workers (CHWs), who would implement the intervention and community members, the intervention recipients, using eight focus group discussions. All discussions were audio-recorded, transcribed verbatim and analysed thematically guided by the theoretical framework.

RESULTS: CHWs and community members reported high eagerness to participate in the programme. Whereas CHWs had implemented similar community programmes and cited health promotion as their role, community members looked forward to health services being brought nearer to them. Although the intervention was preventive in nature, CHWs and community members expressed high interest in treatments for risk factors and were skeptical about the health system capacity to deliver them. CHWs anticipated barriers in mobilising communities who they said sometimes may not be cooperative while community members were concerned about failing to access treatment and support services after screening for risk factors. The major cost to CHWs and community members for engaging in the intervention was time that they would have dedicated to income generating activities and social events though CHWs also had the extra burden of being exemplary. CHWs were confident in their ability to deliver the intervention as prescribed if well trained, supported and supervised, and community members felt that if provided sufficient information and supported by CHWs, they could change their behaviours.

CONCLUSIONS: The community CVD prevention programme was highly acceptable among CHWs and community members in Mukono and Buikwe districts of Uganda amidst a few burdens and opportunity costs. Suggestions made by study participants to improve programme effectiveness informed programme design and implementation for impact.

KEYWORDS: Acceptability, Cardiovascular disease, Community health workers, Community, Uganda.

9. Access to medicines and diagnostic tests integral in the management of diabetes mellitus and cardiovascular diseases in Uganda: insights from the ACCODAD study

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ABSTRACT

BACKGROUND: Despite the burgeoning burden of diabetes mellitus (DM) and cardiovascular diseases (CVD) in low and middle income countries (LMIC), access to affordable essential medicines and diagnostic tests for DM and CVD still remain a challenge in clinical practice. The Access to Cardiovascular diseases, Chronic Obstructive pulmonary disease, Diabetes mellitus and Asthma Drugs and diagnostics (ACCODAD) study aimed at providing contemporary information about the availability, cost and affordability of medicines and diagnostic tests integral in the management of DM and CVD in Uganda.

METHODS: The study assessed the availability, cost and affordability of 37 medicines and 19 diagnostic tests in 22 public hospitals, 23 private hospitals and 100 private pharmacies in Uganda. Availability expressed as a percentage, median cost of the available lowest priced generic medicine and the diagnostic tests and affordability in terms of the number of days' wages it would cost the least paid public servant to pay for one month of treatment and the diagnostic tests were calculated.

RESULTS: The availability of the medicines and diagnostic tests in all the study sites ranged from 20.1% for unfractionated heparin (UFH) to 100% for oral hypoglycaemic agents (OHA) and from 6.8% for microalbuminuria to 100% for urinalysis respectively. The only affordable tests were

blood glucose, urinalysis and serum ketone, urea, creatinine and uric acid. Parenteral benzathine penicillin, oral furosemide, glibenclamide, bendrofluazide, atenolol, cardiac aspirin, digoxin, metformin, captopril and nifedipine were the only affordable drugs. Conclusion: This study demonstrates that the majority of medicines and diagnostic tests essential in the management of DM and CVD are generally unavailable and unaffordable in Uganda. National strategies promoting improved access to affordable medicines and diagnostic tests and primary prevention measures of DM and CVD should be prioritised in Uganda.

KEYWORDS: Availability, Cost, Affordability, Diabetes mellitus, Cardiovascular diseases, Low and middle income countries.

10. Active Case Finding for Rheumatic Fever in an Endemic Country

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ABSTRACT

BACKGROUND: Despite the high burden of rheumatic heart disease in sub-Saharan Africa, diagnosis with acute rheumatic fever (ARF) is exceedingly rare. Here, we report the results of the

first prospective epidemiologic survey to diagnose and characterize ARF at the community level in Africa.

METHODS AND RESULTS: A cross-sectional study was conducted in Lira, Uganda, to inform the design of a broader epidemiologic survey. Key messages were distributed in the community, and children aged 3 to 17 years were included if they had either (1) fever and joint pain, (2) suspicion of carditis, or (3) suspicion of chorea, with ARF diagnoses made by the 2015 Jones Criteria. Over 6 months, 201 children met criteria for participation, with a median age of 11 years (interquartile range, 6.5) and 103 (51%) female. At final diagnosis, 51 children (25%) had definite ARF, 11 (6%) had possible ARF, 2 (1%) had rheumatic heart disease without evidence of ARF, 78 (39%) had a known alternative diagnosis (10 influenza, 62 malaria, 2 sickle cell crises, 2 typhoid fever, 2 congenital heart disease), and 59 (30%) had an unknown alternative diagnosis.

CONCLUSIONS: ARF persists within rheumatic heart disease–endemic communities in Africa, despite the low rates reported in the literature. Early data collection has enabled refinement of our study design to best capture the incidence of ARF and to answer important questions on community sensitization, healthcare worker and teacher education, and simplified diagnostics for low-resource areas. This study also generated data to support further exploration of the relationship between malaria and ARF diagnosis in rheumatic heart disease/malaria-endemic countries.

KEY WORDS: epidemiology, pediatrics, rheumatic heart disease

11. An implementation science study to enhance cardiovascular disease prevention in Mukono and Buikwe districts in Uganda: a stepped-wedge design

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ABSTRACT

BACKGROUND: Uganda is experiencing a shift in major causes of death with cases of stroke, heart attack, and heart failure reportedly on the rise. In a study in Mukono and Buikwe in Uganda, more than one in four adults were reportedly hypertensive. Moreover, very few (36.5%) reported to have ever had a blood pressure measurement. The rising burden of CVD is compounded by a lack of integrated primary health care for early detection and treatment of people with increased risk. Many people have less access to effective and equitable health care services which respond to their needs. Capacity gaps in human resources, equipment, and drug supply, and laboratory capabilities are evident. Prevention of risk factors for CVD and provision of effective and affordable treatment to those who require it prevent disability and death and improve quality of life. The aim of this study is to improve health profiles for people with intermediate and high risk factors for CVD at the community and health facility levels. The implementation process and effectiveness of interventions will be evaluated. METHODS: The overall study is a type 2-hybrid stepped-wedge (SW) design. The design employs mixed methods evaluations with incremental execution and adaptation. Sequential crossover take place from control to intervention until all are exposed. The study will take place in Mukono and Buikwe districts in Uganda, home to more than 1,000,000 people at the community and primary healthcare facility levels. The study evaluation will be guided by; 1) RE-AIM an evaluation framework and 2) the CFIR a determinant framework. The primary outcomes are implementation – acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, coverage, and sustainability.

DISCUSSION: The study is envisioned to provide important insight into barriers and facilitators of scaling up CVD prevention in a low income context. This project is registered at the ISRCTN Registry with number ISRCTN15848572. The trial was first registered on 03/01/2019. KEYWORDS: Implementation, Risk prevention, Cardiovascular diseases, Uganda.

12. Atherogenic Risk Assessment among Persons Living in Rural Uganda

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ABSTRACT

BACKGROUND. Hypertension and dyslipidemia are independent risk factors for coronary heart disease and commonly coexist. Cardiovascular risk can be reliably predicted using lipid ratios such as the atherogenic index, a useful prognostic parameter for guiding timely interventions.

OBJECTIVE. We assessed the cardiovascular risk profile based on the atherogenic index of residents within a rural Ugandan cohort.

METHODS. In 2011, a population based survey was conducted among 7507 participants. Sociodemographic characteristics, physical measurements (blood pressure, weight, height, and waist and hip circumference), and blood sampling for nonfasting lipid profile were collected for each participant. Atherogenic risk profile, defined as logarithm base ten of (triglyceride divided by high density lipoprotein cholesterol), was categorised as low risk (0.24).

RESULTS. Fifty-five percent of participants were female and the mean age was 49.9 years (SD± 20.2). Forty-two percent of participants had high and intermediate atherogenic risk. Persons with hypertension, untreated HIV infection, abnormal glycaemia, and obesity and living in less urbanised villages were more at risk.

CONCLUSION. A significant proportion of persons in this rural population are at risk of atherosclerosis. Key identified populations at risk should be considered for future intervention against cardiovascular related morbidity and mortality. The study however used parameters from unfasted samples that may have a bearing on observed results.

13. Barriers and facilitators of implementation of a community cardiovascular disease prevention programme in Mukono and Buikwe districts in Uganda using the Consolidated Framework for Implementation Research

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ABSTRACT

BACKGROUND: In low- and middle-income countries, there is an increasing attention towards community approaches to deal with the growing burden of cardiovascular disease (CVD). However, few studies have explored the implementation processes of such interventions to inform their scale up and sustainability. Using the consolidated framework for implementation research (CFIR), we examined the barriers and facilitators influencing the implementation of a community

CVD programme led by community health workers (CHWs) in Mukono and Buikwe districts in Uganda.

METHODS: This qualitative study is a process evaluation of an ongoing type II hybrid stepped wedge cluster trial guided by the CFIR. Data for this analysis were collected through regular meetings and focus group discussions (FGDs) conducted during the first cycle (6 months) of intervention implementation. A total of 20 CHWs participated in the implementation programme in 20 villages during the first cycle. Meeting reports and FGD transcripts were analysed following inductive thematic analysis with the aid of Nvivo 12.6 to generate emerging themes and subthemes and thereafter deductive analysis was used to map themes and sub-themes onto the CFIR domains and constructs. Results: The barriers to intervention implementation were the complexity of the intervention (complexity), compatibility with community culture (culture), the lack of an enabling environment for behaviour change (patient needs and resources) and mistrust of CHWs by community members (relative priority). In addition, the low community awareness of CVD (tension for change), competing demands (other personal attributes) and unfavourable policies (external policy and incentives) impeded intervention implementation. On the other hand facilitators of intervention implementation were availability of inputs and protective equipment (design quality and packaging), training of CHWs (Available resources), working with community structures including leaders and groups (process—opinion leaders), frequent support supervision and engagements (process—formally appointed internal implementation leaders) and access to quality health services (process—champions).

CONCLUSION: Using the CFIR, we identified drivers of implementation success or failure for a community CVD prevention programme in a low-income context. These findings are key to inform the design of impactful, scalable and sustainable CHW programmes for non-communicable diseases prevention and control.

KEYWORDS: Adoption, Cardiovascular disease, Community health workers, Implementation

14. Benzathine penicillin adherence for secondary prophylaxis among patients affected with rheumatic heart disease attending Mulago Hospital

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ABSTRACT

INTRODUCTION: Rheumatic heart disease (RHD) frequently occurs following recurrent episodes of acute rheumatic fever (ARF). Benzathine penicillin (benzapen) is the most effective method for secondary prophylaxis against ARF whose efficacy largely depends on adherence to treatment.

Various factors determine adherence to therapy but there are no data regarding current use of benzapen in patients with RHD attending Mulago Hospital. The study aims were (1) to determine the levels of adherence with benzapen prophylaxis among rheumatic heart disease patients in Mulago Hospital, and (2) establish the patient factors associated with adherence and, (3) establish the reasons for missing monthly benzathine penicillin injections.

METHODS: This was a longitudinal observational study carried out in Mulago Hospital cardiac clinics over a period of 10 months; 95 consecutive patients who satisfied the inclusion criteria were recruited over a period of four months and followed up for six months. Data on demographic characteristics and disease status were collected by means of a standardised questionnaire and a card to document the injections of benzapen received. Results: Most participants were female 75 (78.9%). The age range was five to 55 years, with a mean of 28.1 years (SD 12.2) and median of 28 years. The highest education level was primary school for most patients (44, 46.3%) with eight (8.4%) of the patients being illiterate. Most were either NYHA stage II (39, 41.1%) or III (32, 33.7%). Benzathine penicillin adherence: 44 (54%) adhered to the monthly benzapen prophylaxis, with adherence rates ≥ 80%; 38 (46%) patients were classified as non-adherent to the monthly benzapen, with rates less than 80%. The mean adherence level was 70.12% (SD 29.25) and the median level was 83.30%, with a range of 0–100%; 27 (33%) patients had extremely poor adherence levels of ≤ 60%. Factors associated with adherence: higher education status, residing near health facility favoured high adherence, while painful injection was a major reason among poor performers.

CONCLUSION: The level of non-adherence was significantly high (46%). Residence in a town/city and having at least a secondary level of education was associated with better adherence, while the painful nature of the benzapen injections and lack of transport money to travel to the health centre were the main reasons for non-adherence among RHD patients in Mulago.

KEYWORDS: rheumatic heart disease, benzathine penicillin, secondary prophylaxis, adherence

15. Burden of heart diseases in children attending cardiology clinic in a regional referral hospital in Uganda

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ABSTRACT

INTRODUCTION: Patterns and prevalence of heart diseases are different between the high income countries and low income countries. Acquired heart diseases like RHD, cardiomyopathies,

pericarditis are still a public health burden while congenital heart diseases still carry a poor outcome among children. The aim of this study was to report the burden and pattern of heart diseases in a semi urban referral hospital in Uganda.

METHODS: This was a prospective study in the paediatrics department at a regional referral hospital in south western Uganda over a period of 20months. All children from birth up to 12years who were referred or presented at the paediatrics department from different areas in the region for an index cardiac evaluation and had their transthoraxic echo done were included in the study. These children were enrolled and followed up in the cardiology clinic for chronic care. Those who did not turn up for their expected reviews were followed up with phone calls to find out their outcome.

RESULTS: Two hundred and forty children were screened during this period and 158(65.8%) had abnormal echocardiological findings. More females than males were had abnormal Echos at 51.9%. VSD were the commonest acyanotic heart disease followed by PDA at 37% and 17% respectively. TOF has the highest prevalence at 8.23% followed by Truncus arteriosus at 5.9% amongst the cyanotic heart diseases. Mean age at diagnosis of congenital heart disease was 28months (SD 33). RHD was the commonest acquired heart diseases (72.5%.) Sixty three percent of children needed and were referred to the national cardiac centre. Only 52% of referred children managed to go to the national referral cardiac centre. Of all the children who needed surgical intervention, 4.4% got the intervention. 25% of the children died while 12.7% were lost to follow up.

CONCLUSION; There is a high burden of heart diseases in south western Uganda with limited access to interventional services.

16. Cardiac surgery for patients with heart failure due to structural heart disease in Uganda: access to surgery and outcomes

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ABSTRACT

OBJECTIVE: Few data are available on heart failure (HF) in sub-Saharan Africa. We aimed to provide a current picture of HF aetiologies in urban Uganda, access to heart surgery, and outcomes.

METHODS: We prospectively collected clinical and echocardiographic data from 272 consecutive patients referred for suspected heart disease to a tertiary hospital in Kampala during seven non-governmental organisation (NGO) missions from 2009 to 2013. We focused the analysis on 140 patients who fulfilled standardised criteria of HF by echocardiography. RESULTS: Rheumatic heart disease (RHD) was the leading cause of HF in 44 (31%) patients. Among the 50 children included (age ≤ 16 years), congenital heart disease (CHD) was the first cause of HF (30 patients, 60%), followed by RHD (16 patients, 32%). RHD was the main cause of HF (30%) among the 90 adults. All 85 patients with RHD and CHD presented with an indication for heart surgery, of which 74 patients were deemed fit for intervention. Surgery was scheduled in 38 patients with RHD [86%, median age 19 years (IQR: 12–31)] and in 36 patients with CHD [88%, median age 4 years (IQR 1–5)]. Twenty-seven candidates (32%) were operated on after a median waiting time of 10 months (IQR 6–21). Sixteen (19%) had died after a median of 38 months (IQR 5–52); 19 (22%) were lost to follow up.

CONCLUSIONS: RHD still represents the leading cause of HF in Uganda, in spite of cost-efficient prevention strategies. The majority of surgical candidates, albeit young, do not have access to treatment and present high mortality rates.

KEYWORDS: heart failure, rheumatic heart disease, congenital heart disease, echocardiography, heart surgery.

17. Cardiovascular disease prevention knowledge and associated factors among adults in Mukono and Buikwe districts in Uganda

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ABSTRACT

BACKGROUND: With the growing epidemic of Cardiovascular Disease (CVD) in sub-Saharan Africa, behavioural change interventions are critical in supporting populations to achieve better cardiovascular health. Population knowledge regarding CVD is an important first step for any such interventions. This study examined CVD prevention knowledge and associated factors among adults in Mukono and Buikwe districts in Uganda.

METHODS: The study was cross-sectional in design conducted among adults aged 25 to 70 years as part of the baseline assessment by the Scaling-up Packages of Interventions for Cardiovascular disease prevention in selected sites in Europe and Sub-Saharan Africa (SPICES) – project. Data were collected using pretested semi-structured questionnaires, and respondents categorized as knowledgeable if they scored at least five out of six in the knowledge questions. Data were exported into STATA version 15.0 statistical software for analysis conducted using mixed-effects Poisson regression with fixed and random effects and robust standard errors.

RESULTS: Among the 4372 study respondents, only 776 (17.7%) were knowledgeable on CVD prevention. Most respondents were knowledgeable about foods high in calories 2981 (68.2%), 2892 (66.1%) low fruit and vegetable intake and high salt consumption 2752 (62.9%) as CVD risk factors. However, majority 3325 (76.1%) thought the recommended weekly moderate physical activity was 30 min and half 2262 (51.7%) disagreed or did not know that it was possible to have hypertension without any symptoms. Factors associated with high CVD knowledge were: post-primary education [APR = 1.55 (95% CI: 1.18–2.02), p = 0.002], formal employment [APR = 1.69 (95% CI: 1.40– 2.06), p < 0.001] and high socio-economic index [APR = 1.35 (95% CI: 1.09–1.67), p = 0.004]. Other factors were: household ownership of a mobile phone [APR = 1.35 (95% CI: 1.07–1.70), p = 0.012] and ever receiving advice on healthy lifestyles [APR = 1.38 (95% CI: 1.15–1.67), p = 0.001].

CONCLUSIONS: This study found very low CVD knowledge with major gaps around recommended physical activity duration, diet and whether hypertension is asymptomatic. Observed knowledge gaps should inform suitable interventions and strategies to equip and empower communities with sufficient information for CVD prevention.

KEYWORDS: Diet, Healthy lifestyles, Hypertension, Physical activity and sub-Saharan Africa

18. Cardiovascular disease risk in women living with HIV

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PURPOSE OF REVIEW: To synthesize current evidence on the impact of cardiovascular disease among women living with HIV (WLWH) with a particular focus on disease prevalence, mechanisms and prevention.

RECENT FINDINGS: HIV-related cardiovascular disease risk is 1.5-fold to 2-fold higher for women than for men. Mechanisms of enhanced risk are multifactorial and include reinforcing pathways between traditional risk factors, metabolic dysregulation, early reproductive aging and chronic immune activation. These pathways influence both the presentation of overt syndromes of myocardial infarction, stroke and heart failure, as well as subclinical disease, such as microvascular dysfunction and cardiac fibrosis. Cardiovascular disease, therefore, remains a consistent threat to healthy aging among WLWH.

SUMMARY: Although no specific prevention strategies exist, patient-centered risk mitigation approaches that are adaptable to the needs of aging individuals are essential to combat disparities in cardiovascular outcomes among WLWH. Further research into the optimal prevention approach for CVD among WLWH, particularly for women living in under-resourced health systems, is needed.

19. Chronic Disease in the Community (CDCom) Program: Hypertension and noncommunicable disease care by village health workers in rural Uganda

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ABSTRACT

BACKGROUND: Although hypertension, the largest modifiable risk factor in the global burden of disease, is prevalent in sub-Saharan Africa, rates of awareness and control are low. Since 2011 village health workers (VHWs) in Kisoro district, Uganda have been providing non-communicable disease (NCD) care as part of the Chronic Disease in the Community (CDCom) Program. The VHWs screen for hypertension and other NCDs as part of a door-to-door biannual health census, and, under the supervision of health professionals from the local district hospital, also serve as the primary providers at monthly village-based NCD clinics.

OBJECTIVE/METHODS: We describe the operation of CDCom, a 10-year comprehensive program employing VHWs to screen and manage hypertension and other NCDs at a community

level. Using program records we also report hypertension prevalence in the community, program costs, and results of a cost-saving strategy to address frequent medication stockouts.

RESULTS/CONCLUSIONS: Of 4283 people ages 30–69 screened for hypertension, 22% had a blood pressure (BP) 140/90 and 5% had a BP 160/100. All 163 people with SBP 170 during door-to-door screening were referred for evaluation in CDCom, of which 91 (59%) had repeated BP 170 and were enrolled in treatment. Of 761 patients enrolled in CDCom, 413 patients are being treated for hypertension and 68% of these had their most recent blood pressure below the treatment target. We find: 1) The difference in hypertension prevalence between this rural, agricultural population and national rates mirrors a rural-urban divide in many countries in sub-Saharan Africa. 2) VHWs are able to not only screen patients for hypertension, but also to manage their disease in monthly village-based clinics. 3) Mid-level providers at a local district hospital NCD clinic and faculty from an academic center provide institutional support to VHWs, streamline referrals for complicated patients and facilitate provider education at all levels of care. 4) Selective stepdown of medication doses for patients with controlled hypertension is a safe, cost-saving strategy that partially addresses frequent stockouts of government-supplied medications and patient inability to pay. 5) CDCom, free for village members, operates at a modest cost of 0.20 USD per villager per year. We expect that our data informed analysis of the program will benefit other groups attempting to decentralize chronic disease care in rural communities of low-income regions worldwide.

20. Clinical Outcomes, Echocardiographic Findings, and Care Quality Metrics for People Living With Human Immunodeficiency Virus (HIV) and Rheumatic Heart Disease in Uganda

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD) affects 41 million people worldwide, mostly in low- and middle-income countries, where it is co-endemic with human immunodeficiency virus (HIV). HIV is also a chronic inflammatory disorder associated with cardiovascular complications, yet the epidemiology of patients affected by both diseases is poorly understood. METHODS: Utilizing the Uganda National RHD Registry, we described the echocardiographic findings, clinical characteristics, medication prescription rates, and outcomes of all 73 people carrying concurrent diagnoses of HIV and RHD between 2009 and 2018. These individuals were compared to an age- and sex-matched cohort of 365 subjects with RHD only. Results. The median age of the HIV-RHD group was 36 years (interquartile range [IQR] 15), and 86% were women. The HIV-RHD cohort had higher rates of prior stroke/transient ischemic attack (12% vs 5%, P = .02) than the RHD-only group, with this association persisting following multivariable adjustment (odds ratio [OR] 3.08, P = .03). Prevalence of other comorbidities, echocardiographic findings, prophylactic penicillin prescription rates, retention in clinical care, and mortality were similar between the 2 groups.

CONCLUSIONS: Patients living with RHD and HIV in Uganda are a relatively young, predominantly female group. Although RHD HIV comorbid individuals have higher rates of stroke, their similar all-cause mortality and RHD care quality metrics (such as retention in care) compared to those with RHD alone suggest rheumatic heart disease defines their clinical outcome more than HIV does. We believe this study to be one of the first reports of the epidemiologic profile and longitudinal outcomes of patients who carry diagnoses of both conditions.

KEYWORDS: HIV; quality of care; rheumatic heart disease; Uganda, global health.

21. Community Perspectives on Primary Prevention of Rheumatic Heart Disease in Uganda

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ABSTRACT

BACKGROUND: Untreated streptococcal pharyngitis is a precursor to rheumatic heart disease (RHD) and remains a significant public health issue in many countries. Understanding local determinants of treatment-seeking behaviors can help tailor RHD prevention programs. Objective: We sought to elicit perceptions of pharyngitis and related healthcare use in a range of communities in Uganda.

METHODS: We conducted six focus group discussions (FGD) in three districts that were representative of the country's socioeconomic and cultural heterogeneity. Participants were recruited from six villages (two per district), and FGDs were audio recorded, transcribed and translated into English. Deductive and inductive analysis of the transcripts was done via open axial and sequential coding, which informed development of clusters, themes and subthemes. We extracted quotations from the transcripts to illustrate these themes.

RESULTS: We identified nine key themes in three major domains: knowledge and perception of pharyngitis, treatment practices, and barriers to uptake of formal public-sector healthcare services. Community awareness and understanding of the consequences of pharyngitis were low. Stated barriers to care were usually systemic in nature and included low overall confidence in the healthcare system and substantial costs associated with transportation and medications.

CONCLUSION: The FGDs identified several approaches to shape community perceptions of pharyngitis and improve utilization of interventions to prevent RHD. In Uganda, information-education-communication interventions probably need to be combined with structural interventions that make formal public-sector healthcare more accessible to at-risk populations.

22. Cost-effectiveness analysis of integrating screening and treatment of selected non-communicable diseases into HIV/AIDS treatment in Uganda

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ABSTRACT

INTRODUCTION: Despite growing enthusiasm for integrating treatment of non-communicable diseases (NCDs) into human immunodeficiency virus (HIV) care and treatment services in sub-Saharan Africa, there is little evidence on the potential health and financial consequences of such integration. We aim to study the cost-effectiveness of basic NCD-HIV integration in a Ugandan setting.

METHODS: We developed an epidemiologic-cost model to analyze, from the provider perspective, the cost-effectiveness of integrating hypertension, diabetes mellitus (DM) and high cholesterol screening and treatment for people living with HIV (PLWH) receiving antiretroviral therapy (ART) in Uganda. We utilized cardiovascular disease (CVD) risk estimations drawing from the previously established Globorisk model and systematic reviews; HIV and NCD risk factor prevalence from the World Health Organization's STEPwise approach to Surveillance survey and global databases; and cost data from national drug price lists, expert consultation and the literature. Averted CVD cases and corresponding disability-adjusted life years were estimated over 10 subsequent years along with incremental cost-effectiveness of the integration. Results: Integrating services for hypertension, DM, and high cholesterol among ART patients in Uganda was associated with a mean decrease of the 10-year risk of a CVD event: from 8.2 to 6.6% in older PLWH women (absolute risk reduction of 1.6%), and from 10.7 to 9.5% in older PLWH men (absolute risk reduction of 1.2%), respectively. Integration would yield estimated net costs between $1,400 and $3,250 per disability-adjusted life year averted among older ART patients.

CONCLUSIONS: Providing services for hypertension, DM and high cholesterol for Ugandan ART patients would reduce the overall CVD risk among these patients; it would amount to about 2.4% of national HIV/AIDS expenditure, and would present a cost-effectiveness comparable to other standalone interventions to address NCDs in low- and middle-income country settings.

KEYWORDS: HIV; antiretroviral therapy; non-communicable diseases; hypertension; hypercholesterolaemia; diabetes; cardiovascular diseases; integration; sub-Saharan Africa; Uganda

23. Curbing the Rise of Noncommunicable Diseases in Uganda: Perspectives of Policy Actors

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ABSTRACT

BACKGROUND: Uganda faces a complex policy landscape as it simultaneously addresses infectious diseases and noncommunicable diseases (NCDs). The health system has been overwhelmed by the growing burden of NCDs across all socioeconomic strata. In this study, we sought to understand the policy context around NCDs in Uganda, the roles of actors both within and external to the government, and the factors shaping the development and implementation of NCD policies and programs in Uganda.

METHODS: We conducted in-depth interviews with 30 policy actors from the Ugandan Ministry of Health (MOH), nongovernmental organizations, and academia to understand the roles of different actors in the Ugandan NCD space, the programs and policy measures in discussion, and how to bridge any identified gaps. A thematic data analysis was conducted.

RESULTS: All national actors viewed funding constraints as a critical barrier to developing and executing an NCD strategic plan and as a barrier to leading and coordinating NCD prevention and control efforts in Uganda. The crowding of nongovernment actors was found to fragment NCD efforts, particularly due to the weak implementation of a framework for action among NCD actors. Relatedly, limited recruitment of technical experts on NCDs within the MOH was viewed to further diminish the government's role in leading policy and program formulation and implementation. Though recent MOH efforts have aimed at addressing these concerns, some skepticism remains about the government's commitment to increase budgetary allocations for NCDs and to address the technical and human resources gaps needed to achieve NCD policy aims in Uganda.

CONCLUSIONS: This study highlights the immediate need to mobilize more resources, reduce fragmented efforts in the NCD space, and prioritize investment in NCD prevention and management in Uganda.

24. Decreased Prevalence of Rheumatic Heart Disease Confirmed Among HIV Positive Youth

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ABSTRACT

BACKGROUND: There is geographical overlap between areas endemic for rheumatic heart disease (RHD) and those endemic for human immunodeficiency virus (HIV). A recent pilot study demonstrated that children living with HIV might be at less risk for RHD development however, the sample size was too small to make definitive conclusions. Our objective was to determine the prevalence of RHD among HIV positive children in Uganda.

METHODS: We conducted a prospective, cross-sectional study of HIV+ children (aged 5–15) receiving care at the Baylor Uganda HIV clinic, Kampala, Uganda. A focused echocardiogram and chart review was performed. A sample size of 988 children was needed to provide 80% power to detect a difference in population prevalence between HIV+ children and the general population, 2.97% (95% CI 2.70–3.24%), based on previous reports.

RESULTS: Screening echocardiography of 993 HIV+ children found 15 individuals (1.5%, 95% CI 0.88% - 2.54%) with RHD. Of these 15, 2 were classified as definite RHD and 13 as borderline RHD. The majority of children had isolated mitral valve disease (93%). Children found to have RHD were older than without, 12 years vs 10 years; p=0.004. When separated based on geographic location, the prevalence of RHD among HIV-positive children from Kampala was 1.28% (95% CI 0.63% - 2.51%) compared to 2.1% (95% CI 0.89% - 4.89%) in those from outside Kampala.

CONCLUSIONS: Children living with HIV have a lower prevalence of RHD than the general pediatric population. Further studies are needed to explore this protective association.

KEYWORDS: Rheumatic heart disease; HIV; echocardiogram; cotrimoxazole; Uganda

25. Determinants of Raised Blood Pressure in Urban Uganda: A Community-Based Case-Control Study

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OBJECTIVE: Rapid urbanization is changing the epidemiology of non-communicable diseases in sub-Saharan Africa. We aimed to identify the determinants of raised blood pressure in urban Uganda to highlight targets for preventive interventions.

DESIGN: Case-control. SETTING: Three community-based sites in Kampala, the capital of Uganda. Participants: Participants were eligible to enroll if they were aged ≥18 years and not pregnant.

METHODS: 450 cases with raised blood pressure were frequency matched by sex and age to 412 controls. Unconditional logistic regression was used to evaluate the association of socio-demographic, lifestyle, anthropometric, and laboratory variables with the outcome of raised blood pressure. Cases currently treated with antihypertensive medication and cases not treated with antihypertensive medication were analyzed separately.

RESULTS: Significantly increased odds of raised blood pressure were associated with overweight body mass index (BMI) (25 kg/m2 ≤ BMI < 30 kg/m2), obese BMI (BMI ≥ 30 kg/m2) and hemoglobin A1c ≥ 6.5%. Significantly decreased odds of raised blood pressure were associated with moderate-to-vigorous work-related physical activity of >4 hours/week. No significant associations were found between raised blood pressure and marital status, education level, car or flush toilet ownership, dietary habits, alcohol consumption, smoking habits, moderate-to-vigorous leisure-related physical activity > 4 hours/week, waist-to hip ratio, or total cholesterol levels.

CONCLUSIONS: Targeted interventions are needed to address the key modifiable risk factors for raised blood pressure identified in this study, namely elevated BMI and regular physical activity, in order to reduce the burden of cardiovascular disease in urban Uganda.

KEYWORDS: Hypertension; Cardiovascular Disease; Stroke; Obesity; Uganda; Africa

26. Determining the impact of Benzathine penicillin G prophylaxis in children with latent rheumatic heart disease (GOAL trial): Study protocol for a randomized controlled trial

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD) remains a high prevalence condition in low- and middle-income countries. Most individuals with RHD present late, missing the opportunity to benefit from secondary antibiotic prophylaxis. Echocardiographic screening can detect latent RHD, but the impact of secondary prophylaxis in screen-detected individuals is not known.

METHODS/DESIGN: This trial aims to determine if secondary prophylaxis with every-4-week injectable Benzathine penicillin G (BPG) improves outcomes for children diagnosed with latent RHD. This is a randomized controlled trial in consenting children, aged 5 to 17 years in Northern Uganda, confirmed to have borderline RHD or mild definite RHD on echocardiography, according to the 2012 World Heart Federation criteria. Qualifying children will be randomized to every-4-week injectable intramuscular BPG or no medical intervention and followed for a period of 2 years. Ongoing intervention adherence and retention in the trial will be supported through the establishment of peer support groups for participants in the intervention and control arms. A blinded echocardiography adjudication panel consisting of four independent experts will determine the echocardiographic classification at enrollment and trajectory through consensus review. The primary outcome is the proportion of children in the BPG-arm who demonstrate echocardiographic progression of latent RHD compared to those in the control arm. The secondary outcome is the proportion of children in the BPG-arm who demonstrate echocardiographic regression of latent RHD compared to those in the control arm. A sample size of 916 participants will provide 90% power to detect a 50% relative risk reduction assuming a 15% progression in the control group. The planned study duration is from 2018–2021.

DISCUSSION Policy decisions on the role of echocardiographic screening for RHD have stalled because of the lack of evidence of the benefit of secondary prophylaxis. The results of our study will immediately inform the standard of care for children diagnosed with latent RHD and will shape, over 2–3 years, practical and scalable programs that could substantially decrease the burden of RHD in our lifetime.

CONCLUSION: Existing HIV/AIDS infrastructure can be successfully leveraged to provide quality care for patients with RHD in Uganda. This program could serve as a model for the management

of other chronic cardiovascular (and other non-communicable) diseases in resource limited settings where infrastructure for HIV/AIDS is robust, but other health infrastructure is lacking.

27. Does HIV infection modify the risk of RHD? Initial echocardiographic screening experience at the Joint Clinical Research Centre in Kampala, Uganda

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ABSTRACT

INTRODUCTION: The prevalence of rheumatic heart disease (RHD) is estimated to be 10-fold higher in developing than in developed nations; however, accurate epidemiological data is limited by the lack of echocardiography to detect subclinical RHD. Because of the immunologic basis of RHD, there is reason to suspect that HIV/AIDS may affect the prevalence and/or severity of RHD.

OBJECTIVES: To describe the prevalence of subclinical RHD among HIV-infected children in Kampala, Uganda and to compare our findings with previously published and unpublished studies from Uganda.

METHODS: This was a cross-sectional study of HIV-infected children enrolled in care at the Joint Clinical Research Centre in Kampala. Screening echocardiograms were performed by two physician-sonographers trained in RHD screening using 2012 World Heart Federation criteria. All children with abnormal screening echocardiograms were referred for a confirmatory echocardiogram at the Uganda Heart Institute. Clinical information including age, gender, CD4 count, and use of antiretroviral therapy was obtained by chart review.

RESULTS: Screening echocardiograms were performed on 266 children (see Table). Thirteen children (4.9%) had a positive screen for definite or borderline RHD of the mitral valve and none was positive for aortic valve disease. The overall prevalence of 4.9% (definite and borderline RHD) is higher than the published prevalence of 1.5% (definite, probable, or possible RHD) among 5,000 similarly aged Kampala school children, and higher than the 0.7% prevalence (definite only) in a previous unpublished study of 285 HIV-infected children on ART in Kampala.

CONCLUSION: The prevalence of suspected RHD among HIV-positive children in Kampala was higher than previously reported in this population. Confirmatory testing and clinical/ echocardiographic follow-up will be required to verify these RHD diagnoses and to quantify the extent of valvular abnormalities. Further epidemiologic and mechanistic studies are needed to

determine the effect of concurrent HIV infection and antiretroviral treatment on RHD susceptibility or disease progression.

28. Drivers of cardiovascular disease risk factors in slums in Kampala, Uganda: a qualitative study

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ABSTRACT

BACKGROUND: Cardiovascular disease (CVD) risk factors are increasing in many sub-Saharan African countries and disproportionately affecting communities in urban slums. Despite this, the contextual factors that influence CVD risk among slum communities have not been fully documented to guide interventions to prevent and control the disease.

OBJECTIVE: This study explored the drivers of CVD risk factors in slums in Kampala, Uganda.

METHODS: This qualitative study employed focus group discussions (FGDs) to collect data among slum residents. A total of 10 FGDs separate for gender and age group were held in community public places. Discussions were audio-recorded, transcribed, and transcripts analysed thematically with the aid of Atlas ti 7.0. Study themes and sub-themes are presented supported by participant quotations.

RESULTS: Five themes highlighted the drivers of CVD risk factors in slum communities. (1) Poverty: a critical underlying factor which impacted access and choice of food, work, and housing. (2) Poverty-induced stress: a key intermediate factor that led to precarious living with smoking and alcohol use as coping measures. (3) The social environment which included socialisation through drinking and smoking, and family and peers modelling behaviours. (4) The physical environment such as the high availability of affordable alcohol and access to amenities for physical activity and healthy foods. (5) Knowledge and information about CVD risk factors which included understanding of a healthy diet and the dangers of smoking and alcohol consumption.

CONCLUSION: To address CVD risk in slums, broad-ranging multisectoral interventions are required, including economic empowerment of the slum population, stress reduction and coping interventions, and alcohol legislation. Also, there is a need for community CVD sensitisation and screening as well as increasing access to physical activity amenities and healthy foods within slums.

29. Echocardiographic Screening for Rheumatic Heart Disease in a Ugandan Orphanage: Feasibility and Outcomes

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD) is a major cause of cardiovascular disease in developing nations, leading to more than 230,000 deaths annually. Most patients seek medical care only when long-term structural and hemodynamic complications have already occurred. Echocardiographic screenings ensure the early detection of asymptomatic subjects who could benefit from prophylaxis, monitoring and intervention, when appropriate. The aim of this study is to assess the feasibility of a screening program and the prevalence of RHD in a Ugandan orphanage.

METHODS: We performed an RHD-focused echocardiogram on all the children (5–14 years old) living in a north Ugandan orphanage. Exams were performed with a portable machine (GE Vivid-I). All the time intervals were recorded (minutes).

RESULTS: A total of 163 asymptomatic children were screened over 8 days (medium age 9.1; 46% male; 17% affected by severe motor impairment). The feasibility rate was 99.4%. An average of 20.4 exams were performed per day, with an average of 15.5 images collected per subject. Pathological mitral regurgitation (MR) was found in 5.5% of subjects, while at least two morphological features of RHD were found in 4.3%, leading to 1 "definite RHD" (0.6%) case and

13 “borderline RHD” cases (8.1%). Six congenital heart defects were also noted (3.7%): four atrial septal defects, one coronary artery fistula and one Patent Ductus Arteriosus.

CONCLUSIONS: We demonstrated the feasibility of an echocardiographic screening for RHD in an orphanage in Uganda. A few factors, such as good clinical and hygienic care, the availability of antibiotics and closeness to a big hospital, may account for the low prevalence of the disease in our population.

KEYWORDS: rheumatic heart disease; rheumatic fever; mitral valve; echocardiographic screening; developing countries

30. Epidemiology, Pathophysiology, and Prevention of Heart Failure in People with HIV

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ABSTRACT

Heart failure (HF) has been a known complication of HIV/AIDS for three decades. As the treatment of HIV has changed, so has the epidemiology and pathophysiology of HF in people with HIV (PWH). Initial manifestations of HF in uncontrolled HIV primarily included a rapidly evolving cardiomyopathy with pericardial involvement. With the widespread uptake of effective antiretroviral therapy (ART), HF in PWH has become a chronic disease reflective of the aging population and associated comorbidities, albeit with a contribution from HIV-associated chronic immune dysregulation and inflammation. Despite viral suppression, PWH remain at elevated risk for both HF with reduced ejection fraction and HF with preserved ejection fraction. In this review, we discuss the changing epidemiology and mechanisms of HF in PWH and how that may inform HF prevention in this vulnerable population.

KEYWORDS Heart Failure; HIV; Immune Dysfunction

31. Establishment of a cardiac telehealth program to support cardiovascular diagnosis and care in a remote, resource-poor setting in Uganda

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ABSTRACT

INTRODUCTION: To address workforce shortages and expand access to care, we developed a telemedicine program incorporating existing infrastructure for delivery of cardiovascular care in Gulu, Northern Uganda. Our study had three objectives: 1) assess feasibility and clinical impact 2) evaluate patient/parent satisfaction and 3) estimate costs.

METHODS: All cardiology clinic visits during a two-year study period were included. All patients received an electrocardiogram and echocardiogram performed by a local nurse in Gulu which were stored and transmitted to the Uganda Heart Institute in the capital of Kampala for remote consultation by a cardiologist. Results were relayed to patients/families following cardiologist interpretation. The following telemedicine process was utilized: 1) clinical intake by nurse in Gulu; 2) ECG and echocardiography acquisition in Gulu; 3) echocardiography transmission to the Uganda Heart Institute in Kampala, Uganda; 4) remote telemedicine consultation by cardiologists in Kampala; and 5) communication of results to patients/families in Gulu. Clinical care and technical aspects were tracked. Diagnoses and recommendations were analyzed by age groups (0–5 years, 6–21 years, 22–50 years and > 50 years). A mixed methods approach involving interviews and surveys was used to assess patient satisfaction. Healthcare sector costs of telemedicine-based cardiovascular care were estimated using time-driven activity-based costing.

RESULTS: Normal studies made up 47%, 55%, 76% and 45% of 1,324 patients in the four age groups from youngest to oldest. Valvular heart disease (predominantly rheumatic heart disease) was the most common diagnosis in the older three age groups. Medications were prescribed to 31%, 31%, 24%, and 48% of patients in the four age groups. The median time for consultation was 7 days. A thematic analysis of focus group transcripts displayed an overall acceptance and appreciation for telemedicine, citing cost- and time-saving benefits. The cost of telemedicine was $29.48/visit.

CONCLUSIONS: Our data show that transmission and interpretation of echocardiograms from a remote clinic in northern Uganda is feasible, serves a population with a high burden of heart disease, has a significant impact on patient care, is favorably received by patients, and can be delivered at low cost. Further study is needed to better assess the impact relative to existing standards of care and cost effectiveness.

32. Examining the Ugandan health system's readiness to deliver rheumatic heart disease related services

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ABSTRACT

BACKGROUND: In 2018, the World Health Assembly mandated Member States to take action on rheumatic heart disease (RHD), which persists in countries with weak health systems. We conducted an assessment of the current state of RHD-related healthcare in Uganda. METHODOLOGY/PRINCIPAL FINDINGS: This was a mixed-methods, deductive simultaneous design study conducted in four districts of Uganda. Using census sampling, we surveyed health

facilities in each district using an RHD survey instrument that was modeled after the WHO SARA tool. We interviewed health workers with experience managing RHD, purposively sampling to ensure a range of qualification and geographic variation. Our final sample included 402 facilities and 36 health workers. We found major gaps in knowledge of clinical guidelines and availability of diagnostic tests. Antibiotics used in RHD prevention were widely available, but cardiovascular medications were scarce. Higher levels of service readiness were found among facilities in the western region (Mbarara district) and private facilities. Level III health centers were the most prepared for delivering secondary prevention. Health worker interviews revealed that limited awareness of RHD at the district level, lack of diagnostic tests and case management registries, and absence of clearly articulated RHD policies and budget prioritization were the main barriers to providing RHD-related healthcare. CONCLUSIONS/SIGNIFICANCE: Uganda's readiness to implement the World Health Assembly RHD Resolution is low. The forthcoming national RHD strategy must focus on decentralizing RHD diagnosis and prevention to the district level, emphasizing specialized training of the primary healthcare workforce and strengthening supply chains of diagnostics and essential medicines.

33. Exploring knowledge and attitudes toward non-communicable diseases among village health teams in Eastern Uganda: a cross sectional study

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ABSTRACT

BACKGROUND: Community health workers are essential personnel in resource-limited settings. In Uganda, they are organized into Village Health Teams (VHTs) and are focused on infectious diseases and maternal-child health; however, their skills could potentially be utilized in national efforts to reduce the growing burden of non-communicable diseases (NCDs). We sought to assess the knowledge of, and attitudes toward NCDs and NCD care among VHTs in Uganda as a step toward identifying their potential role in community NCD prevention and management.

METHODS: We administered a knowledge, attitudes and practices questionnaire to 68 VHT members from Iganga and Mayuge districts in Eastern Uganda. In addition, we conducted four focus group discussions with 33 VHT members. Discussions focused on NCD knowledge and

facilitators of and barriers to incorporating NCD prevention and care into their role. A thematic qualitative analysis was conducted to identify salient themes in the data.

RESULTS: VHT members possessed some knowledge and awareness of NCDs but identified a lack of knowledge about NCDs in the communities they served. They were enthusiastic about incorporating NCD care into their role and thought that they could serve as effective conduits of knowledge about NCDs to their communities if empowered through NCD education, the availability of proper reporting and referral tools, and visible collaborations with medical personnel. The lack of financial remuneration for their role did not emerge as a major barrier to providing NCD services.

CONCLUSIONS: Ugandan VHTs saw themselves as having the potential to play an important role in improving community awareness of NCDs as well as monitoring and referral of community members for NCD-related health issues. In order to accomplish this, they anticipated requiring context-specific and culturally adapted training as well as strong partnerships with facility-based medical personnel. A lack of financial incentivization was not identified to be a major barrier to such role expansion. Developing a role for VHTs in NCD prevention and management should be a key consideration as local and national NCD initiatives are developed.

KEYWORDS: community health workers, Village health teams, Non-communicable diseases, Uganda, Task-shifting, Community engagement, Health systems

34. Factors Associated with Congenital Heart Diseases Among Children in Uganda: A Case-Control Study at Mulago National Referral Hospital (Uganda Heart Institute)

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ABSTRACT

Congenital Heart Diseases (CHD) are among the leading causes of morbidity and mortality associated with congenital malformations among children. Not knowing the risk profile of CHD among children in Uganda impedes development of effective prevention interventions. In this hospital based unmatched case-control study we examined risk factors for all types of CHD among 179 pair of case and control children aged 0-10 years old at Mulago National Referral Hospital. Odds ratios and their corresponding 95% confidence intervals were calculated using multivariate logistic regression. Low birth weight (adjusted OR: 3.15, 95% CI 1.48 - 6.69), high birth order ≥5th birth order (adjusted OR: 3.69 (1.10 – 12.54), maternal febrile illness during pregnancy, maternal and paternal alcohol consumption, and paternal socio-economic status were

associated with CHD. Family history of CHD, maternal education level, maternal chronic illness, and paternal education level were not associated with CHD. The results suggest: low birth weight, high birth order, and maternal febrile illness during pregnancy, parental alcohol use and paternal socio-economic status as dominant risk factors for CHD among children. Rigorous implementation of public health policies and strategies targeting prevention of febrile illness during pregnancy, maternal malnutrition, parental alcohol consumption, delivery of high number of children per woman, might be important in reducing the burden of CHD among children in Uganda.

KEYWORDS: Risk Factors, Alcohol Use, Low Birth Weight, Maternal Alcohol Consumption, Congenital Heart Diseases, Children, Uganda

35. Health Related Quality of Life of Ugandan Children Following Valve Replacement Surgery for Rheumatic Heart Disease

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ABSTRACT

BACKGROUND: Valve replacement surgery (VRS) improves clinical outcomes in patients with severe rheumatic heart disease (RHD). However, lifelong anticoagulation and frequent monitoring are required, which potentially impacts health-related quality of life (HRQoL). In this study, we assessed the HRQoL of people with RHD in Uganda following VRS.

METHODS: This was a hospital-based, cross-sectional study conducted between March and August 2021. Eligible participants were individuals who had VRS before the age of 18 years. The Pediatric Quality of Life Inventory–Cardiac Module (PedsQL-Cardiac module) was used to evaluate HRQoL. A total mean score of ≥ 80% was considered as optimal HRQoL.

RESULTS: Of the 83 eligible participants, 52 (60.5%) were female, with a median age of 18 (interquartile range: 14–22) years. Most participants had NYHA I functional status (n = 79, 92%). Most (n = 73, 92.4%) surgeries were performed outside of Uganda, and 61 (72.6%) were single mechanical valve replacement. Almost half (n = 45, 54%) expressed no concern about being on life-long warfarin therapy. However, 24 (29.3%) feared bleeding. The optimal mean score of cardiac-specific HRQoL was achieved in 50 (60.2%) of participants. Factors associated with optimal HRQoL were body mass index (BMI) (adjusted odds ratio (aOR), 1.2, 95% Confidence Interval: 1.1–1.3, p = 0.006), being afraid of bleeding or bruising (aOR: 1.5, 95% CI: 1.21–2.47, p = 0.004), acceptance of having an artificial valve (aOR: 2.7, 95% CI; 1.64–3.81, p < 0.001).

CONCLUSION: HRQoL was optimal in about three in five participants following VRS. Increasing BMI and acceptance of artificial valve were significantly associated with optimal HRQoL.

36. High prevalence of hypertension and of risk factors for non-communicable diseases (NCDs): a population based cross-sectional survey of NCDS and HIV infection in North-western Tanzania and Southern Uganda

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ABSTRACT

BACKGROUND: The burden of non-communicable diseases (NCDs) is increasing in sub-Saharan Africa, but data available for intervention planning are inadequate. We determined the prevalence of selected NCDs and HIV infection, and NCD risk factors in northwestern Tanzania and southern Uganda.

METHODS: A population-based cross-sectional survey was conducted, enrolling households using multistage sampling with five strata per country (one municipality, two towns, two rural areas). Consenting adults (≥18 years) were interviewed using the WHO STEPS survey instrument, examined, and tested for HIV and diabetes mellitus (DM). Adjusting for survey design, we estimated population prevalence of hypertension, DM, obstructive pulmonary disease, cardiac failure, epilepsy and HIV, and investigated factors associated with hypertension using logistic regression.

RESULTS: Across strata, hypertension prevalence ranged from 16 % (95 % confidence interval (CI): 12 % to 22 %) to 17 % (CI: 14 % to 22 %) in Tanzania, and from 19 % (CI: 14 % to 26 %) to 26 % (CI: 23 % to 30 %) in Uganda. It was high in both urban and rural areas, affecting many young participants. The prevalence of DM (1 % to 4 %) and other NCDs was generally low. HIV prevalence ranged from 6 % to 10 % in Tanzania, and 6 % to 12 % in Uganda. Current smoking was reported by 12 % to 23 % of men in different strata, and 1 % to 3 % of women. Problem drinking (defined by Alcohol Use Disorder Identification Test criteria) affected 6 % to 15 % men and 1 % to 6 % women. Up to 46 % of participants were overweight, affecting women more than men and urban more than rural areas. Most patients with hypertension and other NCDs were unaware of their condition, and hypertension in treated patients was mostly uncontrolled. Hypertension was associated with older age, male sex, being divorced/widowed, lower education, higher BMI and, inversely, with smoking.

CONCLUSIONS: The high prevalence of NCD risk factors and unrecognized and untreated hypertension represent major problems. The low prevalence of DM and other preventable NCDs provides an opportunity for prevention. HIV prevalence was in line with national data. In Tanzania, Uganda and probably elsewhere in Africa, major efforts are needed to strengthen health services for the PREVENTION, early detection and treatment of chronic diseases.

KEYWORDS: Non-communicable diseases, hypertension, diabetes mellitus, heart failure, obstructive pulmonary disease, HIV infection, NCD risk factors, WHO STEPS survey, Africa

37. Household economic consequences of Rheumatic Heart Disease in Uganda

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD) has declined dramatically in wealthier countries in the past three decades, but it remains endemic in many lower-resourced regions and can have significant costs to households. The objective of this study was to quantify the economic burden of RHD among Ugandans affected by RHD.

METHODS: This was a cross-sectional cost-of-illness study that randomly sampled 87 participants and their households from the Uganda National RHD registry between December 2018 and February 2020. Using a standardized survey instrument, we asked participants and household members about outpatient and inpatient RHD costs and financial coping mechanisms incurred over the past 12 months. We used descriptive statistics to analyze levels and distributions of costs and the frequency of coping strategies. Multivariate Poisson regression models were used to assess relationships between socioeconomic characteristics and utilization of financial coping mechanisms.

RESULTS: Most participants were young or women, demonstrating a wide variation in socioeconomic status. Outpatient and inpatient costs were primarily driven by transportation, medications, and laboratory tests, with overall RHD direct and indirect costs of $78 per person-year. Between 20 and 35 percent of households experienced catastrophic healthcare expenditure, with participants in the Northern and Western Regions 5–10 times more likely to experience such hardship and utilize financial coping mechanisms than counterparts in the Central Region, a wealthier area. Increases in total RHD costs were positively correlated with increasing use of coping behaviors.

CONCLUSION: Ugandan households affected by RHD, particularly in lower-income areas, incur out-of-pocket costs that are very high relative to income, exacerbating the poverty trap. Universal health coverage policy reforms in Uganda should include mechanisms to reduce or eliminate out-of-pocket expenditures for RHD and other chronic diseases.

KEYWORDS: rheumatic heart disease, catastrophic health expenditure, universal health coverage, cost of illness, household survey

38. Hypertension among newly diagnosed diabetic patients at Mulago National Referral Hospital in Uganda: a cross sectional study

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ABSTRACT

BACKGROUND: The prevalence of hypertension in patients with diabetes is approximately two-fold higher than in age-matched subjects without the disease and, conversely, individuals with hypertension are at increased risk of developing diabetes compared with normotensive persons. Up to 75% of cases of cardiovascular disease (CVD) in patients with diabetes are attributed to hypertension. Diabetics who have hypertension are more likely to develop complications and die, and appropriate blood pressure control in these individuals reduces the risk. This study sought to determine the prevalence and factors associated with hypertension among newly diagnosed adult diabetic patients in a national referral hospital in Uganda. METHODS: In this cross-sectional study, conducted between June 2014 and January 2015, we recruited 201 newly diagnosed adult diabetic patients. Information on patients' socio-demographics was obtained using a pre-tested questionnaire, while biophysical profile, blood pressure measurement, biochemical testing and echocardiographic findings were obtained by the research team for all the participants. Bivariate and multivariate logistic regression analyses were used to investigate the association of several factors with hypertension. RESULTS: Of the 201 patients recruited, 102 were male (50.8%) and the mean age was 46 ± 15 years. The majority of patients (159) had type 2 diabetes mellitus (DM) (79.1%) with a mean HbA1c level of 13.9 ± 5.3%. The prevalence of hypertension was 61.9% (95% CI: 54.8–68.6%). Knowledge of hypertension status was at 56 (27.7%) patients, 24 (44.4%) hypertensives were on treatment, and 19 (33.9%) were using ACE inhibitors/angiotensin receptor blockers. The independent factors associated with hypertension were being employed (OR 0.37, 95% CI: 0.16–0.90, p = 0.029) and being overweight or obese (OR 11.6, 95% CI: 4.29–31.2, p < 0.0001).

CONCLUSION: The prevalence of hypertension was high in this population of newly diagnosed diabetics, few patients had knowledge of their hypertension status and few were on appropriate treatment. Both modifiable and non-modifiable risk factors were associated with hypertension in this group. Therefore routine assessment, treatment and control of hypertension among diabetics is necessary to prevent cardiovascular complications and death. There is also a need to address the modifiable risk factors.

KEYWORDS: hypertension, newly diagnosed, diabetes, Uganda

39. Hypertension and Socioeconomic Status in South Central Uganda: A Population-Based Cohort Study

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ABSTRACT

BACKGROUND: Limited studies exploring the impact of socioeconomic status (SES) on hypertension in Africa suggest a positive association between higher SES and hypertension. The economic development in sub-Saharan African countries has led to changes in SES and associated changes in lifestyle, diet, and physical activity, which may affect the relationship between hypertension and SES differently compared with higher income countries. This cross-sectional study from a large population based cohort, the Rakai Community Cohort Study (RCCS), examines SES, hypertension prevalence, and associated risk factors in the rural Rakai Region in south-central Uganda.

METHODS: Adults aged 30–49 years residing in 41 RCCS fishing, trading, and agrarian communities, were surveyed with biometric data obtained between 2016 and 2018. The primary outcome was hypertension (systolic blood pressure (BP) ≥ 130 mmHg or diastolic BP ≥ 80 mmHg). Modified Poisson regression assessed the adjusted prevalence ratios (PR) of hypertension associated with SES; body mass index (BMI) was explored as a potential mediator.

RESULTS: Among 9,654 adults, 20.8% had hypertension (males 21.2%; females 20.4 %). Participants with hypertension were older (39.0 ± 6.0 vs. 37.8 ± 5.0; $p < 0.001$). Higher SES was associated with overweight or obese BMI categories ($p < 0.001$). In the multivariable model, hypertension was associated with the highest SES category (aPR 1.23; confidence interval 1.09–1.38; $p = 0.001$), older age, male sex, alcohol use, and living in fishing communities and inversely associated with smoking and positive HIV sero status. When BMI was included in the model, there was no association between SES and hypertension (aPR 1.02; CI 0.90–1.15, $p = 0.76$).

CONCLUSION: Hypertension is common in rural Uganda among individuals with higher SES and appears to be mediated by BMI. Targeted interventions could focus on lifestyle modification among highest-risk groups to optimize public health impact.

40. Hypertension control and care at Mulago Hospital ambulatory clinic, Kampala-Uganda

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ABSTRACT

BACKGROUND: Hypertension is as prevalent in many developing countries, as in the developed world and is the leading cause of cardiovascular morbidity and mortality in Africa. The control of hypertension in this resource limited setting is inadequate, a situation that translates into poorer outcomes in form of increasing incidences of stroke, heart failure, kidney failure and therefore early cardiovascular death.

METHODS: This was a chart review of all the patients seen during the months of September 2012 to February 2013. We determined the level of blood pressure control, basic investigations documented as well as the choice of hypertensive treatment among patients attending a hypertension clinic in a national referral hospital, Mulago.

RESULTS: Of the 741 patients whose charts were reviewed the median age was 60 years, Inter quartile range (IQR) was 51–71. Six hundred forty-two (86.6%) were females. Blood pressure (BP) control defined as BP lowering to at least 140/90 was seen in only 198 (26.7%) patients. Biophysical measurement documentation was very low especially for waist and hip circumference at 0.3%. Majority of patients, 476 (64.2%) had at least one documented investigation for the complications of hypertension. Only 103 (13.9%) had all investigations documented in their charts. The investigations included; complete blood count (CBC), urinalysis, renal function tests (RFTs), Chest X-Ray (CXR), echocardiography (Echo) and electrocardiography (ECG). The commonly documented investigations were RFTs (45.5%), ECG (45.2%) and Echo (44.2%). The commonly prescribed anti-hypertensive medications were; Angiotensin receptor blockers (ARBs)/Angiotensin converting enzyme inhibitors (ACEI) (72.74%), calcium channel blockers

(72.3%) and thiazide diuretics (68.6%). Majority of patients were receiving three anti-hypertensive medications 313 (42.2%), with 149 (43.6%) of these, on an ACEI/ARB, a calcium channel blocker and a thiazide diuretic.

CONCLUSION: Blood pressure control is suboptimal in a tertiary clinic setting at Mulago hospital and documentation of investigations is inadequate. ARB/ACEI, Calcium channel blockers and thiazide diuretics were the commonly prescribed anti-hypertensive medications. There is a great need to investigate for renal and cardiac complications as well as exploring reasons for inadequate blood pressure control and consider appropriate interventions to avert bad outcomes.

KEYWORDS: Hypertension, Blood pressure control, Management, Tertiary clinic

41. 'I think my body has become addicted to those tablets'. Chronic heart failure patients' understanding of and beliefs about their illness and its treatment: A qualitative longitudinal study from Uganda

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ABSTRACT

BACKGROUND: Patients with heart failure in Uganda present for health care with advanced structural heart disease, have repeated hospitalizations and poorly controlled disease symptoms. The reasons for these are unclear. Literature from other settings shows that patients' understanding of their illness and their beliefs influence their health related behaviour. The study aimed to explore the beliefs of patients with heart failure, their understanding of their illness and its treatment, and how this influenced their health related behaviour to inform future health education programs, information and palliative care services.

METHODS: Serial qualitative in-depth interviews were conducted with Heart Failure patients who were purposively sampled and recruited in Mulago National Referral Hospital until thematic saturation was reached. In-depth interviews were conducted at three time points over the course of their illness with intervals of 3 months between interviews. A grounded theory approach was used in data analysis. The University of Edinburgh ethics committee, Mulago Hospital Research Ethics committee and the Uganda National Council of Science and Technology (Reference numbers D/GC/178; MREC 33, SS 3083 respectively) approved the research.

RESULTS: A total of 40 face to face qualitative longitudinal interviews (36-patient alone, 4 paired-patient and family carer), were conducted with 21 patients. The findings revealed that heart failure patients were unaware of the symptoms of the illness and their definition of illness differed from that of health professionals. Patients understood their diagnosis, cause of illness, prognosis and

the importance of the medicines differently from health professionals, and had insufficient information on self-care. Lay beliefs were used to explain many aspects of the illness and treatments. All these influenced where patients sought care and their adherence to treatment, self-care and follow up leading to uncontrolled disease.

CONCLUSION: There is a high level of health illiteracy among heart failure patients in Uganda. Patients rely on lay beliefs to make health decisions and medical information is often miscomprehended. There is an urgent need for health education using culturally appropriate information.

42. Impact of regionalisation of a national rheumatic heart disease registry: the Ugandan experience

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ABSTRACT

OBJECTIVES: Rheumatic heart disease (RHD) remains a major driver of cardiovascular morbidity and mortality in low-resource settings. Registry-based care for RHD has been advocated as a powerful tool to improve clinical care and track quality metrics. Data collected through an RHD registry may also reveal epidemiological and geospatial trends, as well as insight into care utilisation. Uganda established a central RHD registry at the country's only tertiary cardiac centre in 2010. In 2014 RHD care and registry enrolment expanded to the Western region and in 2015 to the North. Here, we examine the geographical distribution of RHD cases in Uganda and the impact of registry expansion. METHODS: A retrospective search of the Ugandan national RHD registry was preformed to capture all cases of acute rheumatic fever or clinical RHD from January 2010 through July 2016. A geospatial analysis revealed that the density of detected cases (cases/100 000 district residents) reflected proximity to an RHD registry enrolment centre. Regionalisation improved the number of cases detected in the regions of expansion and improved retention of patients in care.

RESULTS AND CONCLUSIONS: RHD appears to have uniform distribution throughout Uganda with geographical clustering surrounding RHD registry enrolment centres reflecting access to care, rather than differences in prevalence. Higher rates of case detection and improved retention in care with regionalisation highlight the urgent need for decentralisation of cardiovascular services. Future studies should examine sustainable models for cardiovascular care delivery, including task shifting of clinical care and echocardiography and use of telemedicine.

43. Implementation of Patient-Centered Education for Chronic-Disease Management in Uganda: An Effectiveness Study

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ABSTRACT

BACKGROUND: The majority of non-communicable disease related deaths occur in low- and middle-income countries. Patient-centered care is an essential component of chronic disease management in high income settings. Objective To examine feasibility of implementation of a validated patient-centered education tool among patients with heart failure in Uganda.

DESIGN: Mixed-methods, prospective cohort. Settings A private and public cardiology clinic in Mulago National Referral and Teaching Hospital, Kampala, Uganda. Participants Adults with a primary diagnosis of heart failure. Interventions PocketDoktor Educational Booklets with patient-centered health education.

MAIN MEASURES: The primary outcomes were the change in Patient Activation Measure (PAM-13), as well as the acceptability of the PocketDoktor intervention, and feasibility of implementing patient centered education in outpatient clinical settings. Secondary outcomes included the

change in satisfaction with overall clinical care and doctor-patient communication. KEY RESULTS: A total of 105 participants were enrolled at two different clinics: the Mulago Outpatient Department (public) and the Uganda Heart Institute (private). 93 participants completed follow up at 3 months and were included in analysis. The primary analysis showed improved patient activation measure scores regarding disease-specific knowledge, treatment options and prevention of exacerbations among both groups (mean change 0.94 [SD = 1.01], 1.02 [SD = 1.15], and 0.92 [SD = 0.89] among private paying patients and 1.98 [SD = 0.98], 1.93 [SD = 1.02], and 1.45 [SD = 1.02] among public paying patients, $p<0.001$ for all vlues) after exposure to the intervention; this effect was significantly larger among indigent patients. Participants reported that materials were easy to read, that they had improved knowledge of disease, and stated improved communication with physicians.

CONCLUSIONS: Patient-centered medical education can improve confidence in self-management as well as satisfaction with doctor-patient communication and overall care in Uganda. Our results show that printed booklets are locally appropriate, highly acceptable and feasible to implement in an LMIC outpatient setting across socioeconomic groups.

44. Improving care for people with heart failure in Uganda: serial in-depth interviews with patients' and their health care professionals

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ABSTRACT

BACKGROUND: The short prognosis of patients with advanced heart failure (HF) and the associated multidimensional distress as illustrated in literature from high income countries necessitates the integration of palliative care into the care of advanced HF patients to address these needs and improve their quality of life. These needs, which are subjective, have not been described from the patients' and health care professionals'(HPs) view point in the Ugandan setting, a low income country with a different socio-cultural context. This study aimed at bridging this gap in knowledge by eliciting patients' and HPs' views of HF patients' needs over the course of their illness to enable generalists, cardiologists and palliative care clinicians to develop guidelines to provide patient-centred realistic care in Uganda.

METHODS: Serial qualitative in-depth interviews were conducted with HF patients who were purposively sampled and recruited in Mulago National Referral Hospital (MNRH) until thematic saturation. In-depth interviews were conducted at three time points with intervals of 3 month

between interviews over the course of their illness in the hospital and their home context. One-of interviews were conducted with HPs that manage HF in MNRH. We used a grounded theory approach in data analysis. The Uganda National Council of science and technology approved the research.

RESULTS: Forty-eight interviews were conducted with 21 patients and their carers and eight interviews with their HPs. Multidimensional needs including physical, psychological, social, spiritual and information needs were identified. These highlighted the underpinning need to have normal functioning, control, to cope and adapt to a changed life and to fnd meaning. Spiritual needs were less recognised by HPs than the other multidimensional needs. Information needs were commonly unmet. Patients and HPs suggested improvements in care that were congruent with the recommendations in chronic disease care and the six pillars of the WHO health systems strengthening approach. CONCLUSION: Management of HF in Uganda requires an approach that targets multidimensional needs, embraces multidisciplinary care and strengthens health systems which are all important tenets of palliative care.

KEYWORDS: Heart failure, Palliative care, Qualitative research, Patient experience, Uganda

45. Incidence of acute rheumatic fever in northern and western Uganda: a prospective, population-based study

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ABSTRACT

BACKGROUND: Acute rheumatic fever is infrequently diagnosed in sub-Saharan African countries despite the high prevalence of rheumatic heart disease. We aimed to determine the incidence of acute rheumatic fever in northern and western Uganda.

METHODS: For our prospective epidemiological study, we established acute rheumatic fever clinics at two regional hospitals in the north (Lira district) and west (Mbarara district) of Uganda and instituted a comprehensive acute rheumatic fever health messaging campaign. Communities and health-care workers were encouraged to refer children aged 3–17 years, with suspected acute rheumatic fever, for a definitive diagnosis using the Jones Criteria. Children were referred if they presented with any of the following: (1) history of fever within the past 48 h in combination with any joint complaint, (2) suspicion of acute rheumatic carditis, or (3) suspicion of chorea. We excluded children with a confirmed alternative diagnosis. We estimated incidence rates among children aged 5–14 years and characterised clinical features of definite and possible acute rheumatic fever cases.

FINDINGS: Data were collected between Jan 17, 2018, and Dec 30, 2018, in Lira district and between June 5, 2019, and Feb 28, 2020, in Mbarara district. Of 1075 children referred for evaluation, 410 (38%) met the inclusion criteria; of these, 90 (22%) had definite acute rheumatic fever, 82 (20·0%) had possible acute rheumatic fever, and 24 (6%) had rheumatic heart disease without evidence of acute rheumatic fever. Additionally, 108 (26%) children had confirmed alternative diagnoses and 106 (26%) had an unknown alternative diagnosis. We estimated the incidence of definite acute rheumatic fever among children aged 5–14 years as 25 cases (95% CI 13·7–30·3) per 100 000 person-years in Lira district (north) and 13 cases (7·1–21·0) per 100000 person-years in Mbarara district (west).

INTERPRETATION: To the best of our knowledge, this is the first population-based study to estimate the incidence of acute rheumatic fever in sub-Saharan Africa. Given the known rheumatic heart disease burden, it is likely that only a proportion of children with acute rheumatic fever were diagnosed. These data dispel the long-held hypothesis that the condition does not exist in sub-Saharan Africa and compel investment in improving prevention, recognition, and diagnosis of acute rheumatic fever.

46. Knowledge and Perception of Stroke: A Population-Based Survey in Uganda

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ABSTRACT

PURPOSE: This study, designed to complement a large population survey on prevalence of stroke risk factors, assessed knowledge and perception of stroke and associated factors.

METHODS: A population survey was conducted in urban Nansana and rural Busukuma, Wakiso district, central Uganda. Adult participants selected by multistage stratified sampling were interviewed about selected aspects of stroke knowledge and perception in a pretested structured questionnaire.

RESULTS: There were 1616 participants (71.8% urban; 68.4% female; mean age: 39.6 years ± 15.3). Nearly 3/4 did not know any stroke risk factors and warning signs or recognize the brain as the organ affected. Going to hospital (85.2%) was their most preferred response to a stroke event. Visiting herbalists/traditional healers was preferred by less than 1%. At multivariable logistic regression, good knowledge of stroke warning signs and risk factors was associated with tertiary level of education (OR 4.29, 95% CI 2.13–8.62 and OR 5.96, 95% CI 2.94–12.06), resp.) and self-reported diabetes (OR 1.97, 95% CI 1.18–3.32 and OR 1.84, 95% CI 1.04–3.25), resp.).

CONCLUSION: Knowledge about stroke in Uganda is poor although the planned response to a stroke event was adequate. Educational strategies to increase stroke knowledge are urgently needed as a prelude to developing preventive programmes.

47. Knowledge, attitudes and perceptions of stroke: a cross-sectional survey in rural and urban Uganda

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ABSTRACT

BACKGROUND: Information regarding the increasing burden of non-communicable diseases such as stroke is largely unknown among the vulnerable communities. This analysis, which is part of a larger U.S. National Institute of Heathfunded Medical Education Partnership Initiative neurological disorder survey, assessed community knowledge and attitudes on stroke and stroke risk factors.

METHODS: A population cross-sectional survey was conducted in urban and rural Mukono, district, central Uganda. Through the systematic sampling method, data were gathered from 377 adult participants who were interviewed about selected aspects of stroke knowledge, attitudes and perception using a pretested structured questionnaire.

RESULTS: A total of 377 participants were enrolled (47 % urban). The leading risk factors identified by the participants were stress (36.6 %) and hypertension (28.9 %) respectively. None of the study participants identified cigarette smoking as a stroke risk factor. Seventy six percent of the participants did not recognize stroke as a disease of the brain.

CONCLUSION: Stroke knowledge is poor in both rural and urban Uganda. Tailored public health approaches that improve stroke awareness, knowledge and self-management approaches are urgently needed to develop effective preventive measures and community response to stroke. Keywords: Stroke, Knowledge, Risk factors, Warning factors

48. Lived Experiences and Technological Literacy of Heart Failure Patients and Clinicians at a Cardiac Care Centre in Uganda

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BACKGROUND: Digital health could serve as a low-cost means of enabling better self-care in patients living with heart failure (HF) in resource-limited settings such as Uganda. However, digital health interventions previously deployed in such settings have been unsuccessful due to a lack of local patient and clinician engagement in the design process. Objective: To engage Ugandan HF patients and clinicians regarding their experiences with HF management and technology, so as to inform the future design of a digital health intervention for HF patients in Uganda.

METHODS: The study employed a convergent parallel mixed-methods design. Data collection was completed at the Uganda Heart Institute in Kampala, Uganda. Data were ascertained through a patient survey and semi-structured interviews completed with HF patients, caregivers, physicians, and nurses. A conventional content analysis approach was used to qualitatively examine interview transcripts.

FINDINGS: Survey data were collected from 101 HF patients (62 female/39 male, aged 54.2 ± 17.5 years). Nearly half (48%) disagreed that they knew what to do in response to changes in their HF symptoms. Almost all patients (98%) had access to a mobile device. Many patients (63%) identified as comfortable in using mobile money – a local set of services that use Unstructured Supplementary Service Data (USSD). Interviews were completed with 19 HF patients, three caregivers, seven physicians, and three nurses. Qualitative analysis revealed four clusters of themes: overdependence of patients on the clinic, inconvenience associated with attending the clinic, inconsistent patient self-care behaviours at home, and technological abilities that favoured USSD-based services.

CONCLUSIONS: Ugandan HF patients possess unmet information needs that leave them ill-equipped to care for themselves. Future digital health interventions for this population should empower patients with HF-specific information and reassurance in their self-care abilities. Based on patient preferences, such systems should harness USSD technology with which most patients are already comfortable.

49. Longitudinal Changes in Subclinical Vascular Disease in Ugandan Youth With Human Immunodeficiency Virus

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ABSTRACT

BACKGROUND: Prospective investigations on the risk of cardiovascular disease among youth with perinatally acquired human immunodeficiency virus (PHIV) in sub-Saharan Africa are lacking.

METHODS: A prospective observational cohort study was performed in 101 youth (aged 10–18 years) with PHIV and 97 who were human immunodeficiency virus (HIV) uninfected (HIV−), from 2017 to 2021 at the Joint Clinical Research Center in Uganda. Participants with PHIV were receiving antiretroviral therapy (ART) and had HIV-1 RNA levels ≤400 copies/mL. The common carotid artery intima-media thickness (IMT) and pulse wave velocity (PWV) were evaluated at baseline and at 96 weeks. Groups were compared using unpaired *t*-test, and potential predictors of IMT and PWV were assessed using quantile regression.

RESULTS: Of the 198 participants recruited at baseline, 168 (89 with PHIV, 79 HIV−) had measurements at 96 weeks. The median age (interquartile range) age was 13 (11–15) years; 52% were female, and 85% had viral loads <50 copies/mL that remained undetectable at week 96. The baseline mean common carotid artery IMT was slightly higher in participants with PHIV compared with controls ($P < .01$), and PWV did not differ between groups ($P = .08$). At week 96, IMT decreased and PWV increased in the PHIV group ($P \leq .03$); IMT increased in the HIV− group ($P = .03$), with no change in PWV ($P = .92$). In longitudinal analyses in those with PHIV, longer ART duration was associated with lower PWV (β = .008 [95% confidence interval, −.008 to .003]), and abacavir use with greater IMT (β = .043 [.012–.074]).

CONCLUSIONS: In healthy Ugandan youth with PHIV, virally suppressed by ART, the common carotid artery IMT did not progress over 2 years. Prolonged and early ART may prevent progression of subclinical vascular disease, while prolonged use of abacavir may increase it.

KEY WORDS: cardiovascular disease, inflammation, immune activation, perinatally acquired HIV, complications

50. Makerere University-Uganda Heart Institute collaborative cardiovascular disease training and research since 1988

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ABSTRACT

BACKGROUND: Makerere University College of Health Sciences has been collaborating with the Uganda Heart Institute to build capacity for research, training and clinical care in cardiovascular medicine for the last 34 years to appropriately respond to rising societal needs for advanced cardiovascular care which was lacking before this period.

AIM: To describe the major milestones in the MakCHS-UHI cardiovascular training collaboration and chart way for future collaborations.

METHOD: This short communication highlights some of the salient features and important milestones in the collaboration journey of the two institutions.

CONCLUSION: Clinical centres of excellence in specialised fields of health care, such as the Uganda Heart Institute for Cardiology, provide a conducive academic environment for MakCHS clinical scientists to provide high quality evidence-based care to meet societal needs.

KEYWORDS: Cardiovascular research, Uganda Heart Institute, Makerere University College of Health Sciences, Cardiology training.

51. Modelling study of the ability to diagnose acute rheumatic fever at different levels of the Ugandan healthcare system

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ABSTRACT

OBJECTIVE: To determine the ability to accurately diagnose acute rheumatic fever (ARF) given the resources available at three levels of the Ugandan healthcare system.

METHODS: Using data obtained from a large epidemiological database on ARF conducted in three districts of Uganda, we selected variables that might positively or negatively predict rheumatic fever based on diagnostic capacity at three levels/tiers of the Ugandan healthcare system. Variables were put into three statistical models that were built sequentially. Multiple logistic regression was used to estimate ORs and 95% CI of predictors of ARF. Performance of the models was determined using Akaike information criterion, adjusted R2, concordance C statistic, Brier score and adequacy index.

RESULTS: A model with clinical predictor variables available at a lower-level health centre (tier 1) predicted ARF with an optimism corrected area under the curve (AUC) (c-statistic) of 0.69. Adding tests available at the district level (tier 2, ECG, complete blood count and malaria testing) increased the AUC to 0.76. A model that additionally included diagnostic tests available at the national referral hospital (tier 3, echocardiography, anti-streptolysin O titres, erythrocyte sedimentation rate/C-reactive protein) had the best performance with an AUC of 0.91.

CONCLUSIONS: Reducing the burden of rheumatic heart disease in low and middle-income countries requires overcoming challenges of ARF diagnosis. Ensuring that possible cases can be evaluated using electrocardiography and relatively simple blood tests will improve diagnostic accuracy somewhat, but access to echocardiography and tests to confirm recent streptococcal infection will have the greatest impact.

52. Motivations of women in Uganda living with rheumatic heart disease: A mixed methods study of experiences in stigma, childbearing, anticoagulation, and contraception

Andrew Y. Chang[1], Juliet Nabbaale[2,3], Haddy Nalubwama[4], Emmy Okello[2], Isaac Ssinabulya[2], Christopher T. Longenecker[3‡], Allison R. Webel[5‡ *]

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD) is a leading cause of premature mortality in low- and middle-income countries (LMICs). Women of reproductive age are a unique and vulnerable group of RHD patients, due to increased risk of cardiovascular complications and death during pregnancy. Yet, less than 5% of women of childbearing age with RHD in LMICs use

contraceptives, and one in five pregnant women with RHD take warfarin despite known teratogenicity. It is unclear whether this suboptimal contraception and anticoagulant use during pregnancy is due to lack of health system resources, limited health literacy, or social pressure to bear children.

METHODS: We conducted a mixed methods study of 75 women living with RHD in Uganda. Questionnaires were administered to 50 patients. Transcripts from three focus groups with 25 participants were analyzed using qualitative description methodology.

RESULTS: Several themes emerged from the focus groups, including pregnancy as a calculated risk; misconceptions about side-effects of contraceptives and anticoagulation; reproductive decision-making control by male partners, in-laws, or physicians; abandonment of patients by male partners; and considerable stigma against heart disease patients for both their reproductive and financial limitations (often worse than that directed against HIV patients). All questionnaire respondents were told by physicians that their hearts were not strong enough to support a pregnancy. Only 14% used contraception while taking warfarin. All participants felt that society would look poorly on a woman who cannot have children due to a heart condition.

CONCLUSIONS: To our knowledge, this is the first qualitative study of female RHD patients and their attitudes toward cardiovascular disorders and reproduction. Our results suggest that health programs targeting heart disease in LMICs must pay special attention to the needs of women of childbearing age. There are opportunities for improved family/societal education programs and community engagement, leading to better outcomes and patient empowerment.

53. Outcomes and Care Quality Metrics for Women of Reproductive Age Living With Rheumatic Heart Disease in Uganda

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ABSTRACT

BACKGROUND: Rheumatic heart disease disproportionately affects women of reproductive age, as it increases the risk of cardiovascular complications and death during pregnancy and childbirth. In sub-Saharan Africa, clinical outcomes and adherence to guideline-based therapies are not well characterized for this population.

METHODS AND RESULTS: In a retrospective cohort study of the Uganda rheumatic heart disease registry between June 2009 and May 2018, we used multivariable regression and Cox proportional hazards models to compare comorbidities, mortality, anticoagulation use, and treatment cascade metrics among women versus men aged 15 to 44 with clinical rheumatic heart disease. We included 575 women and 252 men with a median age of 27 years. Twenty percent had New York Heart Association Class III-IV heart failure. Among patients who had an indication for anticoagulation, women were less likely than men to receive a prescription of warfarin (66% versus 81%; adjusted odds ratio, 0.37; 95% CI, 0.14–0.96). Retention in care (defined as a clinic visit within the preceding year) was poor among both sexes in this age group (27% for men, 24% for women), but penicillin adherence rates were high among those retained (89% for men, 92% for women). Mortality was higher in men than women (26% versus 19% over a median follow-up of 2.7 years; adjusted hazard ratio, 1.66; 95% CI, 1.18–2.33).

CONCLUSIONS: Compared with men, women of reproductive age with rheumatic heart disease in Uganda have lower rates of appropriate anticoagulant prescription but also lower mortality rates. Retention in care is poor among both men and women in this age range, representing a key target for improvement.

KEY WORDS: anticoagulation, epidemiology, outcomes research, quality of care, rheumatic heart disease, valvular heart disease, women’s health

54. Pediatric cardiovascular care in Uganda: Current status, challenges, and opportunities for the future

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ABSTRACT

In many developing countries, concerted action against common childhood infectious diseases has resulted in remarkable reduction in infant and under-five mortality. As a result, pediatric cardiovascular diseases are emerging as a major contributor to childhood morbidity and mortality. Pediatric cardiac surgery and cardiac catheterization interventions are available in only a few of Sub-Saharan African countries. In Uganda, open heart surgeries (OHSs) and interventional procedures for pediatric cardiovascular disease are only possible at the Uganda Heart Institute (UHI), having been started with the help of expatriate teams from the years 2007 and 2012, respectively. Thereafter, independent OHS and cardiac catheterization have been possible by the local team at the UHI since the year 2009 and 2013, respectively. The number of OHSs independently performed by the UHI team has progressively increased from 10 in 2010 to 35 in 2015, with mortality rates ranging from 0% to 4.1% over the years. The UHI pediatric catheterization team has independently performed an increasing number of procedures each year from 3 in 2013 to 55 in 2015. We herein describe the evolution and current status of pediatric cardiovascular care in Uganda, highlighting the unique aspects of its establishment, existing constraints, and future plans.

KEYWORDS: Cardiovascular, pediatric, Uganda

55. Poor drug adherence and lack of awareness of hypertension among hypertensive stroke patients in Kampala, Uganda: a cross sectional study

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ABSTRACT

BACKGROUND: Raised blood pressure (BP) remains an important risk factor for cardiovascular diseases such as stroke. Adherence to therapeutic recommendations especially antihypertensive drugs is important in BP control. The aim of the study was to assess the stroke risk factors and levels of adherence among hypertensive patients with stroke in Kampala Uganda.

METHODS: In a cross-sectional study we describe 112 hypertensive subjects with stroke from two Kampala city hospitals. A standardized pre-tested questionnaire was used to collect medical history, clinical details, radiological findings and laboratory data.

RESULTS: A total of 112 hypertensive subjects with stroke were enrolled between May 2013 and April 2014. The median ages were 63.5 years (52.5–75.0) for the cases. Seventy percent (78/112) of the study participants had ischemic strokes. Only 17 % were adherent to anti-hypertensive medications. The main cause of non-adherence appears to be lack of knowledge.

CONCLUSIONS: Poor adherence of anti-hypertensive medications among hypertensive patients remains a big challenge in our setting. This has been attributed to lack of adequate knowledge and cost of the prescribed drugs. There is therefore an urgent need to promptly diagnose and educate hypertensive patients with emphasis on adherence to anti-hypertensive drugs.

KEYWORDS: Stroke, Hypertension

56. Precision Surveillance for Viral Respiratory Pathogens: Virome Capture Sequencing for the Detection and Genomic Characterization of Severe Acute Respiratory Infection in Uganda

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ABSTRACT

BACKGROUND. Precision public health is a novel set of methods to target disease prevention and mitigation interventions to highrisk subpopulations. We applied a precision public health strategy to syndromic surveillance for severe acute respiratory infection (SARI) in Uganda by combining spatiotemporal analytics with genomic sequencing to detect and characterize viral respiratory pathogens with epidemic potential.

METHODS. Using a national surveillance network we identified patients with unexplained, influenza-negative SARI from 2010 to 2015. Spatiotemporal analyses were performed retrospectively to identify clusters of unexplained SARI. Within clusters, respiratory viruses were detected and characterized in naso- and oropharyngeal swab samples using a novel oligonucleotide probe capture (VirCapSeq-VERT) and high-throughput sequencing platform. Linkage to conventional epidemiologic strategies further characterized transmission dynamics of identified pathogens.

RESULTS. Among 2901 unexplained SARI cases, 9 clusters were detected, accounting for 301 (10.4%) cases. Clusters were more likely to occur in urban areas and during biannual rainy seasons. Within detected clusters, we identified an unrecognized outbreak of measles-associated SARI; sequence analysis implicated cocirculation of endemic genotype B3 and genotype D4 likely imported from England. We also detected a likely nosocomial SARI cluster associated with a novel picobirnavirus most closely related to swine and dromedary viruses.

CONCLUSIONS. Using a precision approach to public health surveillance, we detected and characterized the genomics of vaccine-preventable and zoonotic respiratory viruses associated with clusters of severe respiratory infections in Uganda. Future studies are needed to assess the feasibility, scalability, and impact of applying similar approaches during real-time public health surveillance in low-income settings.

KEYWORDS. Acute respiratory infection; surveillance; sequencing; Africa South of the Sahara.

57. Prevalence and characteristics of primary left-sided valve disease in a cohort of 15,000 patients undergoing echocardiography studies in a tertiary hospital in Uganda

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ABSTRACT

BACKGROUND: Although rheumatic heart disease remains the leading cause of valve heart disease (VHD) in developing countries, other forms of valve disease have been over shadowed and not regarded as a public health problem. However, several facts suggest that the role of non-rheumatic VHD as a significant cardiovascular disease should be reconsidered. We aimed to assess the prevalence and characteristics of different forms of primary left sided valve diseases from a series of 15,009 echocardiographic studies.

METHODS: This was a retrospective review of echocardiographic reports for studies performed between January 2012 and December 2013 (24 months) at Uganda Heart Institute. All patients with primary left-sided valve disease were classified into one of five major diagnostic categories and in each diagnostic category; patients were sub-classified into stages A-D of primary valve disease as defined by the American College of Cardiology.

RESULTS: Three thousand five hundred eighty-two echocardiography reports qualified for final data analysis. The "sclerotic valve changes with normal valve function", a Stage A sub-class of "degenerative valve disease" overwhelmingly overshadowed all the other diagnostic categories in this stage. "Rheumatic Heart Disease", "Degenerative Valve Disease", "Bicuspid Aortic Valve", "Mitral Valve Prolapse" and "Endomyocardial Fibrosis" diagnostic categories accounted for 53.0%, 41.8%, 2.2%, 1.4% and 1.7% respectively in stages B-D of primary VHD. Rheumatic heart disease disproportionately affected the young, productive age groups. It was the major risk factor for infective endocarditis; and was the indication for valve surgery in 44 of 50 patients who had undergone valve replacement procedures.

CONCLUSIONS: We acknowledge that rheumatic heart disease remains a leading cause of progressive and severe primary left-sided valve disease among young adults in Uganda. But we bring to light the contemporary footprints of other forms of primary valve disease that require coordinated multidisciplinary approach to research, education and clinical management to ensure improved patient outcomes.

KEYWORDS: Primary, Left-sided, Valve disease, Rheumatic, Non-rheumatic, Uganda

58. Prevalence and factors associated with hypertension among people living with HIV/AIDS on antiretroviral therapy in Uganda

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ABSTRACT

Introduction: antiretroviral therapy (ART) has improved survival of People Living with HIV (PLWH); however, this has resulted in an increasingly high prevalence of non-communicable diseases (NCD) like hypertension. Hypertension is a major risk factor for cardiovascular and cerebral vascular disease, which are both associated with high morbidity and mortality rates. We studied the prevalence and factors associated with hypertension among PLWH on ART.

METHODS: we conducted a retrospective data analysis of PLWH on ART enrolled between 2011 and 2014 into a randomized double-blinded placebo-controlled trial investigating the safety of discontinuing cotrimoxazole prophylaxis (COSTOP) among PLWH in Central Uganda. We used the mean blood pressure (BP) measurements of the first four monthly clinic visits to define hypertension. Patients were categorised as: having normal BP (≤120/80mmHg), elevated BP (systolic >120-129, and diastolic ≤80), Stage 1 hypertension (systolic 130-139, or diastolic >80-89) and Stage 2 hypertension (systolic ≥140 or diastolic ≥90). Multiple logistic regression was used to evaluate factors associated with hypertension.

RESULTS: data from 2026 COSTOP trial study participants were analysed, 74.1% were women and 77.2% were aged 35 years and above. The overall prevalence of hypertension was 29%, of whom 19.5% had Stage 1 hypertension and 9.5% had Stage 2 hypertension. About 21.4% were overweight or obese. Factors independently associated with hypertension among PLWH on ART included increasing age (p≤0.001) and high body mass index (p≤0.001). Efavirenz (p≤0.001) and lopinavir/ritonavir (p=0.036) based regimen had lower odds of hypertension than Nevirapine based regimens.

CONCLUSION: PLWH on ART have a high prevalence of hypertension, which rises with increasing age and body mass index (BMI) and among those on nevirapine-based ART. Implementation of hypertension prevention measures among PLWH on ART and integration of NCD and HIV care to improve patients' management outcomes are required.

59. Prevalence and factors associated with drug therapy problems among hypertensive patients at hypertension clinic of Mbarara Regional Referral Hospital, Uganda: a |cross-sectional study

Merab Babirye, Tadele Mekuriya Yadesa, Robert Tamukong and Paul Stephen Obwoya

ABSTRACT

BACKGROUND: Despite the use of safe and effective conventional drugs, drug therapy problems (DTPs) pose a threat to the successful management of hypertension. DTPs are of a great concern in health care because of their serious consequences such as poor quality of life, increased health care costs, morbidity and mortality. However, there is no published information regarding the prevalence of DTPs and associated factors among hypertensive patients in Uganda.

Objective: The aim of the study was to determine the prevalence and factors associated with DTPs among hypertensive patients at the hypertension clinic of Mbarara Regional Referral Hospital (MRRH).

METHOD: A cross-sectional study was conducted at the hypertension clinic, MRRH, Uganda among 228 hypertensive patients. Data were collected from medical records using a data abstraction tool and patients were interviewed using a structured questionnaire. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 22.0. Descriptive analysis was used to determine the prevalence of DTPs. Logistic regression was used to determine the association between the independent and dependent variables. Variables were considered statistically significant at p-value < 0.05.

RESULTS: A total of 178 DTPs were identified among 141 hypertensive patients. The prevalence of antihypertensive-related DTPs was 61.8% (95% confidence interval [CI]: 55.3–67.5) with an average of 1.26±0.52 DTPs per patient. Out of 141 participants with DTPs, 109 (77.3%) had one DTP, 27 (19.1%) had 2 DTPs, and 5 (3.5%) had 3 DTPs. The most common types of antihypertensive-related DTPs were ‘dosage too low’ which accounted for 53 (29.8%), followed by ‘adverse drug reactions’ which accounted for 48 (27%). Uncontrolled blood pressure (BP; adjusted odds ratio [AOR]: 4.17; 95% CI: 2.33–7.45, p < 0.001] and routine laboratory test results (AOR: 1.87; 95% CI: 1.04–3.36, p=0.036) were significantly associated with antihypertensive-related DTPs among hypertensive patients.

CONCLUSION: Almost two-thirds of study participants had antihypertensive-related DTPs. The most common DTPs were ‘dosage too low’ and ‘adverse drug reactions’ which both accounted for almost a third of the total DTPs each. Uncontrolled BP and routine laboratory test results were significantly associated with antihypertensive-related DTPs among the study participants. Our study emphasizes the need for improved patient care by clinical pharmacists to identify and prevent DTPs among hypertensive patients.

KEYWORDS: drug therapy problems, hypertension clinic, hypertensive patients, Uganda

60. Prevalence and risk factors for self-reported noncommunicable diseases among older Ugandans: a cross-sectional study Stephen

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ABSTRACT

BACKGROUND: There is limited evidence about the prevalence and risk factors for non-communicable diseases (NCDs) among older Ugandans. Therefore, this article is aimed at investigating the prevalence of self-reported NCDs and their associated risk factors using a nationally representative sample. Design: We conducted a secondary analysis of the 2010 Uganda National Household Survey (UNHS) using a weighted sample of 2,382 older people. Frequency distributions for descriptive statistics and Pearson chi-square tests to identify the association between self-reported NCDs and selected explanatory variables were done. Finally, multivariable complementary log-log regressions to estimate the risk factors for self-reported NCDs among older people in Uganda were done.

RESULTS: About 2 in 10 (23%) older persons reported at least one NCD [including hypertension (16%), diabetes (3%), and heart disease (9%)]. Among all older people, reporting NCDs was higher among those aged 60-69 and 70-79; Muslims; and Pentecostals and Seventh Day Adventists (SDAs). In addition, the likelihood of reporting NCDs was higher among older persons who depended on remittances and earned wages; owned a bicycle; were sick in the last 30 days; were disabled; and were women. Conversely, the odds of reporting NCDs were lower for those who were relatives of household heads and were poor.

CONCLUSIONS: In Uganda, self-reported NCDs were associated with advanced age, being a woman, having a disability, ill health in the past 30 days, being rich, depended on remittances and earning wages, being Muslim, Pentecostal and SDAs, and household headship. The Ministry of Health should prevent and manage NCDs by creating awareness in the public and improving the supply of essential drugs for these health conditions. Finally, there is a need for specialised surveillance studies of older people to monitor the trends and patterns of NCDs over time.

KEYWORDS: Africa; Uganda; chronic diseases; non-communicable diseases; elderly

61. Prevalence of latent rheumatic heart disease among HIV-infected children in Kampala, Uganda

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ABSTRACT

Rheumatic heart disease (RHD) remains highly prevalent in resource-constrained settings around the world, including countries with high rates of HIV/AIDS. Although both are immune-mediated diseases, it is unknown whether HIV modifies the risk or progression of RHD. We performed screening echocardiography to determine the prevalence of latent rheumatic heart disease in 488 HIV-infected children aged 5-18 in Kampala, Uganda. The overall prevalence of borderline/ definite RHD was 0.82% (95% CI 0.26% to 2.23%) which is lower than the published prevalence rates of 1.5-4% among Ugandan children. There may be protective factors that decrease the risk of RHD in HIV-infected children.

KEYWORDS: rheumatic heart disease; HIV/AIDS; echocardiogram; Cotrimoxazole

62. Previous Traditional Medicine Use for Sore Throat among Children Evaluated for Rheumatic Fever in Northern Uganda

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ABSTRACT.

Timely diagnosis of group A streptococcal (GAS) sore throat coupled with appropriate antibiotic treatment is necessary to prevent serious post-streptococcal complications, including rheumatic fever (RF) and rheumatic heart disease (RHD). Traditional medicine (TM) is a known common

adjunct to formal medical care in sub-Saharan Africa. A better understanding of health-seeking behavior for sore throat both within and outside the formal medical system is critical to improving primary prevention efforts of RF and RHD. A prospective mixed-methods study on the use of TM for sore throat was embedded within a larger epidemiological study of RF in Northern Uganda. Children presenting with symptoms of RF were interviewed about recent TM use as well as health services use for sore throat. One hundred children with a median age of 10 years (interquartile range: 6.8–13 years) completed the TM interview with their parent/ guardian as part of a research study of RF. Seventeen, or 17%, accessed a TM provider for sore throat as part of the current illness, and 70% accessed TM for sore throat in the past (73% current or past use). Of the 20 parents who witnessed the TM visit, 100% reported use of crude tonsillectomy. Penicillin was the most frequently prescribed medication by TM providers in 52% of participants who were seen by a TM provider. The use of TM among children presenting with symptoms of sore throat in northern Uganda is common and frequently used in tandem with diagnostic services offered through the formal healthcare system. Engagement with TM practitioners may provide an important avenue for designing effective primary prevention and management strategies of RF and reduce the global burden of RHD.

63. Proportion of patients in the Uganda rheumatic heart disease registry with advanced disease requiring urgent surgical interventions

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ABSTRACT:

INTRODUCTION: Since the establishment of the Uganda Rheumatic Heart Registry, over 900 patients have been enrolled. We sought to stratify the patients in the registry according to disease severity and optimal management strategy.

METHODS: We reviewed data of 618 patients who had enrolled in the Registry between March 2010 and February 2013. The 67 patients who had died were excluded leaving 551 patients who were recruited. The optimum management strategy was determined according to the 2012 European Society of Cardiology guidelines on the management of valvular heart disease.

RESULTS: Out of the 551 patient's records evaluated, 398 (72.3%) required invasive intervention, with 332(60.3%) patients requiring surgery and 66 (12.0%) requiring percutaneous mitral

commissurotomy (PMC). This leaves only 27.7% of patients who required only medical management. Currently, majority of the patients (498, 90.4%) in the registry are on medical treatment. Of the 60.3% requiring surgical intervention, only 8.0% (44 patients) underwent valvular surgery and 5(1.0%) patients of the 66 (12.0%) underwent PMC successfully.

CONCLUSION: There is a high proportion of patients with severe disease that require surgical treatment yet they cannot access this therapy due to absence of local expertise.

KEYWORDS: Rheumatic Heart Disease, surgical intervention, percutaneous intervention

64. Recent Advances in the Rheumatic Fever and Rheumatic Heart Disease Continuum

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ABSTRACT:

Nearly a century after rheumatic fever (RF) and rheumatic heart disease (RHD) was eradicated from the developed world, the disease remains endemic in many low- and middle-income countries (LMICs), with grim health and socioeconomic impacts. The neglect of RHD which persisted for a semi-centennial was further driven by competing infectious diseases, particularly the human immunodeficiency virus (HIV) pandemic. However, over the last two-decades, slowly at first but with building momentum, there has been a resurgence of interest in RF/RHD. In this narrative review, we present the advances that have been made in the RF/RHD continuum over the past two decades since the re-awakening of interest, with a more concise focus on the last decade's achievements. Such primary advances include understanding the genetic predisposition to RHD, group A Streptococcus (GAS) vaccine development, and improved diagnostic strategies for GAS pharyngitis. Echocardiographic screening for RHD has been a major advance which has unearthed the prevailing high burden of RHD and the recent demonstration of benefit of secondary antibiotic prophylaxis on halting progression of latent RHD is a major step forward. Multiple befitting advances in tertiary management of RHD have also been realized. Finally, we summarize the research gaps and provide illumination on profitable future directions towards global eradication of RHD.

KEYWORDS: rheumatic fever; rheumatic heart disease; advances

65. **Rheumatic heart disease in Uganda: predictors of morbidity and mortality one year after presentation**

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD), the long-term consequence of rheumatic fever, accounts for most cardiovascular morbidity and mortality among young adults in developing

countries. However, data on contemporary outcomes from resource constrained areas are limited. METHODS: A prospective cohort study of participants aged 5–60 years with established RHD was conducted in Kampala, Uganda, in which clinical exam, echocardiography, electrocardiography (ECG), and laboratory evaluation were done every 3 months and every 4-week benzathine penicillin prophylaxis was prescribed. Participants were followed up for 12 months and outcomes and predictors of morbidity and mortality were assessed using Kaplan Meier curves and Cox proportional hazards models.

RESULTS: Of 449 subjects, 66.8% (300/449) were females, median age was 30 (interquartile range 20). 73.7% (331/449) had atleast one follow up visit. Among these, 35% (116/331) developed decompensated heart failure and, 63.7% (211/331) developed atrial fibrillation. Heart failure was associated with poor penicillin adherence (OR = 3.3, CI 2–5.4, p = 0.001), and left ventricular end diastolic diameter greater than 55 mm (OR = 3.16, CI 1.73–5.76, p = 0.001). Atrial fibrillation was associated with left atrial diameter >40 mm (OR = 7.5, CI 2.4–9.8, p = 0.001). There were 59 deaths with a 1-year mortality rate of 17.8%. Most deaths occurred within the first three months of presentation. Subjects whose average adherence to benzathine penicillin was < 0.001). In multivariate analysis, the risk of death among those with poor penicillin adherence was 3.81 times higher than those with better adherence (HR = 3.81, CI 1.92–7.63, p = 0.001). Other predictors of 1 year mortality included heart failure (HR 8.36, CI 3.28–21.31, p = 0.001) and left ventricular end diastolic diameter greater than 55 mm (HR = 1.93, CI 1.07–3.49, p = 0.02).

CONCLUSION: In this study of RHD in Uganda, morbidity and mortality within 1 year of presentation were higher than in recently published from other low and middle income countries. Suboptimal adherence to benzathine penicillin injections was associated with incident heart failure and mortality over 1 year. Future studies should test interventions to improve adherence among patients with advanced disease who are at the highest risk of mortality.

KEYWORDS: Rheumatic heart disease, Predictors, Morbidity, Mortality, Outcomes, Uganda

66. Rheumatic Heart Disease Treatment Cascade in Uganda

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ABSTRACT

BACKGROUND—Rheumatic heart disease (RHD) is a leading cause of premature death and disability in low-income countries; however, few receive optimal benzathine penicillin G (BPG) therapy to prevent disease progression. We aimed to comprehensively describe the treatment cascade for RHD in Uganda to identify appropriate targets for intervention.

METHODS AND RESULTS—Using data from the Uganda RHD Registry (n=1504), we identified the proportion of patients in the following care categories: (1) diagnosed and alive as of June 1, 2016; (2) retained in care; (3) appropriately prescribed BPG; and (4) optimally adherent to BPG (>80% of prescribed doses). We used logistic regression to investigate factors associated with retention and optimal adherence. Overall, median (interquartile range) age was 23 (15–38) years, 69% were women, and 82% had clinical RHD. Median follow-up time was 2.4 (0.9–4.0) years. Retention in care was the most significant barrier to achieving optimal BPG adherence with only 56.9% (95% confidence interval, 54.1%–59.7%) of living subjects having attended clinic in the prior 56 weeks. Among those retained in care, however, we observed high rates of BPG prescription (91.6%; 95% confidence interval, 89.1%–93.5%) and optimal adherence (91.4%; 95% confidence interval, 88.7–93.5). Younger age, latent disease status, and access to care at a regional center were the strongest independent predictors of retention and optimal adherence.

CONCLUSIONs—Our study suggests that improving retention in care—possibly by decentralizing RHD services—would have the greatest impact on uptake of antibiotic prophylaxis among patients with RHD in Uganda.

KEY WORDS: adherence, follow-up studies, HIV, humans, poverty, rheumatic heart disease

67. Secondary Antibiotic Prophylaxis for Latent Rheumatic Heart Disease

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ABSTRACT

BACKGROUND Rheumatic heart disease affects more than 40.5 million people worldwide and results in 306,000 deaths annually. Echocardiographic screening detects rheumatic heart disease at an early, latent stage. Whether secondary antibiotic prophylaxis is effective in preventing progression of latent rheumatic heart disease is unknown.

METHODS We conducted a randomized, controlled trial of secondary antibiotic prophylaxis in Ugandan children and adolescents 5 to 17 years of age with latent rheumatic heart disease. Participants were randomly assigned to receive either injections of penicillin G benzathine (also known as benzathine benzylpenicillin) every 4 weeks for 2 years or no prophylaxis. All the participants underwent echocardiography at baseline and at 2 years after randomization. Changes from baseline were adjudicated by a panel whose members were unaware of the trial-group assignments. The primary outcome was echocardiographic progression of latent rheumatic heart disease at 2 years.

RESULTS Among 102,200 children and adolescents who had screening echocardiograms, 3327 were initially assessed as having latent rheumatic heart disease, and 926 of the 3327 subsequently received a definitive diagnosis on the basis of confirmatory echocardiography and

were determined to be eligible for the trial. Consent or assent for participation was provided for 916 persons, and all underwent randomization; 818 participants were included in the modified intention-to-treat analysis, and 799 (97.7%) completed the trial. A total of 3 participants (0.8%) in the prophylaxis group had echocardiographic progression at 2 years, as compared with 33 (8.2%) in the control group (risk difference, −7.5 percentage points; 95% confidence interval, −10.2 to −4.7; P<0.001). Two participants in the prophylaxis group had serious adverse events that were attributable to receipt of prophylaxis, including one episode of a mild anaphylactic reaction (representing <0.1% of all administered doses of prophylaxis).

CONCLUSIONS Among children and adolescents 5 to 17 years of age with latent rheumatic heart disease, secondary antibiotic prophylaxis reduced the risk of disease progression at 2 years. Further research is needed before the implementation of population level screening can be recommended.

68. Sedentary Lifestyle and Hypertension in a Periurban Area of Mbarara, South Western Uganda: A Population Based Cross Sectional Survey

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ABSTRACT

INTRODUCTION. Globally, cardiovascular diseases (CVDs) and diabetes constitute over 50% of the noncommunicable disease (NCD) burden and projections indicate Sub-Saharan Africa will experience a larger burden. Urbanization on the continent is contributing to the change in lifestyle such as diet and physical activity, which may increase the risk for CVDs.Tere is lack of sufcient data from the African continent on hypertension and its association with sedentary lifestyle.

METHODS. We conducted a cross sectional study in periurban Uganda among adults aged at least 35 years. We administered questions on diet, physical activity, and smoking. We took anthropometric measurements, blood pressure, and fasting blood glucose. Hypertension was defined as systolic BP >= 140 and/or diastolic BP >= 90 and/or history of hypertension medications. Logistic regression was used to determine the crude and adjusted odds ratios for the factors associated with hypertension.

RESULTS. We enrolled 310 participants and 50% were female. The prevalence of systolic hypertension was 24.5%, diastolic hypertension was 31%, obesity was 46%, and diabetes was 9%. Of those with hypertension (n= 76), 53 participants (69.7%) were not aware they had high BP. Sedentary lifestyle was significantly associated with hypertension even after adjusting for age and obesity.

CONCLUSION. There is a high prevalence of obesity, hypertension, and diabetes and majority of participants with hypertension are not aware. Participants with a sedentary work style should be targeted for prevention and screening.

69. Sex modifies the association between HIV and coronary artery disease among older adults in Uganda

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ABSTRACT

INTRODUCTION: Little is known about the epidemiology of coronary artery disease (CAD) in sub-Saharan Africa, where the majority of people living with HIV (PLHIV) live. We assessed the association of HIV with CAD and explored relationships with monocyte activation in sex-stratified analyses of older PLHIV and people without HIV (PWOH) in Uganda.

METHODS: The Ugandan Study of HIV effects on the Myocardium and Atherosclerosis (mUTIMA) follows 100 PLHIV on antiretroviral therapy (ART) and 100 age- and sex-matched PWOH controls in Kampala, Uganda; all >45 years of age with >1 cardiovascular disease risk factor. At the year 2 exam (2017–2019), 189 participants had available coronary calcium score and 165 had coronary CT angiography (CCTA) for this analysis. A subset of participants (n = 107) had both CCTA and fresh whole blood flow cytometry for monocyte phenotyping.

RESULTS: Median age was 57.8 years and 63% were females. Overall, 88% had hypertension, 37% had diabetes and 4% were smokers. Atherosclerotic cardiovascular disease (ASCVD) risk was modestly higher for PWOH, but not statistically significant (median 10-year ASCVD risk 7.2% for PLHIV vs. 8.6% for PWOH, p = 0.09). Median duration of ART was 12.7 years and 86% had suppressed viral load. Despite a high prevalence of risk factors, only 34/165 (21%, 95% CI 15–28%) had any coronary plaque. After adjustment for ASCVD risk score, HIV status was not associated with CAD (OR 0.55, 95% CI 0.23–1.30) but was associated with more severe CAD (segment severity score>3) among those with disease (OR 10.9, 95% CI 1.67–70.45). Females had a trend towards higher odds of CAD among PLHIV (OR 4.1, 95% CI 0.4–44.9), but a trend towards lower odds of CAD among PWOH (OR 0.30; 95% CI 0.07–1.3; HIV*sex interaction p = 0.019). CAD was positively correlated with classical monocytes (r = 0.3, p = 0.012) and negatively correlated with CX3CR1 expression (r = –0.31, p = 0.011) in PLHIV and negatively correlated with patrolling monocytes (r = –0.36, p = 0.031) and tissue factor expression (r = –0.39, p = 0.017) in PWOH.

CONCLUSIONS: Our results suggest that HIV may be associated more with severity rather than the presence of CAD in Uganda. Sex differences in the HIV effect suggest that tailored CAD prevention strategies may be required in this setting.

KEYWORDS: HIV; sex; Uganda; cardiovascular diseases; monocytes; computed tomography angiography

70. Simplified Echocardiography Screening Criteria for Diagnosing and Predicting Progression of Latent Rheumatic Heart Disease

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ABSTRACT

BACKGROUND: The 2012 World Heart Federation Criteria are the current gold standard for the diagnosis of latent rheumatic heart disease (RHD). Because data and experience using these criteria have grown, there is opportunity to simplify and develop outcome prediction tools. We

aimed to develop a simple echocardiographic score applicable for RHD screening with potential to predict disease progression.

METHODS: This study included 3 cohorts used for score derivation (n=9501), score validation (n=7312), and assessment of outcomes prediction (n=227). In the derivation cohort, variables independently associated with definite RHD were assigned point values proportional to their regression coefficients. The sum of these values was stratified into low (0–6), intermediate (7–9), and high (≥10) risk.

RESULTS: Five components were selected for score development, including mitral valve anterior leaflet thickening, excessive leaflet tip motion, and regurgitation jet length ≥2 cm, and aortic valve focal thickening and any regurgitation. The score showed optimal discrimination and calibration for RHD diagnosis in the derivation and validation cohorts (C statistic, 0.998 and 0.994, respectively), with good discrimination for predicting disease progression (C statistic, 0.811). Progression-free survival rate in the low-risk children at 1-, 2-, and 3-year follow-up was 100%, 100%, and 93%, respectively, compared with 90%, 60%, and 47% in high-risk group. The point-based score was strongly associated with disease progression (hazard ratio, 1.270; 95% CI, 1.188–1.358; P<0.001).

CONCLUSIONS: This simplified score, based on components of the World Heart Federation criteria, is highly accurate to recognize definite RHD and provides the first tool for risk stratification, assigning children with latent RHD to low, intermediate, or high risk based on echocardiographic features at diagnosis.

71. Systematic review of international clinical guidelines for the promotion of physical activity for the primary prevention of cardiovascular diseases

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ABSTRACT

BACKGROUND: Cardiovascular diseases are the world's leading cause of morbidity and mortality. An active lifestyle is one of the cornerstones in the primary prevention of cardiovascular

disease. An initial step in guiding primary prevention programs is to refer to clinical guidelines. We aimed to systematically review clinical practice guidelines on primary prevention of cardiovascular disease and their recommendations regarding physical activity.

METHODS: We systematically searched Trip Medical Database, PubMed and Guidelines International Network from January 2012 up to December 2020 using the following search strings: 'cardiovascular disease', 'prevention', combined with specific cardiovascular disease risk factors. The identified records were screened for relevance and content. We methodologically assessed the selected guidelines using the AGREE II tool. Recommendations were summarized using a consensus-developed extraction form.

RESULTS: After screening, 27 clinical practice guidelines were included, all of which were developed in Western countries and showed consistent rigor of development. Guidelines were consistent about the benefit of regular, moderate intensity, aerobic physical activity. However, recommendations on strategies to achieve and sustain behavior change varied. Multicomponent interventions, comprising education, counseling and self-management support, are recommended to be delivered by various providers in primary health care or community settings. Guidelines advise to embed patient-centered care and behavioral change techniques in prevention programs.

CONCLUSIONS: Current clinical practice guidelines recommend similar PA lifestyle advice and propose various delivery models to be considered in the design of such interventions. Guidelines identify a gap in evidence on the implementation of these recommendations into practice.

KEYWORDS: Systematic review, Clinical practice guidelines, Cardiovascular disease, Primary prevention, Behavior change, Lifestyle advice, Cardiovascular risk reduction

72. Targeted Echocardiographic Screening for Latent Rheumatic Heart Disease in Northern Uganda: Evaluating Familial Risk Following Identification of an Index Case

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ABSTRACT

BACKGROUND Echocardiographic screening for detection of latent RHD has shown potential as a strategy to decrease the burden of disease. However, further research is needed to determine optimal implementation strategies. RHD results from a complex interplay between environment and host susceptibility. Family members share both and relatives of children with latent RHD may represent a high-risk group. The objective of this study was to use echocardiographic family screening to determine the relative risk of RHD among first-degree relatives of children with latent RHD compared to the risk in first-degree relatives of healthy peers.

METHODOLOGY/PRINCIPAL FINDINGS Previous school-based screening data were used to identify RHD positive children and RHD negative peers. All first-degree relatives 5 years were invited for echocardiography screening (2012 World Heart Federation Criteria). Sixty RHD positive cases (30 borderline/ 30 definite RHD) and 67 RHD negative cases were recruited. A total of 455/667 (68%) family members were screened. Definite RHD was more common in childhood siblings of RHD positive compared to RHD negative ($p = 0.05$). Children with any RHD were 4.5 times as likely to have a sibling with definite RHD, a risk that increased to 5.6 times when considering only cases with definite RHD. Mothers of RHD positive and RHD negative cases had an unexpectedly high rate of latent RHD (9.3%).

CONCLUSIONS/SIGNIFICANCE Siblings of RHD positive cases with RHD are more likely to have definite RHD and the relative risk is highest if the index case has definite RHD. Future screening programs should

73. The Early Impact of COVID-19 on a Cardiovascular Disease Prevention Program in Mukono and Buikwe Districts in Uganda: A Qualitative Study

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ABSTRACT

BACKGROUND: In 2011, the United Nations set out an ambitious plan to dramatically reduce the effect of non-communicable diseases (NCDs) including cardiovascular diseases (CVD) in all regions of the world. However, the outbreak of Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-Cov-2) is slowing current efforts and the set targets may not be achieved, yet NCDs have been associated with the risk of more severe COVID-19 disease. In the current study, we explore the early impact of the COVID-19 pandemic on a CVD prevention program in Mukono

and Buikwe districts in Uganda. METHODS: We collected qualitative data through interviews and mini focus group discussions (FGDs) in the months of May and June 2020. A total of 39 community health workers (CHWs) and 10 healthcare workers (HCW) participated in the study. The data were transcribed verbatim and analysed with the help of the ATLAS.ti software following a content analysis approach. Emerging themes and sub themes were generated and these exemplified with quotations from the transcripts.

RESULTS: Negative and positive impact themes were observed. The negative observations were: (1) Disruption of CVD prevention services including halting screening for CVD risk factors at the community and health facility, halting sensitisation and health promotion activities at the community; (2) Reduction in patient health seeking behaviours; (3) Acute health facility staff absenteeism (4) Disruption in reporting and referral mechanisms; and (5) Disruption in supply chain. On the other hand, two positive attributes were observed: (1) Perceived reduction in alcohol consumption; and (2) perceived reduction in crime related psychosocial stress.

CONCLUSION: COVID-19 disrupted the implementation of CVD prevention activities in this lowincome context. Screening programs and CVD prevention activities at the community and health facility levels were literally halted mainly due to fear, the non-discriminatory lockdown measures and a lack of medicines and supplies – including personal protective equipment. There is need for a balance in measures to sustain CVDs interventions while controlling the COVID-19 pandemic.

KEYWORDS: Cardiovascular disease prevention; COVID-19; SARS COV-2; impact; disruption of health care services; implementation; Sub-Saharan Africa

74. The effect of childhood stunting and wasting on adolescent cardiovascular diseases risk and educational achievement in rural Uganda: a retrospective cohort study

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ABSTRACT

BACKGROUND: Little is known about the long-term effects of early childhood undernutrition on adolescent cardiovascular disease risk and educational performance in low-income countries. We examined this in a rural Ugandan population.

OBJECTIVE: To investigate if stunting or wasting among children aged 2–5 years is associated with cardiovascular disease risk or educational achievement during adolescence.

METHODS: We conducted analyses using data from a cohort of children followed from early childhood to adolescence. Weight and height were measured in 1999–2000 when the children were 2–5 years of age and repeated in 2004/2005 and 2011. We compared cardiovascular disease risk parameters (mean blood pressure, lipids, HbA1c) and schooling years achieved in 2011 among 1054 adolescents categorised into four groups: those who experienced stunting or wasting throughout follow-up; those who recovered from stunting or wasting; those who were normal but later became stunted or wasted; and those who never experienced stunting or wasting from childhood up to adolescence. We controlled for possible confounding using multiple generalised linear regression models along with Generalised Estimating Equations to account for clustering of children within households.

RESULTS: Wasting was negatively associated with systolic blood pressure (−7.90 95%CI [−14.52,-1.28], p = 0.02) and diastolic blood pressure (−3.92, 95%CI [−7.42, −0.38], p = 0.03). Stunting had borderline negative association with systolic blood pressure (−2.90, 95%CI [−6.41, 0.61] p = 0.10). Recovery from wasting was positively associated with diastolic blood pressure (1.93, 95%CI [0.11, 3.74] p = 0.04). Stunting or wasting was associated with fewer schooling years.

CONCLUSION: Recovery from wasting rather than just an episode in early childhood is associated with a rise in blood pressure while educational achievement is compromised regardless of whether recovery from undernutrition happens. These findings are relevant to children exposed to undernutrition in low-income settings.

75. The Global Impact of Rheumatic Heart Disease

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ABSTRACT

PURPOSE OF REVIEW Rheumatic heart disease (RHD) is a neglected disease of poverty, which presents challenges for patients, communities, and health systems. These effects are magnified in low resource countries, which bear the highest disease burden. When considering the impact of RHD, it is imperative that we widen our lens in order to better understand how RHD impacts the over 40 million people currently living with this preventable condition and their communities. We aimed to perform an updated literature review on the global impact of RHD, examining a broad range of aspects from disease burden to impact on healthcare system to socioeconomic implications.

RECENT FINDINGS RHD accounts for 1.6% of all cardiovascular deaths, resulting in 306,000 deaths yearly, with a much higher contribution in low- and middle-income countries, where 82% of the deaths occurred in 2015. RHD can result in severe health adverse outcomes, markedly heart failure, arrhythmias, stroke and embolisms, and ultimately premature death. Thus, preventive, diagnostic and therapeutic interventions are required, although insufficiently available in under sourced settings. As examples, anticoagulation management is poor in endemic regions – and novel oral anticoagulants cannot be recommended – and less than 15% of those in need have access to interventional procedures and valve replacement in Africa.

SUMMARY RHD global impact remains high and unequally distributed, with a marked impact on lower resourced populations. This preventable disease negatively affects not only patients, but also the societies and health systems within which they live, presenting broad challenges and high costs along the pathway of prevention, diagnosis, and management.

KEYWORDS Rheumatic heart disease · Impact · World · Screening · Prevention · Review

76. The personal and clinical impact of screendetected maternal rheumatic heart disease in Uganda: a prospective follow up study

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ABSTRACT

BACKGROUND: Pre-existing maternal cardiac disease is a significant contributor to adverse maternal, fetal, and neonatal outcomes. In 2015–2017, our team conducted the first community-based study of maternal rheumatic heart disease (RHD) in sub-Saharan Africa and identified RHD in 88% of those with pre-existing heart disease. Here we conducted a follow up investigation of women previously identified with RHD, describing clinical and echocardiographic outcomes, identifying barriers to medical adherence and evaluating the personal impact of RHD.

METHODS: A 2 week prospective follow up was completed at sites in Central and Eastern Uganda. Participants underwent a three-step mixed methods study comprising of 1) direct structured interview targeting clinical history and medication adherence, 2) echocardiogram to evaluate left-sided heart valves, and 3) semi-structured guideline interview to elicit personal impacts of RHD.

RESULTS: The team evaluated 40 (80%) of the original 51 mothers with RHD at a median post-partum time of 2.5 years after delivery (IQR 0.5). Echocardiographic data showed improvement in nine women with the remaining 31 women showing stable echocardiographic findings. Adherence to Benzathine penicillin G (BPG) prophylaxis was poor, with 70% of patients either poorly adherent or non-adherent. Three major themes emerged from interviews: 1) social determinants of health (World Health Organization, Social determinants of health, 2019) negatively affecting healthcare, 2) RHD diagnosis negatively affecting female societal wellbeing, 3) central role of spouse in medical decision making.

CONCLUSIONS: Screening echocardiography can identify women with pre-existing rheumatic heart disease during pregnancy, but long-term follow-up in Uganda reveals adherence to medical care following diagnosis, including BPG, is poor. Additionally, mothers diagnosed with RHD may experience unintended consequences such as social stigmatization. As identification of occult RHD is critical to prevent adverse pregnancy outcomes, further research is needed to determine how to best support women who face a new diagnosis of RHD, and to determine the role of screening echocardiography in high-risk settings.

KEYWORDS: Rheumatic heart disease, Maternal health, Uganda, Health disparities, Echocardiography, Screening

77. The rural Uganda non-communicable disease (RUNCD) study: prevalence and risk factors of self-reported NCDs from a cross sectional survey

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ABSTRACT

BACKGROUND: Non-communicable diseases (NCDs) are an increasing global concern, with morbidity and mortality largely occurring in low- and middle-income settings. We established the prospective Rural Uganda Noncommunicable Disease (RUNCD) cohort to longitudinally characterize the NCD prevalence, progression, and complications in rural Africa. Methods: We conducted a population-based census for NCD research. We systematically enrolled adults in each household among three sub-counties of the larger Nakaseke Health district and collected baseline demographic, health status, and self-reported chronic disease information. We present our data on self-reported chronic disease, as stratified by age, sex, educational attainment, and sub-county.

RESULTS: A total of 16,694 adults were surveyed with 10,563 (63%) respondents enrolled in the self-reported study. Average age was 37.8 years (SD = 16.5) and 45% (7481) were male. Among self-reported diseases, hypertension (HTN) was most prevalent (6.3%). 1.1% of participants reported a diagnosis of diabetes, 1.1% asthma, 0.7% COPD, and 0.4% kidney disease. 2.4% of the population described more than one NCD. Self-reported HTN was significantly higher in the peri-urban subcounty than in the other two rural sub-counties ($p < 0.001$); diagnoses for all other diseases did not differ significantly between sub-counties. Odds for self-reported HTN increased significantly with age (OR = 1.87 per 10 years of age, 95% CI 1.78–1.96). Male sex was associated with lower odds of reporting asthma (OR = 0.53, 95% CI 0.34–0.82) or HTN (OR = 0.31, 95% CI 0.26–0.40).

CONCLUSIONS: The RUNCD will establish one of the largest NCD patient cohorts in rural Africa. First analysis highlights the feasibility of systematically enrolling large numbers of adults living in a rural Ugandan district. In addition, our study demonstrates low levels of self-reported NCDs

compared to the nation-wide established levels, emphasizing the need to better educate, characterize, and care for the majority of rural communities.

KEYWORDS: Non-communicable diseases, Rural, Low- and middle-income countries

78. The Utility of Handheld Echocardiography for Early Diagnosis of Rheumatic Heart Disease

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ABSTRACT

BACKGROUND: Rheumatic heart disease (RHD) remains endemic in most of the developing world. Echocardiography has proved highly sensitive for early detection of RHD, but it remains too costly for most low-income settings. Handheld ultrasound machines used to perform handheld echocardiography (HAND) are both less expensive and more portable, possibly making them ideal screening tools. HAND has never been tested for the early diagnosis of RHD. The aim of this study was to evaluate the performance of focused HAND compared with focused standard portable echocardiography for the diagnosis of subclinical RHD.

METHODS: HAND and standard portable echocardiography were performed on 125 Ugandan children, 41 with borderline or definite RHD, and 84 healthy controls. Images were blindly reviewed according to the 2012 World Heart Federation guidelines.

RESULTS: HAND was highly sensitive (90.2%) and specific (92.9%) for distinguishing between normal patients and those with RHD, but it performed best with definite RHD. HAND overestimated mitral valve morphologic valve abnormalities, being only 66.7% specific for anterior leaflet thickness > 3 mm and 79.0% specific for restricted leaflet motion. False-negative results (n = 4) were due primarily to underestimation of mitral regurgitation length.

CONCLUSIONS: In this population, HAND was highly sensitive and specific for early detection of RHD. HAND functions best as a screening tool with confirmation of positive screening results by fully functional echocardiography machines. Technical advances may enable one-step RHD screening using HAND. The performance of HAND should be studied across diverse populations and in field tests before recommending it for widespread screening.

KEYWORDS: Echocardiography, Handheld echocardiography, Rheumatic heart disease, Screening

79. Towards reframing health service delivery in Uganda: the Uganda Initiative for Integrated Management of Non-Communicable Diseases

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ABSTRACT

BACKGROUND: The burden of non-communicable diseases (NCDs) in low- and middle-income countries (LMICs) is accelerating. Given that the capacity of health systems in LMICs is already strained by the weight of communicable diseases, these countries find themselves facing a double burden of disease. NCDs contribute significantly to morbidity and mortality, thereby playing a major role in the cycle of poverty, and impeding development.

METHODS: Integrated approaches to health service delivery and healthcare worker (HCW) training will be necessary in order to successfully combat the great challenge posed by NCDs. Results: In 2013, we formed the Uganda Initiative for Integrated Management of NCDs (UINCD), a multidisciplinary research collaboration that aims to present a systems approach to integrated management of chronic disease prevention, care, and the training of HCWs.

DISCUSSION: Through broad-based stakeholder engagement, catalytic partnerships, and a collective vision, UINCD is working to reframe integrated health service delivery in Uganda.

KEYWORDS: Non-communicable diseases; Health system strengthening; Integration; Multi-sectoral collaboration

80. Understanding factors influencing uptake of healthy lifestyle practices among adults following a community cardiovascular disease prevention programme in Mukono and Buikwe districts in Uganda: A qualitative study

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ABSTRACT

INTRODUCTION Healthy lifestyle practices including physical activity, healthy diets, non-smoking, reduced alcohol consumption and stress reduction are important in the prevention of metabollic CVD risk factors such as hypertension, overweight and obesity, diabetes and hyperlipidaemia. Owing to current lifestyle changes, the increasing burden of CVD and importance of healthy behaviours, the need for strategies to increase uptake of healthy lifestyles among sub-Saharan African populations are apparent. This study explored the factors influencing uptake of healthy lifestyle practices among adults following implementation of a community CVD prevention programme.

METHODS This was a descriptive qualitative study conducted among purposively selected adults who had engaged in a community CVD prevention programme. Data were collected using indepth interviews, which were audio recorded and transcribed verbatim. Study transcripts were read into NVIVO 12.6 software for coding and analysis guided by thematic analysis following the semantic approach.

RESULTS This study found variations in uptake of healthy lifestyle practices for CVD prevention with most changes reported for dietary behaviour especially in vegetable and fruit intake, reduction of salt intake and fats and oils consumption. Changes in physical activity were also notable. On the other hand, participants were slow in making changes in alcohol consumption, smoking behaviours and stress reduction. The barriers to uptake of healthy lifestyle practices were individual such as limited capability or skills, structural such as limited physical activity facilities, and social such as cultural and peer influence. Relatedly, the facilitators of practices uptake were individual including knowledge and personal determination to change, and social including social support from family and the community.

CONCLUSIONS Insights from understanding the uptake of lifestyle practices should guide planning and design of community programmes with an emphasis on removing barriers and strengthening facilitators building on the intermediate motivating factors and considering individual needs and expectations.

81. Understanding the local and international stakeholders in rheumatic heart disease field in Tanzania and Uganda: A systematic stakeholder mapping

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ABSTRACT

BACKGROUND: Our study aimed to systematically identify RHD stakeholders and categories of stakeholders to consider when developing a scorecard that reflects a broad stakeholder input.

METHOD: We used the Schiller et al. (2013) framework to identify RHD stakeholders and stakeholder categories in Tanzania and Uganda. The process involved identifying stakeholders by searching literature related to incidence, prevalence, morbidity, mortality, health services, or health outcomes of Group A streptococcus, acute rheumatic fever, or rheumatic heart disease in these countries. The strategy was completed for two electronic databases in 2016 and in 2020 to update the results. We also engaged known stakeholders to obtain practice-based insight. We then categorised and visually represented the identified stakeholders.

RESULTS: We identified 139 stakeholders in Uganda, with 68% being from 15 different countries across 31 locations. In comparison, local Ugandan stakeholders were dispersed in six locations across the country. In Tanzania, we identified 128 stakeholders, with 66% being locally based and dispersed in seven locations across the country and stakeholders from different countries were situated in 18 countries across 28 locations. We categorised all identified stakeholders into one or more of five categories 1) Civil Society and General Public, 2) Education Sector, 3) Research, Training and Capacity Building, 4) Healthcare service delivery, and 5) Health Policy and Administration.

CONCLUSION: The stakeholder categories identified include multiple sectors and stakeholders from multiple countries, this reflects the complexities of RHD. This also highlights the need for collaboration and partnership as a critical action for preventing and controlling RHD.

82. Urbanicity and Lifestyle Risk Factors for Cardiometabolic Diseases in Rural Uganda: A Cross-Sectional Study

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ABSTRACT

BACKGROUND: Urban living is associated with unhealthy lifestyles that can increase the risk of cardiometabolic diseases. In sub-Saharan Africa (SSA), where the majority of people live in rural areas, it is still unclear if there is a corresponding increase in unhealthy lifestyles as rural areas adopt urban characteristics. This study examines the distribution of urban characteristics across rural communities in Uganda and their associations with lifestyle risk factors for chronic diseases.

METHODS AND FINDINGS: Using data collected in 2011, we examined cross-sectional associations between urbanicity and lifestyle risk factors in rural communities in Uganda, with 7,340 participants aged 13 y and above across 25 villages. Urbanicity was defined according to a multi-component scale, and Poisson regression models were used to examine associations between urbanicity and lifestyle risk factors by quartile of urbanicity. Despite all of the villages not having paved roads and running water, there was marked variation in levels of urbanicity across the villages, largely attributable to differences in economic activity, civil infrastructure, and availability of educational and healthcare services. In regression models, after adjustment for clustering and potential confounders including socioeconomic status, increasing urbanicity was associated with an increase in lifestyle risk factors such as physical inactivity (risk ratio [RR]: 1.19; 95% CI: 1.14, 1.24), low fruit and vegetable consumption (RR: 1.17; 95% CI: 1.10, 1.23), and high body mass index (RR: 1.48; 95% CI: 1.24, 1.77).

CONCLUSIONS: This study indicates that even across rural communities in SSA, increasing urbanicity is associated with a higher prevalence of lifestyle risk factors for cardiometabolic diseases. This finding highlights the need to consider the health impact of urbanization in rural areas across SSA.

83. Wasting, underweight and stunting among children with congenital heart disease presenting at Mulago hospital, Uganda

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ABSTRACT

BACKGROUND: Children with congenital heart disease are at increased risk of malnutrition. The aim of this study was to describe the prevalence of wasting, underweight and stunting among children with congenital heart disease attending Mulago National Referral Hospital, Uganda.

METHODS: A cross-sectional study among 194 children aged 0–15 years was conducted between August 2013 and March 2014. Anthropometric measurements and clinical assessments were carried out on all children. Anthropometric z-scores based on WHO 2007 reference ranges were generated for each child. Weight-for-height zscores were generated for children 0–5 years, weight-for-age z-scores for children 0–10 years, and height-for-age and BMI-for-age z-scores for all children. Risk factors associated with malnutrition were determined by Poisson regression.

RESULTS: One hundred and forty five (74.7%) children were aged 0–5 years; and 111 of 194 (57.2%) were female. Forty five of 145 (31.5%) children aged 0–5 years were wasted; 77 of 181 (42.5%) children aged 0–10 years were underweight; 88 of 194 (45.4%) children were stunted; and 53 of 194 (27.3%) children were thin (BMI for age z score < −2). Moderate to severe anaemia (RR 1.11, 95% CI: 1.01–1.22) and moderate to severe heart failure (RR 1.24, 95% CI: 1.13–1.36) were associated with wasting and underweight respectively. Stunting was associated with moderate to severe heart failure (RR 1.11, 95% CI: 1.01–1.21) while thinness was associated with moderate to severe heart failure (RR 1.12, 95% CI: 1.04–1.21) and moderate to severe anaemia (RR 1.15, 95% CI: 1.06–1.25).

CONCLUSION: Malnutrition is common in children with congenital heart disease, and is associated with anaemia and heart failure. There is need to integrate strategies to identify and manage malnutrition during the care of children with congenital heart disease.

KEYWORDS: Congenital heart disease, Malnutrition, Uganda, Africa

84. A 10-year retrospective study of lung cancer in Uganda

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ABSTRACT

BACKGROUND: Lung cancer is a leading cause of cancer-related deaths in Uganda. In this study, we aimed to describe the baseline characteristics and survival of patients with lung cancer at the Uganda Cancer Institute (UCI).

METHODS: We retrospectively reviewed medical records of all patients with a histological diagnosis of lung cancer registered at UCI between January 2008 and August 2018. Data on demographic, clinical, and treatment characteris- tics, and vital status were abstracted and analyzed. Patients with undocumented vital status on the medical records were contacted through phone calls. We determined survival as time from histological diagnosis to death. The Kaplan-Meier survival analysis was performed to estimate the median survival time and the 5-year overall survival rate.

RESULTS: Of the 207 patients enrolled, 56.5% (n=117) were female, median age was 60 years (range: 20–94), 78.7% (n=163) were never-smokers and 18 (8.7%) were living with HIV. Presumptive anti-tuberculosis treatment was given to 23.2% (n=48). Majority had non-small cell lung cancer (96.6%, n=200) with 74.5% (n=149) adenocarcinoma and 19% (n=38) squamous cell carcinoma. All had advanced (stage III or IV) disease with 96.1% (n=199) in stage IV. Chemotherapy (44.9%, n=93) and biological therapy (34.8%, n=72) were the commonest treatments used. Over- all survival at 6months, 1-, 2- and 5-years was 41.7, 29.7, 11.8, and 1.7%,

respectively. The median survival time of 4.4months was not statistically signifcantly diferent between participants with NSCLC or SCLC (4.5 versus 3.9months, p=.335).

CONCLUSION: In Uganda, adenocarcinoma is the predominant histologic subtype of lung cancer and patients are pre- dominantly females, and non-smokers. Patients present late with advanced disease and poor overall survival. Public awareness should be heightened to facilitate early detection and improve outcomes.

KEYWORDS: Lung cancer, Survival, Adenocarcinoma, Uganda

85. Acceptability of cervical cancer screening using visual inspection among women attending a childhood immunization clinic in Uganda

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ABSTRACT

OBJECTIVE: To evaluate the acceptability and performance of cervical cancer (CC) screening using visual inspection with acetic acid (VIA) integrated into a rural immunization clinic in Uganda.

METHODS/MATERIALS: We conducted a cross-sectional pilot study in rural Uganda. We explored associations between women's characteristics and acceptance of VIA testing. We collected samples for Papanicolaou (Pap) smear testing in a random subset of women and used results from this test as a comparator for assessing VIA performance.

RESULTS: We enrolled 625 women of whom 571 (91.4%) accepted and 54 (8.6%) refused CC screening. In the univariate model, age (Odds Ratio (OR)=1.10; p-value < 0.001) and employment status (OR 2.00; p-value=0.019) were significantly associated with acceptance of VIA screening. In the multivariate model, no characteristic was independently associated with acceptance of VIA screening after adjusting for other factors. Compared to reference Pap smear, CC screening with VIA had a sensitivity of 50% and a specificity of 97.7%.

CONCLUSIONS: CC screening with VIA is highly acceptable in the setting of rural immunization clinics in Uganda. Studies to assess which screening method would be the most effective and cost-effective are needed before stakeholders can consider adopting screening programs at scale.

86. Adherence to antiretroviral and cancer chemotherapy, and associated factors among patients with HIV–cancer co-morbidity at the Uganda Cancer Institute: a cross sectional study

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ABSTRACT

Background Human Immunodeficiency Virus is a major global public health issue affecting millions of people, and sub-Saharan Africa where Uganda lies is disproportionately affected. There has been an increase in cancer among HIV patients which has resulted into use of co-medications that sometimes affect ART and cancer chemotherapy adherence. We aimed to determine adherence to antiretroviral and cancer chemotherapy and the associated factors among patients with HIV-cancer co-morbidity at the Uganda Cancer Institute.

METHODS We conducted a cross-sectional study among 200 randomly selected adult cancer patients infected with HIV and attending the Uganda cancer institute. Antiretroviral and anti-cancer chemotherapy adherence with associated factors were assessed quantitatively. We collected the data using interviewer administered semi-structured questionnaires. Modified Poisson regression with robust standard errors was used to estimate the prevalence ratios (PR) and its 95% confidence intervals (CI) for the factors associated with adherence to Antiretroviral Therapy (ART) and cancer chemotherapy.

RESULTS Overall, 54% of the study participants adhered to both ART and chemotherapy, and 55% adhered to ART while 65% adhered to cancer chemotherapy. The mean age of the respondents was 42 (SD±11years), and a majority, 61% were males. More than half, 56.5% were married and at least 45% had attained a primary level of education. Patients with good adherence to antiretroviral therapy and chemotherapy were 54%. No knowledge of cancer stage (PR=0.4,

95% CI=0.3–0.6, P<0.0001), , having an AIDS defining cancer (PR=0.7, 95% CI=0.5–0.9, P=0.005), ART clinic in district not near Uganda Cancer Institute (PR=0.7,95% CI=0.8-1.0, P=0.027) and affordability of cancer chemotherapy (PR=1.4, 95% CI=1.0-1.9, P=0.037) were associated with adherence to both ART and cancer chemotherapy.

CONCLUSION Adherence to both ART and cancer chemotherapy was low. Factors significantly associated with adherence were: knowledge of the cancer stage by the patient, the type of cancer diagnosis, source of ART and affordability/ availability of medications. There is a need to provide information on the stage of cancer and adherence counseling to patients. Furthermore, Integration of HIV- cancer care will be necessary for efficient and effective care for the patients.

KEYWORDS HIV, Cancer, Comorbidity, Uganda, Chemotherapy

87. Awareness of cervical cancer risk factors and symptoms: cross-sectional community survey in post-conflict northern Uganda

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ABSTRACT

BACKGROUND Lack of awareness of risk factors and symptoms for cancer may lead to late diagnosis and poor prognosis.

OBJECTIVE We assessed community awareness about cervical cancer risk factors and symptoms and perceptions about prevention and cure of cervical cancer in order to contribute data to inform interventions to improve cervical cancer survival.

DESIGN Cross-sectional population-based survey. Setting and participants We conducted this study in Gulu, a postconflict district in Uganda in 2012. The sample included 448 persons aged 18 years and above, selected through a multi-stage stratified cluster sampling process. Data

collection methods and analysis We collected data using a pretested structured questionnaire. Logistic regressions were used to determine magnitudes of associations between socio-demographic and outcome variables.

RESULTS Most participants (444/448) had heard about cervical cancer. Known risk factors including multiple sexual partners, human papillomavirus infection, and early onset of sexual activity, were recognized by 88%, 82%, and 78% of respondents respectively. 63% of participants believed that prolonged use of family planning pills and injections caused cervical cancer. The majority of participants recognized symptoms of cervical cancer including intermenstrual bleeding (85%), post-menopausal bleeding (84%), and offensive vaginal discharge (83%). 70% of participants believed that cervical cancer is preventable and 92% believed that it could be cured if diagnosed at an early stage.

DISCUSSION AND CONCLUSIONS Recognition of cervical cancer risk factors and symptoms was high among study participants. Targeted interventions including increasing availability of HPV vaccination, population-based cervical screening and diagnostic services can translate high awareness into actual benefits.

88. in febrile cancer patients in Uganda

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ABSTRACT

OBJECTIVE: The aim of this study was to determine the predominant bacterial species causing bacteremia among febrile cancer patients, and their antibacterial resistance profiles at the Uganda Cancer Institute.

RESULTS: We enrolled in-patients with a documented fever (≥37.5 °C). Bacteria from positive blood cultures were identified using standard methods biochemically. Antibacterial susceptibility testing was performed with the Kirby– Bauer disc diffusion method. From a total of 170 febrile episodes, positive blood cultures were obtained from 24 (14.1%). A positive culture was more likely to be obtained from a patient with neutropenia (P=0.017). Of 22 (66.7%) Gram-negative bacteria isolated, half were E. coli (n=11). Gram-negative compared to Gram-positive bacteria were most likely to be isolated from patients with a hematologic malignancy (P=0.02) or patients with neutropenia (P=0.006). Of the isolated Enterobacteriaceae 85% (n=20) were resistant to

three or more classes of antibiotic and 41% (n=7) had extended spectrum beta-lactamases. Of the 11 Gram-positive bacteria isolated, the S. aureus isolate was methicillin resistant but susceptible to vancomycin. Multidrug resistant Gram-negative bacteria are the main cause of bacteremia in febrile cancer patients at the Uganda Cancer Institute. There is need for ongoing microbial surveillance, infection prevention and control, and antibiotic stewardship programs.

KEYWORDS: Bacteremia, Neutropenia, Antimicrobial resistance, Antibiotics, Cancer, Uganda, Sub-Saharan Africa

89. Beliefs, perceptions and health-seeking behaviours in relation to cervical cancer: a qualitative study among women in Uganda following completion of an HPV vaccination campaign

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ABSTRACT

BACKGROUND: Cervical cancer remains a leading cause of morbidity and mortality in Uganda. Despite earlier information campaigns to introduce human papilloma virus (HPV) vaccination, which also targeted cervical cancer, misinterpretation and misunderstanding of the subject remain high. Women in Uganda present with cervical cancer at an advanced stage due to poor health-seeking behaviours, with an associated high mortality rate. This project explored beliefs, attitudes, perceptions, and health-seeking behaviours in relation to cervical cancer among women in Uganda after an HPV vaccination project had been rolled out.

DESIGN: A qualitative study design was used, with six focus group discussions (FGDs) that included 36 women, aged 25-49 years, with no previous history of cervical cancer symptoms or diagnosis. The women were interviewed in February and March 2013. The transcribed data was analysed using content analysis.

RESULTS: Three themes emerged: feeling unprotected and unsafe, misbelief and wondering about cervical cancer, and fear of the testing procedure. Participating women had heard of cervical cancer but preferred to wait to access cervical cancer screening until symptom debut.

CONCLUSIONS: There are still barriers to cervical cancer screening among women in Uganda, where there is a need for culture-specific, sensitive information and interventions to address the

issues of improving the cervical cancer screening uptake among these women. Societal context needs to be taken into account when implementing community-based health education.

KEYWORDS: beliefs; perceptions; health-seeking behaviours; health belief model; cervical cancer screening

90. Breast Cancer Beliefs as Potential Targets for Breast Cancer Awareness Efforts to Decrease Late-Stage Presentation in Uganda

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ABSTRACT

PURPOSE To assess breast cancer beliefs in Uganda and determine whether these beliefs are associated with factors potentially related to nonparticipation in early detection.

METHODS A survey with open- and close-ended items was conducted in a community sample of Ugandan women to assess their beliefs about breast cancer. Linear regression was used to ascertain associations between breast cancer beliefs and demographic factors potentially associated with early detection, including socioeconomic factors, health care access, prior breast cancer knowledge, and personal detection practices.

RESULTS Of the 401 Ugandan women surveyed, most had less than a primary school education and received medical care at community health centers. Most women either believed in or were unsure about cultural explanatory models for developing breast cancer (> 82%), and the majority listed these beliefs as the most important causes of breast cancer (69%). By comparison, £ 45% of women believed in scientific explanatory risks for developing breast cancer. Although most believed that regular screening and early detection would find breast cancer when it is easy to treat (88% and 80%, respectively), they simultaneously held fatalistic attitudes toward their own detection efforts, including belief or uncertainty that a cure is impossible once they could self-detect a lump (54%). Individual beliefs were largely independent of demographic factors.

CONCLUSION Misconceptions about breast cancer risks and benefits of early detection are widespread in Uganda and must be addressed in future breast cancer awareness efforts. Until screening programs exist, most breast cancer will be self-detected. Unless addressed by future

awareness efforts, the high frequency of fatalistic attitudes held by women toward their own detection efforts will continue to be deleterious to breast cancer early detection in sub-Saharan countries like Uganda.

91. cancer care in Uganda: A multicenter study on the frequency of breast cancer surgery in relation to the incidence of breast cancer

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ABSTRACT

BACKGROUND Breast cancer is the most common cancer in women worldwide. Considerable funding and efforts are invested in breast cancer research and healthcare, but only a fraction of this reaches women and healthcare systems in low income countries. Surgical treatment is an essential part of breast cancer care, but access to surgery is in general very limited in low income countries such as Uganda. In this study, the previously unknown nationwide rate of breast cancer surgery was investigated.

METHODS AND FINDINGS This was a multicentre, retrospective study, investigating breast cancer surgery in the public healthcare system in Uganda. Data were collected from operating theatre registries at primary, secondary and tertiary level healthcare centres throughout the country, including 14 general hospitals, the 14 regional referral hospitals and the national referral hospital. Patients who underwent major surgery for breast cancer at these hospitals during 2013 and 2014 were included. The number of breast cancer procedures performed, geographical variation, level of healthcare staff performing surgery and patient characteristics were investigated. After correction for missing data, a total of 137 breast cancer procedures were performed each year within the public healthcare system, corresponding to 5.7% of the breast cancer incidence in the country at that time. Most procedures (n = 161, 59.0%) were performed at the national referral hospital by qualified surgeons. Many of the patients were young; 30.1% being less than 40 years old. The proportion of male breast cancers in the study was large (6.2%).

CONCLUSIONS The rate of breast cancer surgery in Uganda is minimal and in several parts of the country breast cancer surgery is not performed at all. More resources must be directed towards breast cancer in low income countries such as Uganda. The fact that the patients were young calls for further research, prevention and treatment specifically targeting young women in the study setting.

92. BREAST CANCER EARLY DETECTION AND DIAGNOSTIC CAPACITY IN UGANDA

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ABSTRACT

BACKGROUND: Greater than 80% of women presenting for breast cancer treatment in Uganda have late-stage disease, which is attributable to a dysfunctional referral system and a lack of recognition of the early signs and symptoms among primary health care providers, and compounded by the poor infrastructure and inadequate human capacity. Improving the breast health care system requires a systemic approach beginning with situational analysis to identify systematic gaps that prevent sustainable improvements in outcome.

METHODS: The authors performed a situational analysis of the breast health care system using methods developed by the Breast Health Global Initiative. Based on their findings, they developed a series of recommendations for strengthening the health system for the early diagnosis of breast cancer based on clinical detection, referral, tissue sampling, and diagnosis.

RESULTS: Deficits in the recognition of breast cancer signs and symptoms, the underuse of clinical breast examination as a diagnostic and/or screening tool, the centralization of diagnostic tests (radiology and pathology), reliance on excisional biopsies rather than needle biopsies, and a lack of trained professionals and knowledge of the referral system all contribute to significant health system delays.

CONCLUSIONS: To strengthen referral networks and improve the early diagnosis of breast cancer in Uganda, national referral hospitals should provide educational programs to primary health care providers in community health centers (CHCs), at which the majority of women first

present with symptoms. At secondary district-level facilities in which imaging and tissue sampling can be performed, the capacity for diagnostic testing could be increased through task shifting of basic interpretation (abnormal vs normal) from specialists to non-specialists using networking technology to facilitate remote oversight from specialists at the national referral hospitals.

KEYWORDS: breast cancer, detection, diagnosis, health care capacity, low-resource country, Uganda.

93. **Breast Cancer Knowledge and Breast Self-Examination Practices Among Female University Students in Kampala, Uganda: A Descriptive Study**

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ABSTRACT

OBJECTIVE: The purpose of the study was to assess female university students' knowledge of breast cancer risk factors, signs and symptoms, and identify breast self-examination (BSE) practices. Using this information we aimed to design an education intervention tailored to address any knowledge and practice gaps identified.

METHODS: We conducted a cross-sectional study with 204 female Makerere University students. Data was obtained through the use of a structured questionnaire over a period of two months (1 April 2013 to 30 May 2013).

RESULTS: Our study revealed a high awareness of breast cancer (98.0%) and BSE practices (76.5%) among female students. Over half the students (61.3%) had an intermediate level of knowledge about risk factors related to breast cancer and the signs and symptoms of the disease. Skills related to BSE practices were found to be low (43.6%). The majority (56.9%) of students received information about breast cancer via mass media.

CONCLUSION: Pre- post-education intervention studies need to be conducted to evaluate the intervention outcomes related to breast cancer knowledge and BSE practices among female students in Uganda.

94. Breast Cancer Risk Factors among Ugandan Women at a Tertiary Hospital: A Case-Control Study

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ABSTRACT

BACKGROUND: Although East Africa, like other countries in sub-Saharan Africa, has a lower incidence of breast cancer than high-income countries, the disease rate is rising steeply in Africa; it has nearly tripled in the past few decades in Uganda. There is a paucity of studies that have examined the relation between reproductive factors and breast cancer risk factors in Ugandan women. Objective: To determine breast cancer risk factors among indigenous Ugandan women.

METHODS: This is a hospital-based unmatched case-control study. Interviews were conducted between 2011 and 2012 using structured questionnaires. Patients with histologyproven breast cancer were recruited over a 2-year period. Logistic regression was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs).

RESULTS: A total of 350 women were recruited; 113 were cases and 237 were controls. The mean age was 47.5 years (SD 14) for the cases and 45.5 years (SD 14.1) for the controls. The odds of breast cancer risk seemed lower for those who breastfed (adjusted OR = 0.04; 95% CI: 0.01, 0.18). There was no significance for early age at first full-term birth (adjusted OR = 1.96; 95% CI: 0.97, 3.96; p = 0.061), and urban residence carried no increased odds of breast cancer either (p = 0.201).

CONCLUSION: Breastfeeding seems to be associated with reduced odds of breast cancer.

95. Cancer Risk Studies and Priority Areas for Cancer Risk Appraisal in Uganda

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ABSTRACT

BACKGROUND: Research into aetiologies and prevention of the commonest cancers and implementation of primary and secondary prevention can reduce cancer risk and improve quality of life. Moreover, monitoring the prevalence of cancer risk factors in a specific population helps guide cancer prevention and early detection efforts and national cancer control programming.

OBJECTIVE: This article aims to provide the scope and findings of cancer risk studies conducted in Uganda to guide researchers, health-care professionals, and policymakers.

METHODS: Between November 2019 to January 2020, we searched peer-reviewed published articles in Pubmed, EMBASE and Cochrane Library (Cochrane central register of controlled trials-CENTRAL). We followed the recommendation of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses – the PRISMA. The primary focus was to identify cancer risk and prevention studies conducted in Uganda and published in peer-reviewed journals from January 2000 and January 2020. We used key Boolean search terms with their associated database strings.

RESULTS: We identified 416 articles, screened 269 non-duplicate articles and obtained 77 full-text articles for review. Out of the 77 studies, we identified one (1%) randomized trial, two (2.5%) retrospective cohort studies and 14 (18%) case-control studies, 46 (60%) cross-sectional studies, five (6.4%) ecological studies, three panel studies (4%) and six (8%) qualitative studies. Cervical cancer was the most studied type of cancer in Uganda (23.4%, n = 18 studies), followed by lymphomas – both Hodgkin and Non-Hodgkin sub-types (20.7%), n = 16 studies) and breast cancer (15.6%, n = 12 studies). In lymphoma studies, Burkitt lymphoma was the most studied type of lymphoma (76%, n = 13 studies). The studies concentrated on specific cancer risk awareness, risk perceptions, attitudes, uptake of screening, uptake of human papillomavirus vaccination, the prevalence of some of the known cancer risk factors and obstacles to accessing screening services.

CONCLUSION: The unmet need for comprehensive cancer risk and prevention studies is enormous in Uganda. Future studies need to comprehensively investigate the known and putative cancer risk factors and prioritize the application of the higher-hierarchy evidence-generating epidemiological studies to guide planning of the national cancer control program.

96. Capacity building for cancer prevention and early detection in the Ugandan primary healthcare facilities: Working toward reducing the unmet needs of cancer control services

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ABSTRACT

BACKGROUND: In 2018, approximately 60,000 Ugandans were estimated to be suffering from cancer. It was also reported that only 5% of cancer patients access cancer care and 77% present with late-stage cancer coupled with low level of cancer health literacy in the population despite a wide coverage of primary healthcare facilities in Uganda. We aimed to contribute to reducing the

unmet needs of cancer prevention and early detection services in Uganda through capacity building.

METHODS: In 2017, we conducted two national and six regional cancer control stakeholders' consultative meetings. In 2017 and 2018, we trained district primary healthcare teams on cancer prevention and early detection. We also developed cancer information materials for health workers and communities and conducted a follow-up after the training.

RESULTS: A total of 488 primary healthcare workers from 118 districts were trained. Forty-six health workers in the pilot East-central subregion were further trained in cervical, breast, and prostate cancer early detection (screening and early diagnosis) techniques. A total of 32,800 cancer information, education and communication materials; breast, cervical, prostate childhood and general cancer information booklets; health education guide, community cancer information flipcharts for village health teams and referral guidelines for suspected cancer were developed and distributed to 122 districts. Also, 16 public and private-not-for-profit regional hospitals, and one training institution received these materials. Audiovisual clips on breast, cervical, and prostate cancer were developed for mass and social media dissemination. A follow-up after six months to one year indicated that 75% of the districts had implemented at least one of the agreed actions proposed during the training. CONCLUSIONS: In Uganda, the unmet needs for cancer control services are enormous. However, building the capacity of primary healthcare workers to integrate prevention and early detection of cancer into primary health care based on low-cost options for low-income countries could contribute to reducing the unmet needs of cancer prevention and early detection in Uganda.

KEYWORDS cancer prevention, capacity building, early detection of cancer, integration of cancer services, primary health care, unmet needs for cancer prevention and early detection

97. Capacity of Ugandan public sector health facilities to prevent and control non-communicable diseases: an assessment based upon WHO-PEN

standards Hilary E. Rogers[1], Ann R. Akiteng[2], Gerald Mutungi[2,3], Adrienne S. Ettinger[4] and Jeremy I. Schwartz[2,5*]

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ABSTRACT

Background: Non-communicable diseases (NCDs) are increasing in prevalence in low-income countries including Uganda. The Uganda Ministry of Health has prioritized NCD prevention, early diagnosis, and management. However, research on the capacity of public sector health facilities to address NCDs is limited.

METHODS: We developed a survey guided by the literature and the standards of the World Health Organization Pacakage of Essential Noncommunicable Disease Interventions for Primary Health Care in Low-Resource Settings. We used this tool to conduct a needs assessment in 53 higher-level public sector facilities throughout Uganda, including all Regional Referral Hospitals (RRH) and a purposive sample of General Hospitals (GH) and Health Centre IVs (HCIV), to: (1) assess their capacity to detect and manage NCDs; (2) describe provider knowledge and practices regarding the management of NCDs; and (3) identify areas in need of focused improvement. We collected data on human resources, equipment, NCD screening and management, medicines, and laboratory tests. Descriptive statistics were used to summarize our findings.

RESULTS: We identified significant resource gaps at all sampled facilities. All facilities reported deficiencies in NCD screening and management services. Less than half of all RRH and GH had an automated blood pressure machine. The only laboratory test uniformly available at all surveyed facilities was random blood glucose. Sub-specialty NCD clinics were available in some facilities with the most common type being a diabetes clinic present at eleven (85%) RRHs. These facilities offered enhanced services to patients with diabetes. Surveyed facilities had limited use of NCD patient registries and NCD management guidelines. Most facilities (46% RRH, 23% GH, 7% HCIV) did not track patients with NCDs by using registries and only 4 (31%) RRHs, 4 (15%) GHs, and 1 (7%) HCIVs had access to diabetes management guidelines.

CONCLUSIONS: Despite inter-facility variability, none of the facilities in our study met the WHO-PEN standards for essential tools and medicines to implement effective NCD interventions. In Uganda, improvements in the allocation of human resources and essential medicines and technologies, coupled with uptake in the use of quality assurance modalities are desperately needed in order to adequately address the rapidly growing NCD burden.

KEYWORDS: Uganda, Non-communicable disease, Prevention, Health facility readiness, Health service delivery

98. Cervical cancer screening among HIV-positive women in urban Uganda: a cross sectional study

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ABSTRACT

BACKGROUND: Women living with Human Immunodeficiency Virus (HIV) are at a high risk for early development of cervical cancer. Adherence to cervical cancer prevention strategies in this population is vital for the early detection and treatment of cervical cancer. This study aimed to determine the prevalence and factors associated with cervical cancer screening among HIV-positive women attending an urban HIV care center in Uganda.

METHODS: This cross-sectional study included 205 HIV-positive women receiving care at an urban HIV care center. An interviewer-administered questionnaire was used to capture sociodemographic information, history of screening for cervical cancer, and reproductive health characteristics. Logistic regression analysis was used to determine the factors associated with cervical cancer screening. RESULTS: Of the 205 HIV-positive women with a mean age of 37.5±8.87 that participated in the study, majority (n=201, 98%) were aware of cervical cancer screening. Ninety participants (44%) had ever been screened for cervical cancer and only 33 (16.1%) had been screened in the past year. Obtaining information about cancer of the cervix and cervical cancer screening from health care professionals was significantly associated with higher levels of cervical cancer screening (adjusted odds ratio=5.61, 95% confidence interval: 2.50–12.61, p value<0.001).

CONCLUSION: This study highlights the low prevalence of cervical cancer screening among HIV-positive women and underscores the role of health professionals as an effective source of information on cervical cancer and cervical cancer screening. Patient education programs in HIV prevention and care facilities should emphasize cervical cancer screening messages to enhance the uptake of screening services.

KEYWORDS: Cervical cancer, Cervical cancer screening, HIV, Women, Health professionals, Uganda

99. Cervical cancer screening and treatment in Uganda

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ABSTRACT

Cervical cancer is the leading cause of cancer death among women in Uganda. Given the high prevalence of genital human papillomavirus infection, the current unavailability of radiotherapy, and the absence of a national cervical cancer prevention and control program, these deaths will likely increase. Efforts to organize an effective cervical cancer screening and treatment program will require adequate financial resources, the development of infrastructure, training needed manpower, and surveillance mechanisms of the targeted women. Screening with VIA (visual inspection with acetic acid) and HPV DNA testing on self-collected samples with processing at a specific site could, for the first time, make national, large-scale population-based screening feasible in Uganda. Combining screening efforts with timely treatment of all screen positives for HPV infection can prevent progression to invasive cervical cancer. To date, this is the most effective intervention in closing the current prevention gap. Training of health professionals, ongoing construction of new radiotherapy bunkers, and opening of regional centers are all geared towards improving cervical cancer care in Uganda. The Uganda Cancer Institute Bill establishes the Institute as a semi-autonomous agency mandated to undertake and coordinate the prevention and treatment of cancer. Its implementation will be a milestone in cervical cancer prevention and control. However, execution will require political will and an increase in domestic and international investment.

100. Challenges faced by cancer patients in Uganda: Implications for health systems strengthening in resource limited settings

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ABSTRACT

BACKGROUND: Uganda Cancer Institute (UCI), the only comprehensive cancer treatment center in Uganda, registers about 4000 new cancer patients a year. However, many cancer patients in Uganda never receive treatment due to a variety of challenges. We therefore conducted a study to identify and assess the challenges faced by cancer patients in Uganda.

METHODS: A cross-sectional study conducted in April-May 2017 among adult cancer patients. 359 participants participated in an interviewer-administered survey. We used stratified random sampling to select the study participants. Data was analyzed in SPSS Statistics 24.

RESULTS: 35 % of the patients delayed initiating cancer treatment and 41 % missed medical appointments along their care journey. Delayed and missed appointments were mainly due to lack of money for cancer medicines, transportation and accommodation. Patients also expressed

challenges with side effects of cancer treatment: 52 % sought help from health workers when they experienced side effects; 14 % used alternative medicine; and 21 % did not inform anyone. In addition, 55 % of the participants had limited knowledge about their disease and treatment. Other challenges when at UCI included: being hungry and thirsty throughout the day, long waiting hours, not having a resting place, not understanding what comes next, and having their records lost by hospital staff.

CONCLUSION: Challenges faced by cancer patients in Uganda result in enormous delays in initiation and continuation of cancer treatment. These challenges are often a result of the poor social-economic status of the patients; inadequate infrastructure for cancer care; and inefficiencies in the health care system.

POLICY SUMMARY: To improve the experience of patients, the National Cancer Control Plan should consider establishing regional cancer centers; creating a reliable supply of cancer medicines; and integrating navigation programmes into cancer care. Strengthening the whole health system, in relation to cancer service delivery, should remain a top priority for Uganda and other resource limited settings.

101. Community health workers' involvement in the prevention and control of non-communicable diseases in Wakiso District, Uganda

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ABSTRACT

BACKGROUND: Community health workers (CHWs) are an important cadre of the global health workforce as they are involved in providing health services at the community level. However, evidence on the role of CHWs in delivering interventions for non-communicable diseases (NCDs) in Uganda is limited. This study, therefore, assessed the involvement of CHWs in the prevention and control of NCDs in Wakiso District, Uganda with a focus on their knowledge, attitudes and practices, as well as community perceptions.

METHODS: A cross-sectional study using mixed methods was conducted which involved a structured questionnaire among 485 CHWs, and 6 focus group discussions (FGDs) among community members. The study assessed knowledge, perceptions including the importance of the various risk factors, and the current involvement of CHWs in NCDs, including the challenges they faced. Quantitative data were analysed in STATA version 13.0 while thematic analysis was used for the qualitative data.

RESULTS: The majority of CHWs (75.3%) correctly defined what NCDs are. Among CHWs who knew examples of NCDs (87.4%), the majority mentioned high blood pressure (77.1%), diabetes (73.4%) and cancer (63.0%). Many CHWs said that healthy diet (86.2%), physical activity (77.7%), avoiding smoking/tobacco use (70.9%), and limiting alcohol consumption (63.7%) were very important to prevent NCDs. Although more than half of the CHWs (63.1%) reported being involved in NCDs activities, only 20.9 and 20.6% had participated in community mobilisation and referral of patients respectively. The majority of CHWs (80.1%) who were involved in NCDs prevention and control reported challenges including inadequate knowledge (58.4%), lack of training (37.6%), and negative community perception towards NCDs (35.1%). From the FGDs, community members were concerned that CHWs did not have enough training on NCDs hence lacked enough information. Therefore, the community did not have much confidence in them regarding NCDs, hence rarely consulted them concerning these diseases.

102. Correlates of cervical cancer prevention advocacy and cervical cancer screening in Uganda Cross-sectional evaluation of a conceptual model

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ABSTRACT

An approach to increasing cervical cancer (CC) screening is to empower women who have been screened to act as advocates and encourage other women they know to get screened. We examined correlates of CC screening advocacy and CC screening uptake among constructs in our conceptual model of factors driving engagement in advocacy. A cross-sectional, correlational analysis was conducted with survey data from 40 women (index participants) who had recently screened for CC, and 103 female members of their social network (alter participants) who had not been screened. Variables measured included CC prevention advocacy, as well as internalized CC stigma, sharing of CC screening result, CC knowledge, healthy bodily intake (i.e., diet; alcohol and cigarette use) and self-efficacy related to CC service utilization and CC prevention advocacy, which were hypothesized to be associated with advocacy. Bivariate and multivariable regression

analyses, controlling for clustering, were conducted. Among index participants, greater engagement in advocacy was positively correlated with CC knowledge, sharing of CC screening result, and CC service utilization self-efficacy. Women who had screened positive and received treatment for precancerous lesions reported greater CC prevention advocacy, CC knowledge and healthy living, compared to those who screened negative. In multiple regression analyses, CC screening was positively associated with CC prevention advocacy and being age 36 or older, and CC prevention advocacy was also positively associated with CC service utilization self-efficacy. These findings support the validity of our conceptual model regarding factors associated with engagement in CC prevention advocacy among women screened for CC. The strong association between CC prevention advocacy and both CC screening uptake and CC service utilization self-efficacy suggests the potential value of advocacy promotion among women who have been screened, as well as for increasing screening uptake.

KEYWORDS: advocacy, cervical cancer, knowledge, screening, self-efficacy, Uganda

103. Curbing the Rise of Noncommunicable Diseases in Uganda: Perspectives of Policy Actors

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ABSTRACT

BACKGROUND: Uganda faces a complex policy landscape as it simultaneously addresses infectious diseases and noncommunicable diseases (NCDs). The health system has been overwhelmed by the growing burden of NCDs across all socioeconomic strata. In this study, we sought to understand the policy context around NCDs in Uganda, the roles of actors both within and external to the government, and the factors shaping the development and implementation of NCD policies and programs in Uganda.

METHODS: We conducted in-depth interviews with 30 policy actors from the Ugandan Ministry of Health (MOH), nongovernmental organizations, and academia to understand the roles of different actors in the Ugandan NCD space, the programs and policy measures in discussion, and how to bridge any identified gaps. A thematic data analysis was conducted.

RESULTS: All national actors viewed funding constraints as a critical barrier to developing and executing an NCD strategic plan and as a barrier to leading and coordinating NCD prevention and control efforts in Uganda. The crowding of nongovernment actors was found to fragment NCD efforts, particularly due to the weak implementation of a framework for action among NCD actors. Relatedly, limited recruitment of technical experts on NCDs within the MOH was viewed to further

diminish the government's role in leading policy and program formulation and implementation. Though recent MOH efforts have aimed at addressing these concerns, some skepticism remains about the government's commitment to increase budgetary allocations for NCDs and to address the technical and human resources gaps needed to achieve NCD policy aims in Uganda.

CONCLUSIONS: This study highlights the immediate need to mobilize more resources, reduce fragmented efforts in the NCD space, and prioritize investment in NCD prevention and management in Uganda.

104. Effects of a peer advocacy intervention on cervical cancer screening among social network members: results of a randomized controlled trial in Uganda

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ABSTRACT

Cervical cancer (CC) is the most common cancer among women in Uganda, yet lifetime CC screening is as low as 5%. Training women who have screened for CC to engage in peer advocacy could increase uptake of CC screening in social networks. We conducted a randomized controlled trial of a peer-facilitated, manualized, 7-session group intervention to train women to engage in CC prevention advocacy. Forty women recently screened for CC (index participants) enrolled and were assigned to receive the intervention (n=20) or wait-list control (n=20). Each index was asked to recruit up to three female social network members (alters) who had not been screened for CC (n=103 enrolled alters). All index and alter participants were assessed at baseline and month-6 follow-up. All but one (n=39; 98%) index and 98 (95%) alter participants completed the month 6 assessment. In multivariate regression models controlling for baseline outcome measures and demographic covariates, intervention alters were more likely to have been screened for CC at month 6 [67% vs. 16%; adjusted OR (95% CI)= 12.13 (4.07, 36.16)], compared to control alters. Data also revealed significant increased engagement in CC prevention

advocacy, among both index and alter participants in the intervention group at month 6, compared to the control group. The intervention was highly effective in increasing CC screening uptake among social network members, and engagement in CC prevention advocacy among not only intervention recipients, but also targets of advocacy, suggesting the potential for wide dissemination of CC knowledge.

105. Experiences of patients undergoing chemotherapy - a qualitative study of adults attending Uganda Cancer Institute

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ABSTRACT

BACKGROUND: Cancer is a global public health challenge and how patients in countries with poor healthcare infrastructure experience cancer treatment is largely unknown.

PURPOSE: The objective of this study was to describe adult Ugandan cancer patients' experiences of undergoing chemotherapy treatment.

Methodology: Using a qualitative descriptive design, seven in-patients with varying cancer diagnoses at the Uganda Cancer Institute were interviewed about their experiences of undergoing chemotherapy treatment; the interviews were transcribed and analysed thematically.

RESULTS: The analysis resulted in nine subthemes, which were categorized under three main themes: 'experiences related to the body', with the subthemes dry and sensitive skin, changes in eating and bowel habits, fever and feelings of abnormal body sensation; 'thoughts and feelings', with four subthemes reflecting the psychosocial impact of chemotherapy; and 'actively dealing with discomfort', with three subthemes describing how patients dealt with side effects, such as by sticking to a diet.

CONCLUSION: Receiving chemotherapy treatment is difficult, and the side effects negatively influenced patients' bodies and moods. Dealing actively with discomfort and accepting negative impacts in hope of a cure helped the participants manage the acute complications related to the

treatment. We recommend the development of interventions to ease discomfort due to chemotherapy.

KEYWORDS: Cancer, chemotherapy, experiences, nursing, qualitative

106. **Exploring knowledge and attitudes toward non-communicable diseases among village health teams in Eastern Uganda: a cross sectional study**

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ABSTRACT

BACKGROUND: Community health workers are essential personnel in resource-limited settings. In Uganda, they are organized into Village Health Teams (VHTs) and are focused on infectious diseases and maternal-child health; however, their skills could potentially be utilized in national efforts to reduce the growing burden of non-communicable diseases (NCDs). We sought to assess the knowledge of, and attitudes toward NCDs and NCD care among VHTs in Uganda as a step toward identifying their potential role in community NCD prevention and management.

METHODS: We administered a knowledge, attitudes and practices questionnaire to 68 VHT members from Iganga and Mayuge districts in Eastern Uganda. In addition, we conducted four focus group discussions with 33 VHT members. Discussions focused on NCD knowledge and facilitators of and barriers to incorporating NCD prevention and care into their role. A thematic qualitative analysis was conducted to identify salient themes in the data.

RESULTS: VHT members possessed some knowledge and awareness of NCDs but identified a lack of knowledge about NCDs in the communities they served. They were enthusiastic about incorporating NCD care into their role and thought that they could serve as effective conduits of knowledge about NCDs to their communities if empowered through NCD education, the availability of proper reporting and referral tools, and visible collaborations with medical personnel. The lack of financial remuneration for their role did not emerge as a major barrier to providing NCD services.

CONCLUSIONS: Ugandan VHTs saw themselves as having the potential to play an important role in improving community awareness of NCDs as well as monitoring and referral of community members for NCD-related health issues. In order to accomplish this, they anticipated requiring context-specific and culturally adapted training as well as strong partnerships with facility-based medical personnel. A lack of financial incentivization was not identified to be a major barrier to such role expansion. Developing a role for VHTs in NCD prevention and management should be a key consideration as local and national NCD initiatives are developed.

KEYWORDS: community health workers, Village health teams, Non-communicable diseases, Uganda, Task-shifting, Community engagement, Health systems

107. From their own perspectives: a qualitative study exploring the perceptions of traditional health practitioners in northern Uganda regarding cancers, their causes and treatments

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ABSTRACT

BACKGROUND: Many cancer patients in the low- and middle-income countries seek care with traditional health practitioners (THPs) and use traditional and complementary medicines (T&CMs) for treatment of cancers. Little is known about the perceptions and influence of THPs on cancer patients' help-seeking and treatment decisions. We aimed to explore perceptions of THPs regarding cancers, cancer causes, and preferred treatments for cancers, in order to identify aspects that can inform interventions to improve cancer outcomes in Uganda.

METHODS: We conducted this ethnographic study in northern Uganda. In-depth interviews were conducted at the respondents' homes in quiet, open places, and in the absence of none-respondents. Interviews were audio-recorded and transcribed verbatim within a week of the interviews. Thematic qualitative analysis approaches were used to identify themes and subthemes.

RESULTS: We included 21 respondents in the study; most were male (16/21), married, with median age of 59 years (range 39 – 80). Most respondents perceived cancer as a new and challenging disease, while one respondent thought of cancer as a result of an imbalance within the body. Most confessed unawareness of the causes of cancers, but believed that cancer could result from the interplay of a number of factors including poor diets, ingestions of chemical agents, and assaults by the spirits of the dead. Some reported that cancers (especially of women's genital

tracts) were sexually transmitted, or caused by accumulation of dirt. Only few healers treated cancers. Most respondents reported that they referred cancer patients to biomedical facilities, sometimes after they have first used their medicines. Most respondents hoped that collaborative research with scientists could help them identify potent T&CMs that cure cancers.

CONCLUSION: Traditional health practitioners require training on cancer causes, symptoms and signs, and the necessity for prompt initiation of effective treatments in order to improve cancer outcomes. The predisposition of the majority of respondents to refer cancer patients to biomedical services sets a fertile ground for meaningful cooperation between biomedical and traditional health practices. The national health system in the low- and middle-income countries could formally recognize traditional health practices as a component of the national healthcare system, and encourage the two to practice side by side.

KEYWORDS: Traditional medicine, Complementary medicine, Therapy, Traditional health practitioners, Uganda, Cancer

108. Gastrointestinal malignancies at five regional referral hospitals in Uganda.

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ABSTRACT:

BACKGROUND: There is a paucity of published data regarding the trend and distribution of gastrointestinal malignancies in Uganda.

Objectives: To study the trend and distribution of gastrointestinal malignancies over a 10 year period at five regional referral hospitals in Uganda.

METHODS: Patient's charts with histologically confirmed diagnoses of gastrointestinal malignancies for the period 2002-2011 were identified. Case information, which included age at diagnosis, sex, and year of diagnosis, primary anatomic site of the tumour and hospitals attended, was retrospectively abstracted. Patient's clinical and demographic features were compared.

RESULTS: Oesophageal cancer was the most common (28.8%) followed by liver (25.8%), stomach (18.4%) and colorectal (14.3%). The mean age at diagnosis for all the cancers was not significantly different in both sexes 54.1, (SD16.1) versus 53.6, (SD 14.7). The highest mean annual number of cases of oesophageal and stomach cancers was 21.8, (SD 15.5) and 16.6, (SD 13.0) respectively from Mbarara Hospital; Lacor had the highest mean annual number of liver cancer cases (21, SD 17.7) followed by Mbale (11.4,SD 8.3). The mean annual number of colorectal cancers was highest in Mbale Hospital (10.3, SD 8.1) followed by Lacor (4.9, SD 3.9). The distribution of oesophageal, liver, stomach and colorectal cancers diagnosed per year across the five referral hospitals was different, P<0.001.

CONCLUSION: Oesophageal, liver, stomach and colorectal cancer remain the most common gastrointestinal malignancies and their rate is increasing in Uganda. There is a need for awareness, endoscopic and radiological assessment of symptomatic individuals and a need for screening of high index patients.

KEYWORDS: Gastrointestinal malignancies, Uganda Regional Referral Hospitals, 10-year trend.

109. Health facility assessments of cervical cancer prevention, early diagnosis, and treatment services in Gulu, Uganda

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ABSTRACT

BACKGROUND Cervical cancer is ranked globally in the top three cancers for women younger than 45 years, with the average age of death at 59 years of age. The highest burden of disease is in low-to-middle income countries (LMICs), responsible for 90% of the 311,000 cervical cancer deaths in 2018. This growing health disparity is due to the lack of quality screening and treatment programs, low human papillomavirus (HPV) vaccination rates, and high human immunodeficiency virus (HIV) co-infection rates. To address these gaps in care, we need to develop a clear understanding of the resources and capabilities of LMICs' health care facilities to provide prevention, early diagnosis through screening, and treatment for cervical cancer.

OBJECTIVES This project aimed to assess baseline available cervical cancer prevention, early diagnosis, and treatment resources, at facilities designated as Health Center III or above, in Gulu, Uganda. Methods We adapted the World Health Organization's Harmonized Health Facility Assessment for our own HFA and grading scale, deploying it in October 2021 for a cross-sectional analysis of 21 health facilities in Gulu.

RESULTS Grading of Health Center IIIs (n = 16) concluded that 37% had "excellent" or "good" resources available, and 63% of facilities had "poor" or "fair" resources available. Grading of Health Center IVs and above (n = 5) concluded that 60% of facilities had "excellent" or "good" resources, and 40% had "fair" resources available.

DISCUSSION The analysis of health facilities in Gulu demonstrated subpar resources available for cervical cancer prevention, early diagnosis, and treatment. Focused efforts are needed to expand health centers' resources and capability to address rising cervical cancer rates and related health disparities in LMICs. The development process for this project's HFA can be applied to global cervical cancer programming to determine gaps in resources and indicate areas to target improved health equity.

110. Health system factors influencing uptake of Human Papilloma Virus (HPV) vaccine among adolescent girls 9-15 years in Mbale District, Uganda

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ABSTRACT

BACKGROUND: Globally, cervical cancer is the fourth most common cancer in women with more than 85% of the burden in developing countries. In Uganda, cervical cancer has shown an increase of 1.8% per annum over the last 20 years. The availability of the Human Papillomavirus (HPV) vaccine presents an opportunity to prevent cervical cancer. Understanding how the health system influences uptake of the vaccine is critical to improve it. This study aimed to assess how the health systems is influencing uptake of HPV vaccine so as to inform policy for vaccine implementation and uptake in Mbale district, Eastern Uganda.

METHODS: We conducted a cross sectional study of 407 respondents, selected from 56 villages. Six key informant interviews were conducted with District Health Officials involved in implementation of the HPV vaccine. Quantitative data was analyzed using Stata V.13. Prevalence ratios with their confidence intervals were reported. Qualitative data was audio recorded, transcribed verbatim and analyzed using MAXQDA V.12, using the six steps of thematic analysis developed by Braun and Clarke.

RESULTS: Fifty six (14%) of 407 adolescents self-reported vaccine uptake. 182 (52.3%) of 348 reported lack of awareness about the HPV vaccine as the major reason for not having received it. Receiving vaccines from outreach clinics (p = 0.02), having many options from which to receive the vaccine (p = 0.02), getting an explanation on possible side-effects (p = 0.024), and receiving the vaccine alongside other services (p = 0.024) were positively associated with uptake. Key informants reported inconsistency in vaccine supply, inadequate training on HPV vaccine, and the lack of a clear target for HPV vaccine coverage as the factors that contribute to low uptake.

CONCLUSION: We recommend training of health workers to provide adequate information on HPV vaccine, raising awareness of the vaccine in markets, schools, and radio talk shows, and communicating the target to health workers. Uptake of the HPV vaccine was lower than the Ministry of Health target of 80%. We recommend training of health workers to clearly provide adequate information on HPV vaccine, increasing awareness about the vaccine to the adolescents and increasing access for girls in and out of school.

KEYWORDS: Uptake, Health system, Human papillomavirus vaccine, cervical cancer, Low income country, Adolescent girls

111. High-resolution disease maps for cancer control in low-resource settings: A spatial analysis of cervical cancer incidence in Kampala, Uganda

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ABSTRACT

BACKGROUND The global burden of cervical cancer is concentrated in low-and middle-income countries (LMICs), with the greatest burden in Africa. Targeting limited resources to populations with the greatest need to maximize impact is essential. The objectives of this study were to

geocode cervical cancer data from a population-based cancer registry in Kampala, Uganda, to create high-resolution disease maps for cervical cancer prevention and control planning, and to share lessons learned to optimize efforts in other low-resource settings.

METHODS Kampala Cancer Registry records for cervical cancer diagnoses between 2008 and 2015 were updated to include geographies of residence at diagnosis. Population data by age and sex for 2014 was obtained from the Uganda Bureau of Statistics. Indirectly age-standardized incidence ratios were calculated for sub-counties and estimated continuously across the study area using parish level data.

RESULTS Overall, among 1873 records, 89.6% included a valid sub-county and 89.2% included a valid parish name. Maps revealed specific areas of high cervical cancer incidence in the region, with significant variation within sub-counties, highlighting the importance of high-resolution spatial detail.

CONCLUSIONS Population-based cancer registry data and geospatial mapping can be used in low-resource settings to support cancer prevention and control efforts, and to create the potential for research examining geographic factors that influence cancer outcomes. It is essential to support LMIC cancer registries to maximize the benefits of limited cancer control resources

112. **Individual and intimate-partner factors associated with cervical cancer screening in Central Uganda** Alone IsabiryeID*

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ABSTRACT

Intimate-partner factors have a significant effect on the uptake of services that affect maternal reproductive health outcomes. There is limited research on intimate-partner factors associated with cervical cancer screening. Therefore, this article examines the intimatepartner correlates of cervical cancer screening among married women in Central Uganda. We conducted a cross-sectional survey in Wakiso and Nakasongola districts in Central Uganda. A total of 656 married women aged 25–49 participated in the study. Frequency distributions for descriptive statistics and Pearson chi-squared tests were done to identify the association of selected individual explanatory variables and intimate-partner factors with cervical cancer screening. Finally, multivariable complementary log-log regressions were used to estimate intimate-partner factors associated with women's cervical cancer screening uptake in Central Uganda. About 2 in 10 (20%) of the participants had been screened for cervical cancer. The following characteristics when examined separately in relation to the uptake of cervical cancer screening service and were significant: woman's age, education attainment, occupation, wealth index, parity, male partner's age, and male partner's emotional support. After adjusting for independent factors, cervical cancer screening was significantly associated with women who had; attained secondary (AOR = 2.19; CI 1.18–4.06) compared to none/ primary education, and received partner's emotional support (AOR = 30.06; CI 13.44–67.20) compared to those who did not receive partner's emotional support. In Central Uganda, cervical cancer screening among married women was significantly associated

with women's education, and partner's emotional support. These factors point to the importance of intimate-partner factors. Therefore, more effort should be directed at encouraging men's participation. This should be supplemented with empowering women through education to increase uptake of screening services.

113. Infection-related and lifestyle-related cancer burden in Kampala, Uganda: projection of the future cancer incidence up to 2030

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ABSTRACT

OBJECTIVES In Uganda, infection-related cancers have made the greatest contribution to cancer burden in the past; however, burden from lifestyle-related cancers has increased recently. Using the Kampala Cancer Registry data, we projected incidence of top five cancers, namely, Kaposi sarcoma (KS), cervical, breast and prostate cancer, and non-Hodgkin's lymphoma (NHL) in Uganda.

DESIGN Trend analysis of cancer registry data. Setting Kampala Cancer Registry, Uganda. Main outcome measure Cancer incidence data from 2001 to 2015 were used and projected to 2030. Population data were obtained from the Uganda Bureau of Statistics. Age-standardised incidence rates (ASRs) and their trends over the observed and projected period were calculated. Percentage change in cancer incidence was calculated to determine whether cancer incidence changes were attributable to cancer risk changes or population changes.

RESULTS It was projected that the incidence rates of KS and NHL continue to decrease by 22.6% and 37.3%, respectively. The ASR of KS was expected to decline from 29.6 per 100 000

population to 10.4, while ASR of NHL was expected to decrease from 7.6 to 3.2. In contrast, cervical, breast and prostate cancer incidence were projected to increase by 35.3%, 57.7% and 33.4%, respectively. The ASRs of cervical and breast were projected to increase up to 66.1 and 48.4 per 100 000 women. The ASR of prostate cancer was estimated to increase from 41.6 to 60.5 per 100 000 men. These changes were due to changes in risk factors and population growth.

CONCLUSION Our results suggest a rapid shift in the profile of common cancers in Uganda, reflecting a new trend emerging in low/middle-income countries. This change in cancer spectrum, from infection-related to lifestyle-related, yields another challenge to cancer control programmes in resource-limited countries. Forthcoming cancer control programmes should include a substantial focus on lifestyle-related cancers, while infectious disease control programmes should be maintained.

114. Integration of HIV and cervical cancer screening perceptions and preferences of communities in Uganda

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ABSTRACT

BACKGROUND: Despite the fact that HIV-positive women carry an increased risk of developing cervical cancer (CC) in comparison with HIV-negative women, HIV and CC screening programs in many developing countries have remained unintegrated. The objective of this study is to explore perceptions and preferences of community members in Uganda, including women, men, and village health teams, regarding the integration of HIV and CC screening services in a single-visit approach. Methods: This qualitative study was conducted in three districts in Uganda. Data were collected through focus group discussions with women and village health teams, and individual interviews with men. Respondents were purposely selected from among those linked to three CC clinics in the three districts. The content analysis method was used to analyze the data.

RESULTS: Three themes emerged from the data, namely appreciating the benefits of integration, worrying about the challenges of integration, and preferences for integration. The women endorsed the benefits. However, there were worries that integration would prolong the waiting time at the health facility and induce tiredness in both the healthcare providers and the women. There were also fears of being found positive for both HIV and CC and the consequences such as stress, self-isolation, and social conflicts. Participants, particularly the women, considered the challenges of screening integration to be manageable by, for example, taking a day off work to

visit the hospital, delegating house chores to other family members, or taking a packed lunch on visiting the hospital.

CONCLUSIONS: The community members in Uganda perceive the benefits of HIV and CC screening integration to outweigh the challenges, and expect that the challenges can be minimized or managed by the women. Therefore, when considering HIV and CC screening integration, it is important to not only recognize the benefits but also take into consideration the perceived challenges and preferences of community members. Keywords: HIV, Cervical cancer, Integration, Perceptions, Uganda, Screening

115. Involving men in cervical cancer prevention; a qualitative enquiry into male perspectives on screening and HPV vaccination in Mid-Western Uganda

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ABSTRACT

INTRODUCTION Evidence-based preventive strategies for cervical cancer in low-resource setting have been developed, but implementation is challenged, and uptake remains low. Women and girls experience social and economic barriers to attend screening and human papillomavirus (HPV) vaccination programs. Male support has been proven successful in uptake of other reproductive healthcare services. This qualitative study with focus groups aimed to understand the perspectives of males on cervical cancer screening and HPV vaccination in Western-Uganda This knowledge could be integrated into awareness activities to increase the attendance of cervical cancer screening and HPV vaccination programs.

MATERIALS AND METHODS Focus group discussions were conducted with men aged 25 to 60 years, who were married and/or had daughters, in Kagadi district, Mid-Western Uganda. All interviews were transcribed verbatim and thematically analyzed using an inductive approach.

RESULTS Eleven focus group discussions were conducted with 67 men. Men were willing to support their wives for screening and their daughters for HPV vaccination. Misperceptions such as family planning and poor personal hygiene leading to cervical cancer, and misperception of the preventative aspect of screening and vaccination were common. Women with cervical cancer

suffer from stigmatization and family problems due to loss of fertility, less marital sexual activity, domestic violence and decreased economic productivity.

CONCLUSIONS Ugandan men were willing to support cervical cancer prevention for their wives and daughters after being informed about cervical cancer. Limited knowledge among men about the risk factors and causes of cervical cancer, and about the preventative aspect of HPV vaccination and screening and their respective target groups, can limit uptake of both services. Screening and vaccination programs should actively involve men in creating awareness to increase uptake and acceptance of prevention.

116. Knowledge and practice of testicular self-examination among secondary students at Ntare School in Mbarara District, South western Uganda

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ABSTRACT

INTRODUCTION: testicular self-examination (TSE) is a screening technique that involves inspection of the appearance and palpation of the testes to detect any changes from the normal. Globally, the incidence of cancer has increased among which is testicular cancer (TC). Data on this topic among male secondary school adolescents in Uganda is limited therefore this study sought to assess the knowledge and practice of testicular self-examination among secondary students at Ntare School, Mbarara District in south western Uganda. The objective of the study is to assess the knowledge and practice of testicular self-examination among secondary students at Ntare School in Mbarara district, south western Uganda.

METHODS: we conducted a descriptive cross-sectional quantitative study among 165 students. Recruitment was made using simple random sampling technique. Respondents were selected among advanced level (A' level) male students studying at Ntare School in Mbarara district, south western Uganda. Structured self-administered questionnaires were used for data collection.

RESULTS: of the male students, 41.8% reported to have knowledge about TSE and only 23.6% practiced TSE. Most students rated their knowledge of TSE to be below 5 (from 1-10). Of the 39 students who admitted performing TSE, only 16 did so as recommended (monthly).

CONCLUSION: the knowledge and practice of TSE were low among adolescent secondary school boys in Ntare School in Mbarara District, south western Uganda. This suggests that these students are unaware of the value of this personal health promotion tool which is fundamental in early diagnosis of testicular cancer.

117. Knowledge of cervical cancer risk factors and symptoms among women in a refugee settlement: a cross-sectional study in northern Uganda

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ABSTRACT

BACKGROUND: There are limited data on awareness of cervical cancer risk factors and symptoms among refugee populations living in Uganda. In this study, we sought to determine the awareness and knowledge of cervical cancer risk factors and symptoms among women in Palabek refugee settlement, northern Uganda.

METHODS: We conducted a cross-sectional study. 815 women (aged 18–60 years) were randomly selected using multistage sampling in Palabek refugee settlement. Data were collected using pre-tested, structured questionnaires. Logistic regression models were used to determine

magnitudes of association between socio-demographic and health system factors, and knowledge on cervical cancer risk factors and symptoms.

RESULTS: The majority of participants (53%, n = 433) were young (18–29 years), married (68%, n = 553), and did not have formal employment (93%, n = 759). Less than half (40%, n = 325) had heard of cervical cancer. Of those who had heard, most recognized multiple male sexual partners, early onset of sexual intercourse and HPV infections as risk factors for cervical cancer (93%, n = 295; 89%, n = 283; and 86%, n = 271 respectively). Median knowledge score for risk factor recognition = 7 (IQR: 3–9). Median knowledge score for symptoms recognition = 7 (IQR: 1–10). Half of women (50%, n = 409) correctly recognized 7 to 11 symptoms of cervical cancer, with vaginal bleeding between menstrual periods, pelvic pain, and vaginal bleeding during/after sexual intercourse recognized by 58, 52 and 54% respectively. Single women (OR = 0.59 (95%CI: 0.38–0.94), and women that lived farther than 1 kilo meter from nearest health facility in South Sudan (OR = 0.36–0.49 (95%CI: 0.26–0.84) were less likely to be knowledgeable of symptoms of cervical cancer.

CONCLUSION: A significant proportion of women in Palabek refugee settlement had not heard about cervical cancer. Refugee health services providers could increase awareness of cervical cancer risk factors and symptoms through health education in order to promote risk reduction behaviours and guide women during symptoms appraisal. Single women and those who lived more than one kilo metre from nearest health facility in home country could be a priority group for awareness intervention in the settlement.

KEYWORDS: Refugee settlement, Awareness, Cervical cancer, Risk factors, Symptoms

118. Knowledge, attitudes and practices of Ugandan men regarding prostate cancer

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ABSTRACT

BACKGROUND: The incidence of prostate cancer in Uganda is one of the highest recorded in Africa. Prostate cancer is the most common cancer among men in Uganda. Objective: This study assessed the current knowledge, attitudes and practices of adult Ugandan men regarding prostate cancer.

SUBJECTS AND METHODS: We conducted a descriptive cross-sectional study using interviewer administered questionnaires and focus group discussions among 545 adult men aged 18–71 years, residing in Kampala, the capital of Uganda. Quantitative data were analyzed with SPSS version 20. Qualitative data were collected using audio recorded focus group discussions, transcribed and analyzed by clustering into themes.

RESULTS: The majority of the respondents (324, 59.4%) were aged 18–28 years, 295 (54.1%) had heard about prostate cancer and 250 (45.9%) had never heard about it. The commonest source of information about prostate cancer was the mass media. Only 12.5% of the respondents obtained information about prostate cancer from a health worker, 37.4% did not know the age group that prostate cancer affects and 50.2% could not identify any risk factor for prostate cancer. Participants in the focus group discussions confused prostate cancer with gonorrhea and had various misconceptions about the causes of prostate cancer. Only 10.3% of the respondents had good knowledge of the symptoms of prostate cancer and only 9% knew about serum prostate specific antigen (PSA) testing. Although 63.5% thought they were susceptible to prostate cancer, only 22.9% considered getting and only 3.5% had ever undergone a serum PSA test.

CONCLUSION: There was generally poor knowledge and several misconceptions regarding prostate cancer and screening in the study population. Community based health education programs about prostate cancer are greatly needed for this population

119. Knowledge, attitudes, and practice of cervical cancer prevention among health workers in rural health centres of Northern Uganda

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ABSTRACT

BACKGROUND: Cervical cancer is a leading cancer and cause of premature death among women in Uganda aged 15 to 44 years. To address the increasing burden of cervical cancer in Uganda, the Ministry of Health has adopted several strategies which include public education and advocacy. This study aims to assess knowledge, attitudes, and practice of cervical cancer prevention among health workers employed in rural health centres (HCs) III and IV in the Acholi sub-region of Northern Uganda. METHODS: We conducted a cross-sectional survey of nurses, midwives, and clinical officers between February and April 2019 using self-administered questionnaire. We sampled fifty-four HCs III and eight HCs IV. In Uganda, HCs are structured from HC I to HC IV and the health care package provided increases with increasing level of the HC. We used Epidata version 3.1 to create database and analysis was performed using Stata 16. Descriptive and logistic regression analyses were performed. Factors with p-values ≤ 0.05 were considered as predictors of outcome. Results: There were 286 participants who completed the questionnaire: Majority (188, 66%) were females. Nurses were 153 (54%). 141 (75%) female participants self-reported to have been screened for cervical cancer. 171 (60%) participants had adequate knowledge of cervical cancer. 187 (66%) participants had positive attitudes. Participants who indicated not to have ever received training on cervical cancer screening were less likely to have adequate knowledge (AOR = 0.39, 95% CI 0.21–0.71). Participants who indicated not to

have ever been trained on cervical cancer screening were less likely to have positive attitudes (AOR = 0.52, 95% CI 0.28–0.97).

CONCLUSION: Health workers from rural HCs in Uganda play crucial role in cervical cancer prevention as they can reach a wider community. Their significance in the prevention of cervical cancer points to the need for Uganda and other sub-Sahara Africa (SSA) countries to establish training to improve their knowledge, attitudes, and practical skills on cervical cancer screening. Furthermore, Uganda government should develop and disseminate guidelines for cervical cancer prevention to rural health workers to promote standardised cervical cancer prevention activities.

KEYWORDS: Health workers, Cervical cancer, Knowledge, Attitudes, Practice, Northern Uganda, Rural health workers

120. Knowledge, facilitators and barriers to cervical cancer screening among women in Uganda: a qualitative study

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ABSTRACT

OBJECTIVES To explore community knowledge, facilitators and barriers to cervical cancer screening among women in rural Uganda so as to generate data to inform interventions.

DESIGN A qualitative study using focus group discussions and key informant interviews. Setting Discussions and interviews carried out in the community within two districts in Eastern Uganda. Participants Ten (10) focus group discussions with 119 screening-eligible women aged between 25 and 49 years and 11 key informant interviews with healthcare providers and administrators.

RESULTS Study participants' knowledge about cervical cancer causes, signs and symptoms, testing methods and prevention was poor. Many participants attributed the cause of cervical cancer to use of contraception while key informants said that some believed it was due to witchcraft. Perceptions towards cervical cancer and screening were majorly positive with many participants stating that they were at risk of getting cervical cancer. The facilitators to accessing cervical cancer screening were: experiencing signs and symptoms of cervical cancer, family history of the disease and awareness of the disease/screening service. Lack of knowledge about cervical cancer and screening, health system challenges, fear of test outcome and consequences and financial constraints were barriers to cervical cancer screening.

CONCLUSION Whereas perceptions towards cervical cancer and screening were positive, knowledge of study participants on cervical cancer was poor. To improve cervical cancer screening, effort should be focused on reducing identified barriers and enhancing facilitators.

121. Level and factors associated with uptake of human papillomavirus infection vaccine among female adolescents in Lira District, Uganda

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ABSTRACT

INTRODUCTION: the principal burden of human papillomavirus (HPV) infections is cervical cancer. Cervical cancer ranks as the fourth most common malignancy in women affecting 500,000 women each year with an estimated 266,000 deaths. Uganda has one of the highest cervical cancer incidence rates globally with an age-standardised incidence rate per 100,000 of 47.5. This study assessed the level and the factors associated with uptake of HPV vaccine by female adolescents in Lira district, Uganda. METHODS: a mixed methods approach was employed using a survey among 460 female adolescents. We collected data using an interviewer-administered questionnaire. We interviewed five key informants and conducted ten in-depth interviews. Uptake was defined as completing three doses of the vaccine as per the recommended schedule. Prevalence risk ratios were used as measures of association and were computed using modified poison regression. Content analysis was used for qualitative data.

RESULTS: the mean age of the respondents was 13.97 (SD=1.24). Uptake was at 17.61% (81/460). The factors associated with uptake of HPV vaccine were: attaining ordinary level of education (aPR 1.48, 95%CI 1.11-1.97), positive attitude towards the vaccine (aPR 3.46, 95%CI 1.70-7.02), receiving vaccine doses from different vaccination sites (aPR 1.59, 95% CI 1.10-2.28) and encouragement from a health worker (aPR 1.55, 95%CI 1.15-2.11) or Village Health Team (aPR 3.47, 95%CI 1.50-8.02) to go for the vaccine. Other factors associated with uptake of HPV vaccine included; the existence of community outreaches (aPR 1.47, 95%CI 1.02-2.12), availability of vaccines at vaccination sites (aPR 4.84, 95%CI 2.90-8.08) and receiving full information about the vaccine at the vaccination site (aPR 1.90, 95%CI 1.26-2.85).

CONCLUSION: HPV vaccine uptake was low in Lira district. Efforts to improve uptake of HPV vaccine should focus on ensuring a consistent supply of vaccines at the vaccination sites, health education aimed at creating a positive attitude towards the vaccine, sensitisation of the adolescents about the vaccine and conducting community outreaches.

122. Looking at non-communicable diseases in Uganda through a local lens: an analysis using locally derived data

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ABSTRACT

The demographic and nutritional transitions taking place in Uganda, just as in other low- and middle-income countries (LMIC), are leading to accelerating growth of chronic, non-communicable diseases (NCDs). Though still sparse, locally derived data on NCDs in Uganda has increased greatly over the past five years and will soon be bolstered by the first nationally representative data set on NCDs. Using these available local data, we describe the landscape of the globally recognized major NCDs- cardiovascular disease, diabetes, cancer, and chronic respiratory disease- and closely examine what is known about other locally important chronic conditions. For example, mental health disorders, spawned by an extended civil war, and highly prevalent NCD risk factors such as excessive alcohol intake and road traffic accidents, warrant special attention in Uganda. Additionally, we explore public sector capacity to tackle NCDs, including Ministry of Health NCD financing and health facility and healthcare worker preparedness. Finally, we describe a number of promising initiatives that are addressing the Ugandan NCD epidemic. These include multi-sector partnerships focused on capacity building and health systems strengthening; a model civil society collaboration leading a regional coalition; and a novel alliance of parliamentarians lobbying for NCD policy. Lessons learned from the ongoing Ugandan experience will inform other LMIC, especially in sub-Saharan Africa, as they restructure their health systems to address the growing NCD epidemic.

Keywords: Non-communicable diseases, Chronic conditions, Low- and middle-income countries, Uganda, Health system financing, Multi-sector collaboration

123. Medicinal Plants Used in Traditional Management of Cancer in Uganda: A Review of Ethnobotanical Surveys, Phytochemistry, and Anticancer Studies

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ABSTRACT

The burden of neoplastic diseases is a significant global health challenge accounting for thousands of deaths. In Uganda, about 32,617 cancer cases were reported in 2018, accompanied by 21,829 deaths. In a view to identify some potential anticancer plant candidates for possible drug development, the current study was designed to compile the inventory of plants with reported anticancer activity used in rural Uganda and the evidences supporting their use in cancer therapy. An electronic survey in multidisciplinary databases revealed that 29 plant species belonging to 28 genera distributed among 24 families have been reported to be used in the management of cancer in Uganda. Anticancer plants were majorly from the families Bignoniaceae (7%), Caricaceae (7%),

Fabaceae (7%), Moraceae (7%), and Rutaceae (7%). Most species occur in the wild (52%), though some are cultivated (48%).)e growth habit of the plants is as trees (55%) or herbs (45%). Anticancer extracts are usually prepared from leaves (29%), bark (24%), roots (21%), and fruits (13%) through decoctions (53%), as food spices (23%) or pounded to produce ointments that are applied topically (10%). Prunus africana (Hook.f.) Kalkman, Opuntia species, Albizia coriaria (Welw. ex Oliver), Daucus carota L., Cyperus alatus (Nees) F. Muell., Markhamia lutea (Benth.) K. Schum., and Oxalis corniculata L. were the most frequently encountered species. As per global reports, Allium sativum L., Annona muricata L., Carica papaya L., Moringa oleifera Lam., Opuntia species, Prunus africana (Hook.f.) Kalkman, and Catharanthus roseus (L.) G. Don. are the most studied species, with the latter having vincristine and vinblastine anticancer drugs developed from it. Prostate, cervical, breast, and skin cancers are the top traditionally treated malignancies.)ere is a need to isolate and evaluate the anticancer potential of the bioactive compounds in the unstudied claimed plants, such as Cyperus alatus (Nees) F. Muell., Ficus dawei Hutch., Ficus natalensis Hochst., and Lovoa trichilioides Harms, and elucidate their mechanism of anticancer activity.

124. Mind the gaps: a qualitative study of perceptions of healthcare professionals on challenges and proposed remedies for cervical cancer help-seeking in post conflict northern Uganda

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ABSTRACT

BACKGROUND: There are limited data on perceptions of health professionals on challenges faced by cervical cancer patients seeking healthcare in the developing countries. We explored the views of operational level health professionals on perceived barriers to cervical screening and early help–seeking for symptomatic cervical cancer and the proposed remedies to the challenges.

METHODS: Fifteen key informant interviews were held with health professionals including medical directors, gynaecologists, medical officers, nurses and midwives in the gynaecology and obstetrics departments of two hospitals in northern Uganda during August 2012 to April 2013. We used content analysis techniques to analyze the data.

RESULTS: Health professionals' perceived barriers to cervical cancer care included: (i) patients and community related barriers e.g. lack of awareness on cervical cancer and available services, discomfort with exposure of women's genitals and perceived pain during pelvic examinations, and men's lack of emotional support to women (ii) individual healthcare professional's challenges e.g. inadequate knowledge and skills about cervical cancer management; (iii) health facility related

barriers e.g. long distances and lack of transport to cervical cancer screening and care centers, few gynaecologists and lack of pathologists, delayed histology results, lack of established palliative care services and inadequate pain control; and (iv) health policy challenges e.g. lack of specialized cancer treatment services, and lack of vaccination for human papilloma virus. Other challenges included increased number of cervical cancer patients and late stage of cervical cancer at presentations.

CONCLUSIONS: Operational level healthcare professionals in northern Uganda reported several practical challenges facing cervical cancer care that influence their decisions, management goals and practices. The challenges and proposed remedies can inform targeted interventions for early detection, management, and control of cervical cancer in Uganda.

KEYWORDS: Barriers to care, Cervical cancer, Northern Uganda, Healthcare professionals

125. Mobile cancer prevention and early detection outreach in Uganda: Partnering with communities toward bridging the cancer health disparities through "asset-based community development model"

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ABSTRACT

BACKGROUND: Communities in low-income countries are characterized by limited access to cancer prevention and early detection services, even for the commonest types of cancer. Limited resources for cancer control are one of the contributors to cancer health disparities. We explored the feasibility and benefit of conducting outreaches in partnership with local communities using the "asset-based community development (ABCD)" model.

METHODS: We analyzed the quarterly Uganda cancer institute (UCI) community outreach cancer health education and screening output reported secondary data without individual identifiers from July 2016 to June 2019 to compare the UCI-hospital-based and community outreach cancer awareness and screening services based on the ABCD model.

RESULTS: From July 2016 to June 2019, we worked with 107 local partners and conducted 151 outreaches. Of the total number of people who attended cancer health education sessions, 201 568 (77.9%) were reached through outreaches. Ninety-two (95%) cancer awareness TVs and radio talk-shows conducted were sponsored by local partners. Of the total people screened; 22 795 (63.0%) cervical, 22 014 (64.4%) breast, and 4904 (38.7%) prostate screening were reached through community outreach model. The screen-positive rates were higher in hospital-based screening except for Prostate screening; cervical, 8.8%, breast, 8.4%, prostate, 7.1% than

in outreaches; cervical, 3.2%, breast, 2.2%, prostate, 8.2%. Of the screened positive clients who were eligible for pre-cancer treatment like cryotherapy for treatment of pre-cervical cancer lesions, thousands-folds monetary value and productive life saved relative to the market cost of cancer treatment and survival rate in Uganda. When the total number of clients screened for cervical, breast, and prostate cancer are subjected to the incremental cost of specific screening, a greater portion (98.7%) of the outreach cost was absorbed through community partnership.

CONCLUSIONS: Outreaching and working in collaboration with communities as partners through asset-based community development model are feasible and help in cost-sharing and leverage for scarce resources to promote primary prevention and early detection of cancer. This could contribute to bridging the cancer health disparities in the target populations.

KEYWORDS cancer health disparity, cancer screening, community partnership, low-income countries, mobile cancer clinic

126. Mobile cancer preventive and early detection clinic in Uganda: Working with local communities as partners towards bridging the cancer health disparity

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ABSTRACT

BACKGROUND As high-income countries experience over-diagnosis of cancer diseases, the low-income countries are characterized by under-diagnosis or no diagnosis of even the most prevalent cancers. The Comprehensive Community Cancer Program (CCCP) is a community health unit of the Uganda Cancer Institute (UCI) that coordinates and implements primary prevention of cancer and early detection in Uganda. CCCP provides cancer information and screening services at UCI, in rural communities through mobile outreaches, mass media cancer awareness and training health workers on cancer prevention and early detection. We explored the feasibility and benefit of conducting outreaches in partnership with local communities.

METHODS We analyzed the quarterly UCI-CCCP cancer health education and screening output report data form July 2016 to June 2019 to compare UCI-hospital-based and community outreach cancer awareness and screening services.

RESULTS From July 2016 to June 2019, we worked with 107 local partners and conducted 151 outreaches. Out of the total number of people who attended cancer health education sessions, 77.9% were reached through outreaches. Ninety-two (95%) cancer awareness TVs and radio talk-shows conducted were sponsored by local partners. Out of the total people screened; 63.0% cervical, 64.4% breast and 38.7% prostate screening clients were screened through outreaches. The screen-positive rates were higher in hospital-based screening except for Prostate screening;

cervical, 8.8%, breast, 8.4% prostate, 7.1 than in outreaches; cervical, 3.2%, breast, 2.2%, prostate, 8.2%). Out of the screened positive clients who were eligible for pre-cancer treatment like cryotherapy for treatment of pre-cervical cancer lesions, thousands-folds monetary value and productive life saved relative to the market cost of cancer treatment and survival rate in Uganda. When the total number of clients screened for cervical, breast and prostate cancer are subjected to the incremental cost of specific screening, a greater portion (98.7%) of the outreach cost was absorbed through community partnership.

CONCLUSIONS Outreaching and working in collaboration with communities as partners help in cost-sharing and leverage for scarce resources to promote primary prevention and early detection of cancer. This contributes to bridging cancer health disparity in the population.

127. Modeling the Impact of Voluntary Medical Male Circumcision on Cervical Cancer in Uganda

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ABSTRACT

BACKGROUND: In addition to providing millions of men with lifelong lower risk for HIV infection, voluntary medical male circumcision (VMMC) also provides female partners with health benefits including decreased risk for human papillomavirus (HPV) and resultant cervical cancer (CC). Setting: We modelled potential impacts of VMMC on CC incidence and mortality in Uganda as an additional benefit beyond HIV prevention.

METHODS: HPV and CC outcomes were modelled using the CC model from the Spectrum policy tool suite, calibrated for Uganda, to estimate HPV infection incidence and progression to CC, using a 50- year (2018–2067) time horizon. 2016 Demographic Health Survey data provided baseline VMMC coverage. The baseline (no VMMC scale-up beyond current coverage, minimal HPV vaccination coverage) was compared with multiple scenarios to assess the varying impact of VMMC according to different implementations of HPV vaccination and HPV screening programs. Results: Without further intervention, annual CC incidence was projected to rise from 16.9 to 31.2 per 100,000 women in 2067. VMMC scale-up alone decreased 2067 annual CC

incidence to 25.3, averting 13,000 deaths between 2018 and 2067. With rapidlyachieved 90% HPV9 vaccination coverage for adolescent girls and young women, 2067 incidence dropped below 10 per 100,000 with or without a VMMC program. With 45% vaccine coverage, the addition of VMMC scale up decreased incidence by 2.9 per 100,000 and averted 8000 additional deaths. Similarly, with HPV screen-and treat without vaccination, the addition of VMMC scale up decreased incidence by 5.1 per 100,000 and averted 10,000 additional deaths.

CONCLUSIONS: Planned VMMC scale-up to 90% coverage from current levels could prevent a substantial number of CC cases and deaths in the absence of rapid scale-up of HPV vaccination to 90% coverage.

KEYWORDS: voluntary medical male circumcision, human papillomavirus, cervical cancer, STI, modeling, HIV prevention

128. Opportunities and challenges for introducing HPV testing for cervical cancer screening in sub-Saharan Africa

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ABSTRACT

To protect women against cervical cancer, the World Health Organization recommends that women aged 30 to 49 years be screened with tests that detect human papillomavirus (HPV). If the countries that have the greatest burden of this disease—especially those in sub-Saharan Africa—are not to be left behind, we must understand the challenges they face and identify measures that can help them take full advantage now of innovations that are transforming screening services in wealthier countries. We reviewed policy documents and published literature related to Kenya, Tanzania, and Uganda, and met with key personnel from government and non-governmental organizations. National policy makers understand the value of HPV testing in terms of its superior sensitivity and the programmatic advantages that could result from using self-collected samples. However, while these countries have national cervical cancer prevention strategies, and some have national departments or units for cervical cancer prevention, screening is rare, funding scarce, and quality low. Age guidelines are not strictly followed, with scarce resources being used to screen many women younger than the recommended ages. Published evidence of the benefits of HPV testing—including performance, safety, and cost-effectiveness—must be provided to ministry of health leaders, along with information on anticipated costs for training personnel, purchasing supplies, providing facility space, and maintaining test kits. Despite the obstacles, a joint effort on the part of global and national stakeholders to introduce molecular screening methods can bring better protection to the women who need it most.

129. Association between HIV Infection and Cancer Stage at Presentation at the Uganda Cancer Institute

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ABSTRACT

PURPOSE The HIV epidemic has contributed to the increasing incidence of cancer in sub-Saharan Africa, where most patients with cancer present at an advanced stage. However, improved access to HIV care and treatment centers in sub-Saharan Africa may facilitate earlier diagnosis of cancer among patients who are HIV positive. To test this hypothesis, we characterized the stage of cancer and evaluated the factors associated with advanced stage at presentation among patients in Uganda.

METHODS We conducted a retrospective analysis of adult patients with any of four specific cancers who presented for care in Kampala, Uganda, between 2003 and 2010. Demographic, clinical, and laboratory data were abstracted from the medical record, together with the outcome measure of advanced stage of disease (clinical stage III or IV). We identified measures for inclusion in a multivariate logistic regression model.

RESULTS We analyzed 731 patients with both AIDS-defining cancers (cervical [43.1%], and non-Hodgkin lymphoma [18.3%]), and non–AIDS-defining cancers (breast [30.0%] and Hodgkin lymphoma [8.6%]). Nearly 80% of all patients presented at an advanced stage and 37% had HIV infection. More than 90% of patients were symptomatic and the median duration of symptoms before presentation was 5 months. In the multivariate model, HIV-positive patients were less likely to present at an advanced stage as were patients with higher hemoglobin and fewer symptoms.

CONCLUSION Patients with limited access to primary care may present with advanced cancer because of a delay in diagnosis. However, patients with HIV now have better access to clinical care. Use of this growing infrastructure to increase cancer screening and referral is promising and deserves continued support, because the prognosis of HIV-positive patients with advanced cancer is characterized by poor survival globally.

130. Perceived barriers to early detection of breast cancer in Wakiso District, Uganda using a socioecological approach

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ABSTRACT

BACKGROUND: Early detection of breast cancer is known to improve its prognosis. However, women in most low and middle income countries, including Uganda, do not detect it early hence present at an advanced stage. This study investigated the perceived barriers to early detection of breast cancer in Wakiso district, Uganda using a multilevel approach focused through a socioecological framework.

METHODS: Using qualitative methods, participants were purposively selected to take part in the study. 5 semi-structured interviews were conducted among the community members while two focus groups were conducted amongst women's group and community health workers (CHWs) in Ssisa sub county, Wakiso district. In addition, 7 key informant interviews with health professionals, policy makers and public health researchers were carried out.

RESULTS: Findings from the study revealed that barriers to early detection of breast cancer are multifaceted and complex, cutting across individual, interpersonal, organizational, community and policy barriers. The major themes that emerged from the study included: knowledge, attitudes, beliefs and practices (KABP); health system and policy constraints; and structural barriers. Prominent barriers associated with KABP were low knowledge, apathy, fear and poor health seeking behaviours. Barriers within the health systems and policy arenas were mostly centred around competing health care burdens within the country, lack of a cancer policy and weak primary health care capacity in Wakiso district. Distance, poverty and limited access to media were identified as the most prominent structural barriers.

CONCLUSION: Barriers to early detection of breast cancer are complex and go beyond individual behaviours. These barriers interact across multiple levels of influence such as organizational, community and policy. The findings of this study could provide opportunities for investment in multi-level interventions.

KEYWORDS: Breast cancer, Barriers, Early detection, Socioecological framework, Uganda

131. Perceptions of human papillomavirus vaccination of adolescent schoolgirls in western Uganda and their implications for acceptability of HPV vaccination: a qualitative study

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ABSTRACT

BACKGROUND: Human papillomavirus (HPV) vaccination has been perceived in diverse ways some of which encourage its uptake while others could potentially deter its acceptability. This study explored community member's perceptions about HPV vaccination in Ibanda district and the implications of the perceptions for acceptability of HPV vaccination. The study was conducted following initial vaccination of adolescent schoolgirls in the district between 2008 and 2011.

METHODS: This qualitative study employed focus group discussions (FGDs) and key informant interviews (KIIs). FGDs were conducted with schoolgirls and parents/guardians and KIIs were conducted with school teachers, health workers and community leaders. Transcripts from the FGDs and KIIs were coded and analyzed thematically using ATLAS.ti (v. 6).

RESULTS: The HPV vaccination was understood to safely prevent cervical cancer, which was perceived to be a severe incurable disease. Vaccinations were perceived as protection against diseases like measles and polio that were known to kill children. These were major motivations for girls' and parents' acceptance of HPV vaccination. Parents' increased awareness that HPV is sexually transmitted encouraged their support for vaccination of their adolescent daughters against HPV. There were reports however of some initial fears and misconceptions about HPV vaccination especially during its introduction. These initially discouraged some parents and girls but over the years with no major side effects reported, girls reported that they were willing to recommend the vaccination to others and parents also reported their willingness to get their daughters vaccinated without fear. Health workers and teachers interviewed however explained that, some concerns stilled lingered in the communities.

CONCLUSIONS: The perceived benefits and safety of HPV vaccination enhanced girls' and parents' acceptability of HPV vaccination. The initial rumors, fears and concerns about HPV vaccination that reportedly discouraged some girls and parents, seemed to have waned with time giving way to more favourable perceptions regarding HPV vaccination although the study still found that a few concerns still lingered on and these have implications for HPV vaccination acceptability.

KEYWORDS: Perceptions about HPV vaccination, Adolescent schoolgirls, Acceptability, Uganda, Qualitative study

132. Perceptions of key informants on the provision of cervical cancer prevention and control programme in Uganda: implication for cervical cancer policy

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ABSTRACT

BACKGROUND: Uganda has one of the highest burdens of cervical cancer globally. In 2010 the Ugandan Ministry of Health launched the Strategic Plan for Cervical Cancer Prevention and Control with the hope of developing cervical cancer policy in Uganda. This study explored the beliefs of senior key informants in Uganda about cervical cancer prevention, the control programme, and the relevance of cervical cancer policy.

METHODS: We conducted 15 key informant interviews with participants from six organisations across Northern and Central Uganda. Participants were drawn from district local government health departments, St. Mary's Hospital Lacor, Uganda Nurses and Midwifery Council, non-governmental organisations (NGOs) and Ministry of Health in Kampala, Uganda. The interview recordings were transcribed and analysed using thematic analysis.

RESULTS: Seven themes emerged relating to the cervical cancer prevention and control programmes in Uganda: (1) policy frameworks for cervical cancer, (2) operationalising cervical cancer prevention and control, (3) financial allocation and alignment, (4) human resources and capability, (5) essential supplies and vaccines, (6) administrative data and resource distribution, and (7) cervical cancer services.

CONCLUSIONS: The key informants perceive that the lack of a cervical cancer policy in Uganda is hindering cervical cancer prevention and control programmes. Therefore, the Ministry of Health and stakeholders need to work together in coming up with an effective policy framework that will accelerate efforts towards cervical cancer prevention and control in Uganda.

KEYWORDS: Key informants, Perceptions, Cervical cancer, Policy, Uganda

133. Predictors of cervical cancer screening uptake in two districts of Central Uganda

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Abstract Uganda's cervical cancer age standardized incidence rate is four times the global estimate. Although Uganda's ministry of health recommends screening for women aged 25–49 years, the screening remains low even in the most developed region (Central Uganda) of the country. This study examined the demographic, social, and economic predictors of cervical cancer

screening in Central Uganda with the aim of informing targeted interventions to improve screening. The cross-sectional survey was conducted in Wakiso and Nakasongola districts in Central Uganda. A total of 845 women age 25–49 years participated in the study. Data were analyzed at bivariate and multivariate levels to examine the predictors of CC (cervical cancer) screening. Only 1 in 5 women (20.6%) had ever screened for cervical cancer. Our multivariate logistic regression model indicated that wealth index, source of information, and knowledge about CC and CC screening were significantly associated with cervical cancer screening. The odds of cervical cancer screening were higher among rich women compared with poor women [AOR = 1.93 (95%CI: 1.06–3.42), p = 0.031)], receiving information from health providers compared with radios [AOR = 4.14 (95%CI: 2.65–6.48), p<0.001]. Overall cervical cancer screening uptake in central Uganda was found to be low. The findings of the study indicate that women from a wealthy background, who had been sensitized by health workers and with high knowledge about CC and CC screening had higher odds of having ever screened compared with their counterparts. Efforts to increase uptake of screening must address disparities in access to resources and knowledge.

134. Prevalence, trends and distribution of lifestyle cancer risk factors in Uganda: a 20-year systematic review

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ABSTRACT

BACKGROUND Cancer is becoming an important public health problem in Uganda. Cancer control requires surveillance of lifestyle risk factors to inform targeted interventions. However, only one national Non-Communicable Disease (NCD) risk factor survey has been conducted in Uganda. This review assessed the prevalence, trends and distribution of lifestyle risk factors in Uganda.

METHODS The review identified studies up to January 2019 by searching Medline, Embase, CINAL and Cochrane databases. Further literature was identified from relevant websites and journals; scanning reference lists of relevant articles; and citation searching using Google Scholar. To be eligible, studies had to have been conducted in Uganda, and report prevalence estimates for at least one lifestyle cancer risk factor. Narrative and systematic synthesis was used to analyse the data.

RESULTS Twenty-four studies were included in the review. Overall, unhealthy diet (88%) was the most prevalent lifestyle risk factor for both males and females. This was followed by harmful use of alcohol (range of 14.3% to 26%) for men, and being overweight (range of 9% to 24%) for women. Tobacco use (range of 0.8% to 10.1%) and physical inactivity (range of 3.7% to 4.9%)

were shown to be relatively less prevalent in Uganda. Tobacco use and harmful use of alcohol were more common in males and more prevalent in Northern region, while being overweight (BMI>25 kg/ m2) and physical inactivity were more common in females and more prevalent in Central region. Tobacco use was more prevalent among the rural populations compared to urban, while physical inactivity and being overweight were more common in urban than in rural settings. Tobacco use has decreased overtime, while being overweight increased in all regions and for both sexes.

CONCLUSION There is limited data about lifestyle risk factors in Uganda. Apart from tobacco use, other lifestyle risk factors seem to be increasing and there is variation in the prevalence of lifestyle risk factors among the different populations in Uganda. Prevention of lifestyle cancer risk factors requires targeted interventions and a multi-sectoral approach. Most importantly, improving the availability, measurement and comparability of cancer risk factor data should be a top priority for future research in Uganda and other low-resource settings.

KEYWORDS Cancer, Lifestyle, Risk-factors, Prevalence, Trends, Surveillance, Control

135. Provision of cervical cancer prevention services in Northern Uganda: a survey of health workers from rural health centres

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ABSTRACT

BACKGROUND: Cervical cancer is the leading cancer among Ugandan women, contributing to 40 % of all cancer cases recorded in the cancer registry. Having identified the substantial impact of cervical cancer among Ugandan women, the Ministry of Health in 2010 launched a Strategic Plan for Cervical Cancer prevention and control. This study was conducted to determine if health workers working in rural health centres (HCs) III and IV in Northern Uganda provide cervical cancer screening services as recommended in the Strategic Plan.

METHODS: A cross-sectional survey using a structured questionnaire was conducted among nurses, midwives and clinical officers working in rural HC III and IV in Northern Uganda. Data were entered in Epidata 3.1 and analysed using Stata 16 statistical software. Univariate, bivariate, and multivariate analyses were performed. Any factor with pvalue ≤ 0.05 was considered a significant predictor of outcome.

RESULTS: We surveyed 286 health workers. Fifty-one (18 %) health workers were screening women for cervical cancer. Fifty-eight (21 %) health workers have guideline for cervical cancer screening in their HCs, 93 (33 %) participants were trained to screen women for cervical cancer.

Two hundred sixty-two (92 %) participants provided HPV vaccination. Two hundred forty-six (87 %) participants were conducting health education about cervical cancer in their HCs. Factors associated with screening women for cervical cancer include: being a staff member from HCs III (AOR = 0.30, 95 % CI 0.13–0.68, p = 0.00), being staff of HCs that have organization to support cervical cancer screening services (AOR = 4.38, 95 % CI 1.99–9.63, p-=0.00), being a health worker who had been trained to screen for cervical cancer (AOR = 2.21, 95 % CI 1.00–4.90, p = 0.05) and staff from HCs that has guideline for cervical cancer screening (AOR = 2.89, 95 % CI 1.22–6.86, p = 0.02).

CONCLUSIONS: This study shows an overall structural problem related to the delivery of cervical cancer screening services in HC III and IV in Northern Uganda which the Strategic Plan has not addressed. These structural problems need urgent attention if the Uganda government and other sub-Saharan African (SSA) countries are to achieve the World Health Organization (WHO) 90–70–90 targets by 2030 to be on track for cervical cancer elimination.

KEYWORDS: Cervical cancer, Health worker, Prevention services, Northern Uganda

136. Results of a community-based cervical cancer screening pilot project using human papillomavirus self-sampling in Kampala, Uganda

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ABSTRACT

OBJECTIVE: To examine the feasibility of a community-based screening program using human papillomavirus (HPV) self-sampling in a low-income country with a high burden of cervical cancer. METHODS: A pilot study was conducted among 205 women aged 30–69 years in the Kisenyi district of Kampala, Uganda, from September 5 to October 30, 2011. Women were invited to provide a self-collected specimen for high-risk oncogenic HPV testing by outreach workers at their homes and places of gathering in their community. Specimens were tested for HPV, Neisseria gonorrhaeae and Chlamydia trachomatis. Women who tested positive for HPV were referred for colposcopy, biopsy, and treatment at a regional hospital.

RESULTS: Of the 199 women who provided a specimen, 35 (17.6%) tested positive for HPV. The outreach workers were able to provide results to 30 women (85.7%). In all, 26 (74.3%) of the

women infected with HPV attended their colposcopy appointments and 4 (11.4%) women were diagnosed with grade 3 cervical intraepithelial neoplasia.

CONCLUSION: Self-collection of samples for community-based HPV testing was an acceptable option; most women who tested positive attended for definitive treatment. Self-sampling could potentially allow for effective recruitment to screening programs in limited-resource settings.

137. Role of Family Obligation Stress on Ugandan Women's Participation in Preventive Breast Health

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ABSTRACT

BACKGROUND. The purpose of this study is to determine the role of family obligation stress on Ugandan women's participation in preventive breast health through the receipt of breast cancer education and health check-ups.

MATERIALS AND METHODS. A validated survey was conducted on a community sample of Ugandan women, providing a multi-item scale to assess preventive breast-health-seeking behaviors and measure family obligation stress (FO; range 6–18). Univariate and multivariate linear regression was used to assess associations between sociodemographic factors and FO. Univariate and multivariate linear regression (used in conjunction with the robust sandwich estimator for standard errors) and probability differences (PDs) were used to evaluate associations between preventive breast-health-seeking behaviors, sociodemographic factors, and FO.

RESULTS. A total of 401 Ugandan women ages 25–74 participated in the survey. Most had three or more children in the home (60%) and were employed full time (69%). Higher FO was associated

with increasing number of children and/or adults in the household ($p < .05$), full-time employment ($p < .001$), and being single ($p = .003$). Women with higher FO were less likely to participate in breast cancer education (PD = −0.02 per 1-point increase, $p = .008$) and preventive health check-ups (PD = −0.02, $p = .018$), associations that persisted on multivariate analysis controlling for sociodemographic factors.

CONCLUSION. Ugandan women with high FO are less likely to participate in preventive breast cancer detection efforts including breast cancer education and preventive health check-ups. Special efforts should be made to reach women with elevated FO, because it may be a risk factor for late-stage presentation among women who develop breast cancer.

138. Self-collection based HPV testing for cervical cancer screening among women living with HIV in Uganda: a descriptive analysis of knowledge, intentions to screen and factors associated with HPV positivity

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ABSTRACT

BACKGROUND: Women living with HIV (WHIV) are disproportionately impacted by cervical dysplasia and cancer. The burden is greatest in low-income countries where limited or no access to screening exists. The goal of this study was to describe knowledge and intentions of WHIV towards HPV self-collection for cervical cancer screening, and to report on factors related to HPV positivity among women who participated in testing.

METHODS: A validated survey was administered to 87 HIV positive women attending the Kisenyi Health Unit aged 30–69 years old, and data was abstracted from chart review. At a later date, self-collection based HPV testing was offered to all women. Specimens were tested for high risk HPV genotypes, and women were contacted with results and referred for care. Descriptive statistics, Chi Square and Fischer-exact statistical tests were performed.

RESULTS: The vast majority of WHIV (98.9%) women did not think it necessary to be screened for cervical cancer and the majority of women had never heard of HPV (96.4%). However, almost all WHIV found self-collection for cervical cancer screening to be acceptable. Of the 87 WHIV

offered self-collection, 40 women agreed to provide a sample at the HIV clinic. Among women tested, 45% were oncogenic HPV positive, where HPV 16 or 18 positivity was 15% overall.

CONCLUSIONS: In this group of WHIV engaged in HIV care, there was a high prevalence of oncogenic HPV, a large proportion of which were HPV genotypes 16 or 18, in addition to low knowledge of HPV and cervical cancer screening. Improved education and cervical cancer screening for WHIV are sorely needed; self-collection based screening has the potential to be integrated with routine HIV care in this setting.

KEYWORDS: Human papillomavirus, HIV, Cervical cancer, Self-collection, Screening

139. Social network-based group intervention to promote uptake of cervical cancer screening in Uganda: study protocol for a pilot randomized controlled trial

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ABSTRACT

INTRODUCTION: Cervical cancer (CC) is the most common cancer and accounts for one quarter of all cancer-related deaths among women in Uganda, where lifetime CC screening is estimated to be as low as 5%. This study will evaluate the feasibility, acceptability, and preliminary efficacy of a social network-based group intervention designed to empower women who have received CC screening to encourage women in their social network to also screen.

METHODS: Forty adult women (index participants) who have recently screened for CC will be recruited, 20 of whom will be randomly assigned to take part in the intervention and 20 to the wait-list control. Each index participant will be asked to recruit up to three female social network members (i.e., alters; maximum total = 120 alters) who have not screened for CC to participate in the study. Assessments (survey and chart abstraction) will be administered at base- line and month 6 to index and alter participants. The primary outcome is CC screening among participating alters, with a secondary outcome being engagement in CC prevention advocacy among index

participants. Repeated measure multivariable regression analyses will be conducted to compare outcomes between the intervention and control arms.

DISCUSSION: If successful, this intervention model has the potential not only to impact uptake of CC screening and treatment but also to establish a paradigm that can be applied to other health conditions.

Keywords: Cervical cancer, Screening uptake, Social-network intervention

140. Socio-culturally mediated factors and lower level of education are the main influencers of functional cervical cancer literacy among women in Mayuge, Eastern Uganda

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ABSTRACT

BACKGROUND: Health literacy (HL) is the degree of an individual's knowledge and capacity to seek, understand and use health information to make decisions on one's health, yet information on the functional level of cervical cancer literacy in Mayuge and Uganda as a whole is lacking. We, therefore, assessed the level of functional cervical cancer literacy among women aged 18–65 years in Mayuge district in five functional HL domains; prior knowledge, oral, print, numeracy and e-health. Understanding the factors associated with cervical cancer literacy is also pertinent to cervical health communication programming, however, no study has documented this in Uganda and particularly in Mayuge. Mayuge is a rural population based cancer registry and one of the sites for piloting cancer control interventions in Uganda. We also assessed the factors associated with cervical cancer literacy and awareness about currently available cervical cancer preventive services.

METHODS: The study protocol was approved by the Uganda Cancer Institute research and ethic committee (UCI-REC). In August 2017, we assessed five HL domains; cervical cancer knowledge, print literacy, oral literacy using audio-clip, numeral literacy and perceived e-HL among 400 women at household levels. Correct response was scored 1 and incorrect response was scored 0 to generate the mean percentage score for each domain. The mean scores were classified as limited, basic and proficient bands based on the McCormack HL cut-offs scale for knowledge, print, oral and e-health and Weiss cut-offs in the newest vital signs (NVS) for numeracy. We used the cervical cancer literacy scores to explore the effect of selected study variables on cervical cancer literacy. We also conducted five focus group discussions (FGDs) based on the theoretical constructs of the PEN-3 model.

RESULTS: The majority (96.8%) of the participants demonstrated a limited level of cervical cancer literacy with a mean score of 42%. Women who had completed a primary level of education or lower (OR = 3.91; p = 0.044) were more likely to have limited cervical cancer literacy. The qualitative data indicated that the women had limited cervical cancer literacy coupled with limited decisional, social and financial support from their male partners with overall low locus of control. Most (92.3%) of the women were not aware of the available cervical cancer services and had no intention to screen (52.5%).

CONCLUSIONS: The women in Mayuge in general have limited cervical cancer literacy except oral HL domain. Limited cervical cancer literacy was highest among women with lower level of education and overall literacy seemed to be influenced on the higher side by socio-cultural constructs characterised by limited decisional, social and personal resources among the women with overall low locus of control. The Mayuge women further demonstrated scant knowledge about the available health services in their district and low intention to screen. Multi-strategy cervical health empowerment programme is needed to improve cervical HL using orally disseminated messages.

KEYWORDS: cervical cancer, functional health literacy, print literacy, oral literacy, numeral literacy, e-health literacy, perceptions, enablers, nurturers, existential beliefs

141. Task-shifting for point-of-care cervical cancer prevention in low-and middle-income countries: a case study from Uganda

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ABSTRACT

Cervical cancer remains the leading cause of female cancer deaths in sub-Saharan Africa. This is despite cervical cancer being both preventable and curable if detected early and treated adequately. This paper reports on a series of action research 'cycles' designed to progressively integrate a comprehensive, task shifted, point-of-care, prevention program in a community-based public health facility in Uganda. The work has been undertaken through a UK-Ugandan Health Partnership coordinated by Knowledge for Change, a UK-registered Charity. The intervention demonstrates the effectiveness of task-shifting responsibility to Community Health Workers

combined with the use of Geographic Information Systems to strategically guide health awareness-raising and the deployment of medical devices supporting respectful and sustainable point-of-care screen-and treat services. The integration of this with public human immunodeficiency virus services demonstrates the ability to engage hard-to-reach 'key populations' at greatest risk of cervical cancer. The findings also demonstrate the impact of external influences including the Results Based Financing approach, adopted by many foreign Non-Governmental Organizations. The model presents opportunities for policy transfer to other areas of health promotion and prevention with important lessons for international Health partnership engagement. The paper concludes by outlining plans for a subsequent action-research cycle embracing and evaluating the potential of Artificial Intelligence to enhance service efficacy.

KEYWORDS cervical cancer, prevention, task-shifting, frugal innovation, geographic information systems, results based finance

142. The Cost Effectiveness of Treating Burkitt Lymphoma in Uganda

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ABSTRACT

BACKGROUND: Perceptions of high cost and resource intensity remain political barriers to the prioritization of childhood cancer treatment programs in many low- and middle-income countries (LMICs). Little knowledge exists of the actual cost and costeffectiveness of such programs. To improve outcomes for children with Burkitt lymphoma (BL), the most common childhood cancer in Africa, the Uganda Cancer Institute implemented a comprehensive BL treatment program in 2012. We undertook an economic evaluation of the program to ascertain the cost-effectiveness of BL therapy in a specific LIC setting.

METHODS: We compared the treatment of BL to usual care in a cohort of 122 patients treated between 2012 and 2014. Costs included variable, fixed, and family costs. Our primary measure of effectiveness was overall survival (OS). Patient outcomes were determined through prospective capture and retrospective chart abstraction. The cost per disability-adjusted life-year (DALY) averted was calculated using the World Health Organization's Choosing Interventions That Are Cost-Effective (WHO-CHOICE) methodology.

RESULTS: The 2-year OS with treatment was 55% (95% CI, 45% to 64%). The cost per DALY averted in the treatment group was US$97 (Int$301). Cumulative estimate of national DALYs averted through treatment was 8607 years, and the total national annual cost of treatment was US$834,879 (Int$2,590,845). The cost of BL treatment fell well within WHO-CHOICE cost-effectiveness thresholds. The ratio of cost per DALY averted to per capita gross domestic product was 0.14, reflecting a very cost-effective intervention.

CONCLUSION: This study demonstrates that treating BL with locally tailored protocols is very cost-effective by international standards. Studies of this kind will furnish crucial evidence to help policymakers prioritize the allocation of LMIC health system resources among noncommunicable diseases, including childhood cancer.

KEYWORDS: childhood cancer, lymphoma, cost effectiveness, health policy, global health

143. The effect of knowledge on uptake of breast cancer prevention modalities among women in Kyadondo County, Uganda

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ABSTRACT

BACKGROUND: Breast cancer, the third most frequent cancer of women is preventable through knowledge on breast self-examination. Of the 44% of women diagnosed with breast cancer at the Uganda Cancer Institute, only 22% go for check-up in less than three months. This study explored the effect of breast cancer knowledge on the uptake of breast cancer prevention modalities among women in Kyadondo County, Uganda.

METHODS: A household survey of women in Kyadondo County was conducted during June, 2014 to August, 2015. This involved studying in-depth using a questionnaire the level of breast cancer knowledge of the respondents. Data was analyzed using logistic regression model. Chi-square test was used to establish relationships between knowledge base factors and the uptake of breast cancer prevention modalities.

RESULTS: This study has established an empirical relationship between uptake of breast cancer prevention modalities and source of information especially radio (OR 1.94 95% CI: 1.16–3.24), television (OR 1.82 95%CI: 1.14–2.93), awareness of breast cancer (OR 4.03 95%CI: 1.01–15.98), knowledge on how to reduce risk of breast cancer (OR 1.98 95% CI: 1.20–3.27), what reduces breast cancer acquisition (OR 2.75 95% CI: 1.42–5.35), how to check for signs of breast cancer especially through breast self-examination (OR 3.09 95% CI: 1.62–5.88), and other methods of breast cancer diagnosis in a health care set up.

CONCLUSION: The women's level of breast cancer awareness as a primary prevention strategy was found wanting, and requires a boost through community health education.

KEYWORDS: Knowledge, Breast cancer, Modalities, Prevention, Uganda

144. Trends in the incidence of cancer in Kampala, Uganda, 1991 to 2015

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ABSTRACT

Trends in the incidence of cancer in the population of Kyadondo County, Uganda— which comprises the city of Kampala and a peri-urban hinterland—are presented for a period of 25 years (1991-2015) based on data collected by the Kampala Cancer Registry. Incidence rates have risen overall—age-adjusted rates are some 25% higher in 2011 to 2015 compared with 1991 to 1995. The biggest absolute increases have been in cancers of the prostate, breast and cervix, with rates of some 100% (prostate), 70% (breast) and 45% (cervix) higher in 2010 to 2015 than in 1991 to 1995. There were also increases in the incidence of cancers of the esophagus and colonrectum (statistically significant in men), while the incidence of liver cancer—the fifth most common in this population—increased until 2007, and subsequently declined. By far the most commonly registered cancer over the 25-year period was Kaposi sarcoma, but the incidence has declined, consistent with the decreasing populationprevalence of HIV. Non-Hodgkin lymphomas, also AIDS-related, increased in incidence until 2006/2007 and then declined—possibly as a result of availability of antiretroviral therapy. The trends reflect the changing lifestyles of this urban African population, as well as the consequences of the epidemic of HIV/AIDS and the availability of treatment with ARVs. At the same time, it highlights the fact that the decreases in cancer of the

cervix observed in high and upper-middle income countries are not a consequence of changes in lifestyle, but demand active intervention through screening (and, in the longer term, vaccination).

KEYWORDS cancer, incidence, Kampala, registry, trends, Uganda

145. Understanding cervical cancer: an exploration of lay perceptions, beliefs and knowledge about cervical cancer among the Acholi in northern Uganda

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ABSTRACT

BACKGROUND: Cervical cancer is the most common cancer affecting women in Uganda; yet community understanding of the disease is limited. We explored community perceptions, beliefs and knowledge about the local names, causes, symptoms, course, treatment, and prognosis of cervical cancer in order to inform targeted interventions to promote early help-seeking.

METHODS: Twenty four focus group discussions (FGD) with men and women aged 18 – 59 years and ten key informant interviews with persons aged ≥ 60 years were conducted at two sites in Gulu district between May and June 2012. A semi-structured interview guide informed by Kleinman's illness explanatory model and literature on community awareness of cervical cancer was used to collect data. Data analysis was supported with use of ATLAS.ti 6.1 in coding, organizing and tracking data segments. We used content analysis technique in data analysis and organised data into a structured format under distinct themes and categories.

RESULTS: Cervical cancer was known by the local name "two remo", meaning "an illness that manifests with bleeding." Respondents believed that early onset of sexual activity, multiple male sexual partners and multi-parity cause cervical cancer. Respondents in half of FGDs also reported that use of condoms and family planning pills and injections cause cervical cancer. Symptoms of cervical cancer reported included vaginal bleeding, watery vaginal discharge and lower abdominal and waist pain. Respondents in most of the FGDs and key informants perceived cervical cancer

as a chronic illness and that it can be treated with both modern and traditional medicines. The majority thought that cervical cancer treatment was supportive; the illness is not curable.

CONCLUSIONS: While some lay beliefs about the causes of cervical cancer suggest some understanding of aetiology of the disease, other perceived causes particularly those related to use of family planning and condoms are potentially hurtful to public health. Awareness campaigns to promote early help-seeking for cervical cancer symptoms need to be culturally-sensitive and context-specific; and include messages on symptoms, risk factors, course, treatment and prognoses.

KEYWORDS: Cervical cancer, Beliefs, Civil conflict, Lay explanatory model, Northern Uganda

146. Understanding the Low Level of Cervical Cancer Screening in Masaka Uganda Using the ASE Model: A Community-Based Survey

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ABSTRACT

Cervical cancer is one of the leading causes of cancer deaths among women globally and its impact is mostly felt in developing countries like Uganda where its prevalence is higher and utilization of cancer screening services is low. This study aimed to identify factors associated with intention to screen for cervical cancer among women of reproductive age in Masaka Uganda using the attitude, social influence and self-efficacy (ASE) model. A descriptive community-based survey was conducted among 416 women. A semi-structured interviewer administered questionnaire was used to collect data. Unadjusted and adjusted prevalence ratios (PR) were computed using a generalized linear model with Poisson family and a log link using STATA 12. Only 7% (29/416) of our study respondents had ever screened for cervical cancer although a higher proportion (63%, 262/416) reported intention to screen for cervical cancer. The intention to screen for cervical cancer was higher among those who said they were at risk of developing cervical cancer (Adjusted prevalence ratio [PR] 2.0, 95% CI 1.60–2.58), those who said they would refer other women for screening (Adjusted PR 1.4, 95% CI 1.06–1.88) and higher among those who were unafraid of being diagnosed with cervical cancer (Adjusted PR 1.6, 95% CI 1.36–1.93). Those who reported discussions on cervical cancer with health care providers (Adjusted PR 1.2, 95% CI 1.05– 1.44), those living with a sexual partner (Adjusted PR 1.4, 95% CI 1.11–1.68), and those who were formally employed (Adjusted PR 1.2, 95% CI 1.03–1.35) more frequently reported intention to screen for cervical cancer. In conclusion, health education to increase risk perception, improve women's attitudes towards screening for cervical cancer and address the fears held by the women would increase intention to screen for cervical cancer. Interventions should also target increased discussions with health workers.

147. Understanding the role of embarrassment in gynaecological screening: a qualitative study from the ASPIRE cervical cancer screening project in Uganda

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ABSTRACT

OBJECTIVE: To define embarrassment and develop an understanding of the role of embarrassment in relation to cervical cancer screening and self-collected human papillomavirus (HPV) DNA testing in Uganda.

DESIGN: Cross-sectional, qualitative study using semi structured one-to-one interviews and focus groups. Participants: 6 key-informant health workers and 16 local women, purposively sampled. Key informant inclusion criteria: Ugandan members of the project team. Focus group inclusion criteria: woman age 30–69 years, Luganda or Swahili speaking, living or working in the target Ugandan community. Exclusion criteria: unwillingness to sign informed consent. Setting: Primary and tertiary low-resource setting in Kampala, Uganda.

RESULTS: In Luganda, embarrassment relating to cervical cancer is described in two forms. 'Community embarrassment' describes discomfort based on how a person may be perceived by others. 'Personal embarrassment' relates to shyness or discomfort with her own genitalia. Community embarrassment was described in themes relating to place of study recruitment, amount of privacy in dwellings, personal relationship with health workers, handling of the vaginal swab and misunderstanding of HPV self-collection as HIV testing. Themes of personal embarrassment related to lack of knowledge, age and novelty of the self-collection swab. Overall, embarrassment was a barrier to screening at the outset and diminished over time through education and knowledge. Fatalism regarding cervical cancer diagnosis, worry about results and stigma associated with a cervical cancer diagnosis were other psychosocial barriers described. Overcoming psychosocial barriers to screening can include peer-to peer education, drama and media campaigns.

CONCLUSIONS: Embarrassment and other psychosocial barriers may play a large role at the onset of a screening programme, but over time as education and knowledge increase, and the social norms around screening evolve, its role diminishes. The role of peer-to-peer education and

community authorities on healthcare cannot be overlooked and can have a major impact in overcoming psychosocial and social barriers to screening.

148. Uptake and correlates of cervical cancer screening among HIV-infected women attending HIV care in Uganda

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ABSTRACT

BACKGROUND: Human immunodeficiency virus (HIV)-infected women are at high risk of cervical cancer. Objective: This study assessed uptake and correlates of cervical screening among HIVinfected women in care in Uganda.

METHODS: A nationally representative cross-sectional survey of HIV-infected women in care was conducted from August to November 2016. Structured interviews were conducted with 5198 women aged 15–49 years, from 245 HIV clinics. Knowledge and uptake of cervical screening and human papillomavirus (HPV) vaccination were determined. Correlates of cervical screening were assessed with modified Poisson regression to obtain prevalence ratios (PRs) using Stata version 12.0.

RESULTS: Overall, 94.0% (n = 4858) had ever heard of cervical screening and 66% (n = 3732) knew a screening site. However, 47.4% (n = 2302) did not know the schedule for screening and 50% (n = 2409) did not know the symptoms of cervical cancer. One-third (33.7%; n = 1719) rated their risk of cervical cancer as low. Uptake of screening was 30.3% (n = 1561). Women who had never been screened cited lack of information (29.6%; n = 1059) and no time (25.5%; n = 913) as the main reasons. Increased likelihood of screening was associated with receipt of HIV care at a level II health center [adj. PR 1.89, 95% confidence interval (CI) 1.29–2.76] and private facilities (adj. PR 1.68, 95% CI 1.16–3.21), knowledge of cervical screening (adj. PR 2.19, 95% CI 1.78–2.70), where to go for screening (adj. PR 6.47, 95% CI 3.69–11.36), and low perception of risk (adj. PR 1.52, 95% CI 1.14–2.03). HPV vaccination was 2%.

CONCLUSIONS: Cervical screening and HPV vaccination uptake were very low among HIV-infected women in care in Uganda. Improved knowledge of cervical screening schedules and sites, and addressing fears and risk perception may increase uptake of cervical screening in this vulnerable population.

149. Uptake of Cervical Cancer Screening and Associated Factors among Women in Rural Uganda: A Cross Sectional Study

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ABSTRACT

BACKGROUND In developing countries, inadequate access to effective screening for cervical cancer often contributes to the high morbidity and mortality caused by the disease. The largest burden of this falls mostly on underserved populations in rural areas, where health care access is characterized by transport challenges, ill equipped health facilities, and lack of information access. This study assessed uptake of cervical cancer screening and associated factors among women in rural Uganda. METHODS This descriptive cross sectional study was carried out in Bugiri and Mayuge districts in eastern Uganda and utilised quantitative data collection methods. Data were collected using a semi-structured questionnaire on cervical cancer screening among females aged between 25 and 49 years who had spent six or more months in the area. Data were entered in Epidata 3.02 and analysed in STATA 12.0 statistical software. Univariate, bivariate and multi-variate analyses were performed. RESULTS Of the 900 women, only 43 (4.8%) had ever been screened for cervical cancer. Among respondents who were screened, 21 (48.8%) did so because they had been requested by a health worker, 17 (39.5%) had certain signs and symptoms they associated with cervical cancer while 16 (37.2%) did it voluntarily to know their status. Barriers to cervical cancer screening were negative individual perceptions 553 (64.5%) and health facility related challenges 142 (16.6%). Other respondents said they were not aware of the screening service 416 (48.5%). The independent predictors of cervical cancer screening were: being recommended by a health worker [AOR = 87.85, p<0.001], knowing where screening services were offered [AOR = 6.24, p = 0.004], and knowing someone who had ever been screened [AOR = 9.48, p = 0.001].

CONCLUSION The prevalence of cervical cancer screening is very low in rural Uganda. Interventions to increase uptake of cervical cancer screening should be implemented so as to improve access to the service in rural areas.

150. Uptake of prostate cancer screening and associated factors among men aged 50 years and above in Lira city, Uganda: a cross-sectional study

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ABSTRACT

BACKGROUND Prostate cancer is the most common cancer among men globally, with over 1.2 million cases reported in 2018. About 90% of men with prostate cancer are diagnosed when the disease is in an advanced stage. We assessed the factors associated with the uptake of prostate cancer screening among men aged≥50 years in Lira city.

METHODS This was a cross-sectional study involving 400 men aged≥50 years in Lira city who were sampled using multistage cluster sampling method. Uptake of prostate cancer screening was defined as the proportion of men who received prostate cancer screening in the past one year prior to the interview. Multivariable logistic regression analyses were performed to assess the factors associated with the uptake of prostate cancer screening. Data were analyzed using Stata version 14.0 statistical software.

RESULTS Of the 400 participants, only 18.5% (74/400) had ever been screened for prostate cancer. However, 70.7% (283/400) were willing to screen/rescreen if provided with the opportunity. Majority of the study participants, 70.5% (282/400) had ever heard about prostate cancer, mostly from a health worker (40.8% (115/282)). Less than half of the participants had high knowledge of prostate cancer. The factors that were significantly associated with prostate cancer screening were age≥70 years, Adjusted Odds Ratio (AOR) 3.29: 95% Confidence Interval (CI): 1.20-9.00) and having a family history of prostate cancer, AOR 2.48 (95%CI: 1.32–4.65).

CONCLUSION There was low uptake of prostate cancer screening among men in Lira City, but majority of men were willing to screen. We encourage policymakers in Uganda to ensure prostate cancer screening services are readily available and accessible by men so as to improve on early identification and treatment of the disease.

KEYWORDS Prostate cancer, Men, Screening, Uganda

151. Visual inspection with acetic acid (VIA) positivity among female sex workers: a cross-sectional study highlighting one-year experiences in early detection of precancerous and cancerous cervical lesions in Kampala, Uganda

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ABSTRACT

BACKGROUND: Although cervical cancer is preventable, most women in sub-Saharan Africa (SSA) do not receive routine screening and few treatment options exist. Female Sex Workers (FSWs) are among the Ugandan female population at highest risk of acquiring sexually transmitted infections (STIs) including HIV and human papilloma viruses (HPV), the cause of cervical cancer. We report one-year experiences of visual inspection with acetic acid (VIA) positivity among FSWs in the early detection of pre-cancerous and cancerous cervical lesions in Kampala, Uganda.

METHODS: Between June 2014 and July 2015, we enrolled FSWs into a cross-sectional study at a research clinic. The women were screened using the VIA method (application of 3–5 % acetic acid to the cervix). All VIA positive women were referred to a tertiary hospital for colposcopy, biopsy, and immediate treatment (if indicated) at the same visit according to national guidelines. Data on socio-demographic, sexual behaviour, sexual reproductive health and clinical characteristics were collected. We used logistic regression to identify factors associated with VIA positivity.

RESULTS: Of 842 women assessed for eligibility, 719 (85 %) of median age 30 (IQR 26, 35) were screened, and 40 (6 %) women were VIA positive. Of the 24 histology specimens analysed, 6 showed inflammation, only 1 showed cervical intraepithelial neoplasia (CIN) 1, 13 women showed CIN2/3, while 4 women already had invasive cervical cancer. The overall prevalence of HIV was 43 %, of whom only 35 % were receiving ART. In the age-adjusted analysis, VIA positivity was more likely among women who reported having > 100 life-time partners (aOR = 3.34, 95 %CI: 1.38–8.12), and HIV positive women (aOR = 4.55; 95 %CI: 2.12–9.84).

CONCLUSIONS: We found a relatively low proportion of VIA positivity in this population. The experience from our program implies that the VIA results are poorly reproducible even among a category of trained professional health workers. VIA positivity was more likely among women with a high number of sexual partners and HIV infection. Interventions for improving cervical cancer

screening should be recommended as part of HIV care for FSWs to reduce the disease burden in this population.

KEYWORDS: Female sex workers (FSWs), visual inspection with acetic acid (VIA), cervical intra-epithelial neoplasia (CIN), screening, HIV

152. Women's intention to screen and willingness to vaccinate their daughters against cervical cancer – a cross sectional study in eastern Uganda

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ABSTRACT

BACKGROUND: The World Health Organization recommends cervical cancer screening and vaccination programmes as measures to combat cervical cancer. The uptake of these measures remains low in Uganda, most especially in rural areas. An understanding of the factors that influence women's decision to attend screening, and willingness to have their daughters vaccinated against cervical cancer is essential for any attempts to increase uptake of these services. This study assessed the factors associated with intention to screen for cervical cancer among women in eastern Uganda, and willingness to have their daughters vaccinated against the disease.

METHODS: This cross sectional study involved 900 females aged 25 to 49 years in Bugiri and Mayuge districts in eastern Uganda. Data were collected using a pretested semi-structured questionnaire, entered in Epidata version 3.02 and analysed in STATA version 12.0. Unadjusted and adjusted prevalence ratios (PR) were computed using a generalized linear model with Poisson family, and a log link with robust standard errors.

RESULTS: Majority 819 (91.0%) of respondents stated that they intended to go for cervical cancer screening in the subsequent six months. Among them, 603 (73.6%) wanted to know their status, 256 (31.3%) thought it was important, 202 (24.7%) wanted to reduce their chances of getting the disease, and 20 (2.4%) had been told to do so by a health worker. Majority 813 (90.4%) of respondents were willing to vaccinate their daughters against cervical cancer. Higher income (adjusted PR = 1.11, 95% CI: 1.03–1.20), cervical cancer screening status (adjusted PR = 0.81, 95% CI: 0.67–0.99) and knowledge of at least one test for cervical cancer (adjusted PR = 0. 92, 95% CI: 0.85–0.98) were significantly associated with intention to screen for cervical cancer. No socio-demographic characteristic was associated with willingness to vaccinate daughters among women.

CONCLUSION: There is a very high intention to screen and willingness to vaccinate daughters against cervical cancer among women in eastern Uganda. To take advantage of this, there is

need to avail opportunities for women to access cervical cancer screening and vaccinations particularly among rural communities.

KEYWORDS: Cervical cancer, Intention to screen, Rural, Screening, Uganda, Vaccination, Willingness

153. Women's knowledge and attitudes towards cervical cancer prevention: a cross sectional study in Eastern Uganda

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ABSTRACT

BACKGROUND: Cervical cancer is a leading cause of morbidity and mortality among women in Uganda, often due to late disease diagnosis. Early screening for the cancer has been shown to be the most effective measure against the disease. Studies conducted elsewhere have reported the lack of awareness and negative attitudes towards cervical cancer as barriers to early screening. This study assessed the knowledge and attitudes of Ugandan women about cervical cancer prevention with the aim of informing prevention and control interventions.

METHODS: This study was conducted in Bugiri and Mayuge districts in eastern Uganda. It was a cross-sectional community based survey and collected data by means of a questionnaire. A total of 900 women aged 25–49 years participated in the study. Women's knowledge and attitudes towards cervical cancer prevention were assessed and scored. Data were analysed using STATA 12.0 software. Bivariate and multivariate analyses were carried out to establish the relationship between knowledge levels and demographic characteristics. RESULTS: Most (794; 88.2%) of the respondents had heard about cervical cancer, the majority (557; 70.2%) having received information from radio and 120 (15.1%) from health facilities. Most women (562; 62.4%) knew at least one preventive measure and (743; 82.6%) at least one symptom or sign of the disease. The majority (684; 76.0%) of respondents perceived themselves to be at risk of cervical cancer, a disease most (852; 94.6%) thought to be very severe. Living in peri-urban areas (AOR = 1.62, 95% CI: 1.15 – 2.28), urban areas (AOR = 3.64, 95% CI: 2.14 – 6.19), having a higher monthly income (AOR = 0.50, 95% CI: 0.37 – 0.68) and having had an HIV test (AOR = 1.99, 95% CI: 1.34–2.96) were associated with level of knowledge about cervical cancer prevention.

CONCLUSION: Although general knowledge about cervical cancer prevention was relatively high among women, and attitudes mostly encouraging, specific knowledge about screening was low. There were also undesirable perceptions and beliefs regarding cervical cancer among respondents. There is therefore need for more education campaigns to bridge identified

knowledge gaps, and scale up of cervical cancer screening services to all women to increase service uptake.

KEYWORDS: Attitudes, Cervical cancer, Knowledge, Prevention, Rural, Screening, Uganda

154. Challenges to hypertension and diabetes management in rural Uganda: a qualitative study with patients, village health team members, and health care professionals

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ABSTRACT

BACKGROUND: The prevalence of hypertension and diabetes are expected to increase in sub-Saharan Africa over the next decade. Some studies have documented that lifestyle factors and lack of awareness are directly influencing the control of these diseases. Yet, few studies have attempted to understand the barriers to control of these conditions in rural settings. The main objective of this study was to understand the challenges to hypertension and diabetes care in rural Uganda. METHODS: We conducted semi-structured interviews with 24 patients with hypertension and/or diabetes, 11 health care professionals (HCPs), and 12 community health workers (known as village health team members [VHTs]) in Nakaseke District, Uganda. Data were coded using NVivo software and analyzed using a thematic approach.

RESULTS: The results replicated several findings from other settings, and identified some previously undocumented challenges including patients' knowledge gaps regarding the

preventable aspects of HTN and DM, patients' mistrust in the Ugandan health care system rather than in individual HCPs, and skepticism from both HCPs and patients regarding a potential role for VHTs in HTN and DM management.

CONCLUSIONS: In order to improve hypertension and diabetes management in this setting, we recommend taking actions to help patients to understand NCDs as preventable, for HCPs and patients to advocate together for health system reform regarding medication accessibility, and for promoting education, screening, and monitoring activities to be conducted on a community level in collaboration with village health team members.

KEYWORDS: Hypertension, Diabetes, Uganda, Rural health, Chronic diseases, Qualitative, Village health team

155. 'Change means sacrificing a good life': perceptions about severity of type 2 diabetes and preventive lifestyles among people afflicted or at high risk of type 2 diabetes in Iganga Uganda

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ABSTRACT

BACKGROUND: Interventions for prevention of type 2 diabetes ought to be acceptable to target communities. We assessed perceptions about type 2 diabetes and lifestyle change among people afflicted or at high risk of this disease in a low income setting in Iganga Uganda.

METHODS: Twelve focus group discussions (FGDs) of eight participants each were conducted, balancing rural and peri-urban (near the Municipality) residence and gender. The FGDs involved people with suspected type 2 diabetes (based on fasting plasma glucose (FPG), people with suspected pre-diabetes and obese people with normal FPG. Content analysis was conducted.

RESULTS: Diabetes was perceived to be a very severe disease. Its severity was attributed to its incurability and its numerous health effects. Men were also concerned about reduced sexual performance. However, participants' strong concerns about the severity of diabetes were not reflected in their perceptions about the risk factors and lifestyles associated with it. While people with diabetes perceive obesity as 'sickness', those without diabetes perceive it as a sign of 'success'. Although participants are willing to change their diet, they mention numerous barriers including poverty, family size, and access to some foods. Because of their good taste, reduction of high risk foods like sugar and fried food is perceived as 'sacrificing a good life'. Increments in

physical activity were said to be feasible, but only in familiar forms like domestic work. An over-arching theme emerged that 'lifestyle changes are viewed as sacrificing a good life'.

CONCLUSIONS: Health promotion should target both community norms and individual awareness regarding obesity, physical activity and diet, and should address the notion that obesity and unhealthy foods represent a good life. Health educators should plan with clients on how to overcome barriers and misconceptions to lifestyle change, leveraging the pervasive perception of type 2 diabetes as a severe disease to motivate change.

KEYWORDS: Type 2 diabetes, Perception, Lifestyle, Obesity, Diet, Physical activity, Self-monitoring

156. Identification and characterisation of diabetes in Uganda: protocol for the nested, population-based 'Diabetes in low-resource Populations' (DOP) Study

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ABSTRACT

INTRODUCTION Sub-Saharan Africa is experiencing an increasing burden of diabetes, but there are little reliable data, particularly at the community level, on the true prevalence or why this condition affects young and relatively lean individuals. Moreover, the detection of diabetes in Africa remains poor, not only due to a lack of resources but because the performance of available diagnostic tests is unclear.

METHODS This research aims to (1) determine the prevalence and risk factors of diabetes in a rural Ugandan population, (2) use clinical and biochemical markers to define different diabetes phenotypes and (3) study the progression of diabetes in this population. We will also assess the utility of the widely used tests (glycated haemoglobin (HbA1c), oral glucose tolerance test (OGTT) and fasting glucose) in diagnosing diabetes.

DESIGN This is a population-based study nested within the longstanding general population cohort in southwestern Uganda. We will undertake a population survey to identify individuals with diabetes based on fasting glucose, HbA1c, OGTT results or history of pre-existing diabetes.

Participants The study intends to enrol up to 11 700 individuals aged 18 years and above, residing within the study area and not pregnant or within 6months post-delivery date. All participants will have detailed biophysical and biochemical/metabolic measurements. Individuals identified to have diabetes and a random selection of controls will have repeat tests to test reproducibility before referral and enrolment into a diabetic clinic. Participants will then be followed up for 1 year to assess the course of the disease, including response to therapy and diabetes related complications. CONCLUSIONS These data will improve our understanding of the burden of diabetes in Uganda, the risk factors that drive it and underlying pathophysiological mechanisms, as well as better ways to detect this condition. This will inform new approaches to improve the prevention and management of diabetes.

157. Looking at non-communicable diseases in Uganda through a local lens: ananalysis using locally derived data

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ABSTRACT

The demographic and nutritional transitions taking place in Uganda, just as in other low- and middle-income countries (LMIC), are leading to accelerating growth of chronic, non-communicable diseases (NCDs). Though still sparse, locally derived data on NCDs in Uganda has increased greatly over the past five years and will soon be bolstered by the first nationally representative data set on NCDs. Using these available local data, we describe the landscape of the globally recognized major NCDs- cardiovascular disease, diabetes, cancer, and chronic respiratory disease- and closely examine what is known about other locally important chronic conditions. For example, mental health disorders, spawned by an extended civil war, and highly prevalent NCD risk factors such as excessive alcohol intake and road traffic accidents, warrant special attention in Uganda. Additionally, we explore public sector capacity to tackle NCDs,

including Ministry of Health NCD financing and health facility and healthcare worker preparedness. Finally, we describe a number of promising initiatives that are addressing the Ugandan NCD epidemic. These include multi-sector partnerships focused on capacity building and health systems strengthening; a model civil society collaboration leading a regional coalition; and a novel alliance of parliamentarians lobbying for NCD policy. Lessons learned from the ongoing Ugandan experience will inform other LMIC, especially in sub-Saharan Africa, as they restructure their health systems to address the growing NCD epidemic.

KEYWORDS: Non-communicable diseases, Chronic conditions, Low- and middle-income countries, Uganda, Health system financing, Multi-sector collaboration

158. Medicinal Plants Used in the Management of Noncommunicable Diseases in Uganda

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ABSTRACT

Noncommunicable diseases (NCDs) are recent and growing health problem in Uganda. The NCDs epidemic is burdening the healthcare systems, which is already under pressure from the high prevalence of communicable diseases. Hypertension is the most common NCD in Uganda; more females than males suffer from NCDs. High blood pressure and heart disease equally affect 5.3 % of the female population, while they affect 2.4 % and 2.6 % males, respectively. Cancers of the prostate and cervix are ranked number one in men and women, respectively. Traditional herbal medicine remains the most utilized form of healthcare. With the emergence of various NCDs, the services of traditional medical practitioners (TMPs) are set to rise. We collated 42 medicinal plants from literature used in the treatment of NCDs, of which 20 (47.6 %) are used in the management of hypertension, an indicator of its prevalence. Seven priority species were also identified for various NCDs by TMPs. The Uganda government realizing the importance of traditional medicine in primary healthcare established the Natural Chemotherapeutic Research Institute to undertake research on medicinal plants used by TMPs with the aim of justifying the therapeutic claims. Research on medicinal plants is still faced with the challenge of funding and collaboration between institutions to harness synergies towards the gradual integration into modern healthcare systems. The Ministry of Health needs to invest in training professional health providers and TMPs and public sensitization using targeted messages on prevention and management of NCDs, as was done for the HIV/AIDS pandemic in Uganda.

159. Prevalence of prediabetes and associated factors among community members in rural Isingiro district

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ABSTRACT

BACKGROUND In rural Uganda a significant number of persons afflicted with pre-diabetes are unaware of the condition. This is likely to lead to diabetic complications resulting in catastrophic health expendirure. The burden of prediabetes in rural Isingiro has not previously been determined. This study examined the prevalence of prediabetes and the associated factors among rural community members. Methods We conducted a cross-sectional survey and enrolled 370 participants aged between 18 and 70 years in the Kabuyanda sub-county, rural Isingiro district in march 2021. Multistage sampling and systematic random sampling were conducted to select eligible households. Data was collected using a pretested WHO STEP-wise protocol questionnaire. The primary outcome was prediabetes (FBG=6.1mmol/l to 6.9mmol/l), calculated as a proportion. Participants known to be diabetic or on medication were excluded. Chi-square tests and multivariate logistic regression model were performed for data analysis using STATA.

RESULTS The prevalence of prediabetes was 9.19% (95% CI 6.23–12.14). Independent factors significantly associated with pre-diabetes were; advancing age [AOR=5.7, 95% CI:1.03–32.30], moderate-intensity work [AOR=2.6,95% CI:1.23–5.63], high level of consumption of a healthy diet [AOR=5.7, 95% CI:1.67–19.05] and body mass index [AOR=3.7, 95% CI:1.41–9.20].

CONCLUSION Prediabetes is prevalent among adult community members in rural Isingiro, southwestern Uganda. Age and lifestyle factors predict prediabetes in this rural population, suggesting a need for targeted health promotion interventions.

KEYWORDS Prediabetes, Prevalence, Associated factors, Rural Isingiro, Rural Uganda population

160. Suboptimal glycaemic and blood pressure control and screening for diabetic complications in adult ambulatory diabetic patients in Uganda: a retrospective study from a developing country

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ABSTRACT

BACKGROUND: Currently, Sub Saharan Africa is faced with a substantial burden from diabetes mellitus. In most of the African countries, screening for diabetes related complications and control of blood pressure and glycaemic levels is often suboptimal. The study aimed at assessing the extent of optimal glycaemic and blood pressure control and the frequency of screening for diabetic complications in adult ambulatory Ugandan diabetic patients.

METHODS: This was a retrospective study of 250 medical records of adult diabetic patients attending the outpatient diabetic clinic at St. Raphael of St. Francis hospital Nsambya in Kampala, Uganda. RESULTS: The mean age of the patients was 51.6 ± 9.2 years with the majority being females (155, 62%). Using fasting blood glucose levels assessed in all the patients, optimal glycemic control of <7.2 mmol/l was noted in 42.8% of the patients. Glycated haemoglobin was performed at least once in the last year in 24 (9.6%) patients, of which 5 (20.8%) of these attained optimal control of <7%. Optimal blood pressure (BP) control defined as BP ≤140/ 80 mmHg was noted in 56% of the patients. Hypertension and diabetic neuropathy were the most screened for diabetic complications in 100% and 47.2% of the patients respectively and were also the most prevalent diabetic complications (76.4% and 31.2% respectively).

CONCLUSIONS: This study demonstrates that glycemic and blood pressure control and screening for diabetic complications among the adult ambulatory diabetic patients in this urban diabetic clinic is suboptimal. This substantiates development and implementation local guidelines to improve diabetes care.

KEYWORDS: Glycaemic and blood pressure control, Screening, Diabetic complications and Uganda

161. ‘What kind of life is this?’ Diabetes related notions of wellbeing among adults in eastern Uganda and implications for mitigating future chronic disease risk

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ABSTRACT

BACKGROUND: Effective prevention and care for type 2 diabetes requires that people link healthy behaviours to chronic disease-related wellbeing. This study explored how people perceive current and future wellbeing, so as to inform lifestyle education.

METHODS: Eight focus group discussions and 12 in-depth interviews were conducted in Iganga and Mayuge districts in rural Eastern Uganda among people aged 35–60 years in three risk categories (1) People with diabetes, (2) people at higher risk of diabetes (with hypertension or overweight) and (3) community members without diabetes.

RESULTS: People define wellbeing in three notions: 1) Physical health, 2) Socio-economic status and 3) Aspirational fulfilment. Most people hold the narrower view of wellbeing that focuses on absence of pain. Most overweight participants did not feel their condition as affecting their wellbeing. However, for several people with hypertension, the pains they describe indicate probable serious heart disease. Some people with diabetes expressed deep worry and loss of hope, saying that 'thoughts are more bothersome than the illness'. Wellbeing among people with diabetes was described in two perspectives: Those who view diabetes as a 'static' condition think that they cannot attain wellbeing while those who view it as a 'dynamic' condition think that with consistent treatment and healthy lifestyles, they can be well. While many participants perceive future wellbeing as important, people without diabetes are less concerned about it than those with diabetes. Inadequate knowledge about diabetes, drug stock-outs in health facilities, unaffordable healthier food, and contradictory information were cited as barriers to future wellbeing in people with diabetes. CONCLUSIONS: To make type 2 diabetes prevention relevant to healthy people, health education messages should link current lifestyles to future wellbeing. Diabetes patients need counselling support, akin to that in HIV care, to address deep worry and loss of hope.

KEYWORDS: Type 2 diabetes, Wellbeing, Notion, Overweight, Hypertension, Chronic disease

162. A qualitative exploration of Ugandan mental health care workers' perspectives and experiences on sexual and reproductive health of people living with mental illness in Uganda

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ABSTRACT

BACKGROUND: People with Mental Illness experience vast sexual and reproductive health challenges due to the affected mental health. Globally, prevalence of mental illness is on the rise with subsequent increase in the number of people with sexual and reproductive challenges warranting urgent public health intervention. However, information on the perceptions and experiences of mental health workers, the key health care providers for this population is generally lacking yet it's essential for formulation of appropriate policies and public health interventions.

AIM: To explore Ugandan mental health care worker's perspectives and experiences on the sexual and reproductive health of people living with mental illness in Uganda in order to generate recommendations to the ministry of health on how it can be improved.

MATERIALS AND METHODS: Qualitative study design was employed with utilization of phone call semi-structured in-depth interviews to collect data from 14 mental health workers from Uganda's National mental referral hospital, Butabika. Purposive sampling and convenience recruitment was done and the collected data was analyzed using Thematic content analysis.

RESULTS: Four themes were generated which included people with Mental illness having normal sexual needs, mental illness effect on sexuality and relationships, practices for safeguarding sexuality of people with mental illness and the barriers encountered in the provision of sexual and reproductive health services at a mental hospital.

CONCLUSION: People with mental illness experience a multitude of sexual and reproductive health challenges that need public health interventions. However, the integration of sexual and reproductive health services in a mental hospital are not yet successful making people with mental illness to remain with unaddressed health challenges. Policies should therefore be developed and implemented to ensure successful integration of sexual and reproductive health at all mental health service care provision points.

KEYWORDS: Mental health workers, Mental illness, Sexual and reproductive health, Health service integration

163. Potential strategies for sustainably financing mental health care in Uganda

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ABSTRACT

BACKGROUND: In spite of the pronounced adverse economic consequences of mental, neurological, and substance use disorders on households in most low- and middle-income countries, service coverage and financial protection for these families is very limited. The aim of this study was to generate potential strategies for sustainably financing mental health care in Uganda in an effort to move towards increased financial protection and service coverage for these families.

METHODS: The process of identifying potential strategies for sustainably financing mental health care in Uganda was guided by an analytical framework developed by the Emerging Mental health systems in low and middle income countries (EMERALD project). Data were collected through a situational analysis (public health burden assessment, health system assessment, macro fiscal assessment) and eight key informant interviews with selected stakeholders from sectors including health, finance and civil society. The situational analysis provided contextualization for the strategies, and was complimented by views from key informant interviews.

RESULTS: Findings indicate that the following strategies have the greatest potential for moving towards more equitable and sustainable mental health financing in the Uganda context: implementing National Health Insurance Scheme; shifting to Results Based Financing; decentralizing mental health services that can be provided at community level; and continued advocacy with decision makers with evidence through research.

CONCLUSION: Although several options were identified for sustainably financing mental health care in Uganda, the National Health Insurance Scheme seemed the most viable option. However, for the scheme to be effective, there is need for scale up to community health facilities and implementation in a manner that explicitly includes community level facilities.

Keywords: Mental health, Financing, Uganda, Insurance, LAMICs

164. Psychosocial health in adolescent unmarried motherhood in rural Uganda: Implications for community-based collaborative mental health education, and empowerment strategies in the prevention of depression and suicide

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ABSTRACT

Teenage pregnancy rates in Uganda are among the highest in sub-Saharan Africa. Child marriage is often the result of unmarried teenage pregnancy and is recognised by Uganda's government as a form of sexual violence and an outcome of inequality. However, unmarried motherhood incurs stigma and shame within traditionally living rural communities. Using co-produced Open Space and ethnographic methods, we examined the psychosocial impact of unmarried motherhood on girls and their communities, and explored problem-solving with key local stakeholders. Findings indicate that girls experience extreme stress, social exclusion and rejection by their families, and experience bereavement from school expulsion and the loss of their career aspirations. Depressive symptoms and suicidal behaviour are reportedly not uncommon among this population group. Community and family efforts to promote marriage for these mothers to avoid social stigma increased the mothers' feelings of depression, whereas mothers who became independent appeared to fare better psychologically. Community members and local stakeholders demonstrated a willingness to act locally to reduce the negative impacts of unmarried motherhood but lacked knowledge and support resources. Our findings indicate that mental health promotion for teenage mothers is likely to be better served through empowerment strategies rather than marriage and, in a context of poor mental health service access, there is a substantial role for community mobilisation and the promotion of self-help strategies to support teenage mothers. This study raises important points regarding different community understandings of depression and indicates collaboration between professionals and communities for a values based approach.

KEYWORDS empowerment, gender equality, mental health, psychosocial health, teenage pregnancy

165. Maternal mental health priorities, help-seeking behaviors, and resources in post-conflict settings: a qualitative study in eastern Uganda

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ABSTRACT

BACKGROUND: Limited knowledge exists to inform the selection and introduction of locally relevant, feasible, and effective mental health interventions in diverse socio-cultural contexts and health systems. We examined stakeholders' perspectives on mental health-related priorities, help-seeking behaviors, and existing resources to guide the development of a maternal mental health component for integration into non-specialized care in Soroti, eastern Uganda.

METHODS: We employed rapid ethnographic methods (free listing and ranking; semi-structured interviews; key informant interviews and pile sorting) with community health workers (n = 24), primary health workers (n = 26), perinatal women (n = 24), traditional and religious healers (n = 10), and mental health specialists (n = 9). Interviews were conducted by trained Ateso-speaking interviewers. Two independent teams conducted analyses of interview transcripts following an inductive and thematic approach. Smith's Salience Index was used for analysis of free listing data.

RESULTS: When asked about common reasons for visiting health clinics, the most salient responses were malaria, general postnatal care, and husbands being absent. Amongst the free listed items that were identified as mental health problems, the three highest ranked concerns were adeka na aomisio (sickness of thoughts); ipum (epilepsy), and emalaria (malaria). The terms epilepsy and malaria were used in ways that reflected both biomedical and cultural concepts of distress. Sickness of thoughts appeared to overlap substantially with major depression as described in international classification, and was perceived to be caused by unsupportive husbands, intimate partner violence, chronic poverty, and physical illnesses. Reported help-seeking for sickness of thoughts included turning to family and community members for support and consultation, followed by traditional or religious healers and health centers if the problem persisted.

CONCLUSION: Our findings add to existing literature that describes 'thinking too much' idioms as cultural concepts of distress with roots in social adversity. In addition to making feasible and effective treatment available, our findings indicate the importance of prevention strategies that address the social determinants of psychological distress for perinatal women in post-conflict low-resource contexts.

166. Primary school students' mental health in Uganda and its association with school violence, connectedness, and school characteristics: a cross-sectional study

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ABSTRACT

BACKGROUND: Few studies have explored risk factors for poor mental health in Ugandan primary schools. This study investigated whether individual- and contextual-level school-related factors including violence from school staff and other students, connectedness to school and peers, as well as school size and urban/rural location, were associated with mental health difficulties in Ugandan children. We also examined whether associations between violence exposure at school and mental health were mediated by connectedness as well as whether associations were different for boys and girls.

METHODS: The analytic sample consisted of 3,565 students from 42 primary schools participating in the Good Schools Study. Data were collected through individual interviews conducted in June and July 2012. Mental health was measured using the Strengths and Difficulties Questionnaire. Multilevel logistic regression was applied to investigate factors associated with mental health difficulties.

RESULTS: Experiences of violence from school staff and other students in the past week were strongly associated with mental health difficulties (OR = 1.58, 95 % CI 1.31 to 1.90 and 1.81, 1.47 to 2.23, respectively). Children with a low school connectedness had 1.43 times (1.11 to 1.83) the odds of mental health difficulties compared to those with a high school connectedness. The OR comparing children never feeling close to other students at their school with those always feeling close was 1.86 (1.18 to 2.93). The effect of violence on mental health was not mediated through the connectedness variables. School size was not related to mental health difficulties, but attending an urban school increased the odds of mental health difficulties after accounting for other factors. We did not find evidence that the effect of one or more of the exposures on the outcome differed between boys and girls.

CONCLUSIONS: These findings suggest that violence in school and low connectedness to school and peers are independently associated with mental health difficulties and interventions should address both concurrently. Extra support may be needed for students in urban schools.

KEYWORDS: Children, Adolescents, Mental health, Violence, School, Uganda

167. owards understanding governance issues in integration of mental health into primary health care in Uganda

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ABSTRACT

BACKGROUND: There is a growing burden of mental illness in low income countries. The situation is further worsened by the high poverty levels in these countries, resulting in difficult choices for their health sectors as regards to responding to the burden of mental health problems. In Uganda, integration of mental health into primary health care (PHC) has been adopted as the most vital strategy for ensuring mental health service delivery to the general population.

OBJECTIVES: To identify governance related factors that promote/or hinder integration of mental health into PHC in Uganda.

METHODS: A qualitative research design was adopted at national and district level. A total of 18 Key informant interviews were conducted at both levels. Content thematic analysis was the main method of data analysis.

FINDINGS: There were positive gains in working on relevant laws and policies. However, both the mental health law and policy are still in draft form. There is also increased responsiveness/participation of key stakeholders; especially at national level in the planning and budgeting for mental health services. This however seems to be a challenge at both district and community level. In terms of efficiency, human resources, finances, medicines and technologies constitute a major drawback to the integration of mental health into PHC. Ethics, oversight, information and monitoring functions though reported to be in place, become weaker at the district level than at national level due to limited finances, human resources gaps and limited technical capacity. Other governance related issues are also reported in this study.

CONCLUSIONS: There is some progress especially in the legal and policy arena to support integration of mental health into PHC in Uganda. However, adequate resources are still required to facilitate the effective functioning of all governance pillars that make integration of mental health into PHC feasible in Uganda.

KEYWORDS: Governance, Integration, Mental health, PHC, Uganda

168. The influence of caregiver depression on adolescent mental health outcomes: findings from refugee settlements in Uganda

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ABSTRACT

BACKGROUND: Family-level predictors, including caregiver depression, are considered important influences on adolescent mental health. Adolescent depression and anxiety in refugee settings is known to be a significant public health concern, yet there is very limited literature from humanitarian settings focusing on the relationship between caregiver mental health and adolescent mental health. In the context of a larger study on child protection outcomes in refugee settings, researchers explored the relationship between caregiver depression and adolescent mental health in two refugee settlements, Kiryandongo and Adjumani, in Uganda.

METHODS: Adolescents between 13 and 17 and their caregivers participated in a household survey, which included measures of adolescent anxiety and depression, and caregiver depression. Analysis was conducted using multiple logistic regression models, and results were reported for the full sample and for each site separately.

RESULTS: In Kiryandongo, a one-unit increase in a caregiver's depression score tripled the odds that the adolescent would have high levels of anxiety symptoms (AOR: 3.0, 95% CI: 1.4, 6.1), while in Adjumani, caregiver depression did not remain significant in the final model. Caregiver depression, gender and exposure to violence were all associated with higher symptoms of adolescent depression in both sites and the full sample, for example, a one unit increase in caregiver depression more than tripled the odds of higher levels of symptoms of adolescent depression (AOR: 3.6, 95% CI: 2.0, 6.2). Caregiver depression is a consistently significantly associated with adverse mental health outcomes for adolescents in this study.

Conclusions: Adolescent well-being is significantly affected by caregiver mental health in this refugee context. Child protection interventions in humanitarian contexts do not adequately address the influence of caregivers' mental health, and there are opportunities to integrate child protection programming with prevention and treatment of caregivers' mental health symptoms.

KEYWORDS: Mental health, Depression, Anxiety, Violence, Refugees

169. Community health workers' involvement in the prevention and control of non-communicable diseases in Wakiso District, Uganda

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ABSTRACT

BACKGROUND: Community health workers (CHWs) are an important cadre of the global health workforce as they are involved in providing health services at the community level. However, evidence on the role of CHWs in delivering interventions for non-communicable diseases (NCDs) in Uganda is limited. This study, therefore, assessed the involvement of CHWs in the prevention and control of NCDs in Wakiso District, Uganda with a focus on their knowledge, attitudes and practices, as well as community perceptions.

METHODS: A cross-sectional study using mixed methods was conducted which involved a structured questionnaire among 485 CHWs, and 6 focus group discussions (FGDs) among community members. The study assessed knowledge, perceptions including the importance of the various risk factors, and the current involvement of CHWs in NCDs, including the challenges they faced. Quantitative data were analysed in STATA version 13.0 while thematic analysis was used for the qualitative data.

RESULTS: The majority of CHWs (75.3%) correctly defined what NCDs are. Among CHWs who knew examples of NCDs (87.4%), the majority mentioned high blood pressure (77.1%), diabetes (73.4%) and cancer (63.0%). Many CHWs said that healthy diet (86.2%), physical activity (77.7%), avoiding smoking/tobacco use (70.9%), and limiting alcohol consumption (63.7%) were very important to prevent NCDs. Although more than half of the CHWs (63.1%) reported being involved in NCDs activities, only 20.9 and 20.6% had participated in community mobilisation and referral of patients respectively. The majority of CHWs (80.1%) who were involved in NCDs prevention and control reported challenges including inadequate knowledge (58.4%), lack of training (37.6%), and negative community perception towards NCDs (35.1%). From the FGDs, community members were concerned that CHWs did not have enough training on NCDs hence lacked enough information. Therefore, the community did not have much confidence in them regarding NCDs, hence rarely consulted them concerning these diseases.

CONCLUSIONS: Despite CHWs having some knowledge on NCDs and their risk factors, their involvement in the prevention and control of the diseases was low. Through enhanced training and community engagement, CHWs can contribute to the prevention and control of NCDs, including health education and community mobilisation.

KEYWORDS: Community health workers, non-communicable diseases, Risk factors, Knowledge, Attitudes, Practices, Community perceptions, Uganda

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