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HIGHLIGHTS

Abstracts Presented in the 2024 Health Research and Policy Conference

20-21 May 2024

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Kigali, Rwanda

Ministry of Health

Rwanda Biomedical Centre
Healthy People, Wealthy Nation

Rwanda
Public Health Bulletin

General Information

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Its mission is to serve as a knowledge sharing platform for national and international public health scientific information. Content published under RPHB will be used to control and address potential public health outbreak threats and strengthen health systems through real time availability of information.

This will allow more and effective communication between policy makers, researchers and health practitioners.

A new issue is published quarterly with supplements and special reports. Publication materials are submitted online at https://www.rbc.gov.rw/publichealthbulletin/manuscripts/submission and should fulfil the RPHB's instructions.

Go to https://www.rbc.gov.rw/publichealthbulletin/about/instructions for instructions to authors.

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CONTENT

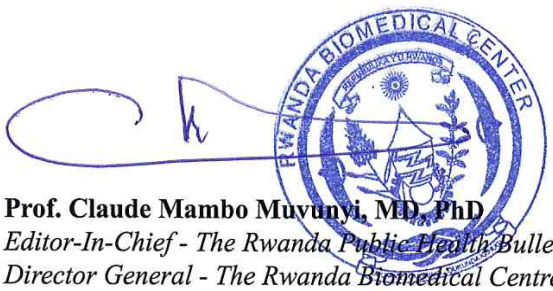
Dear readers,

I'm pleased to present this special edition of the Rwanda Public Health Bulletin (RPHB), which compiles the abstracts from the 2024 Health Research and Policy Conference. This year's conference, held from May 20-21, 2024, at the Kigali Convention Centre, Kigali, Rwanda, brought together a diverse group of professionals from the health sector, including researchers, policymakers, clinicians, and development partners. Under the theme, *"Advancing Research for a Healthy Rwanda,"* the conference highlighted the essential role of research in addressing pressing public health challenges and informing policy decisions that will shape Rwanda's future health landscape.

The abstracts featured in this publication represent the forefront of health research in Rwanda. They address key health priorities, including infectious diseases, maternal and child health, non-communicable diseases, mental health, and the impact of climate change on public health. Importantly, the conference served as a platform for the launch of two significant national frameworks—the National Health Research Agenda (2024-2029) and the National Strategic Plan for Research Innovation and Data Science (2024-2029). These strategic documents underscore Rwanda's commitment to leveraging research and innovation to drive improvements in health outcomes across the nation.

The research presented during this conference is a testament to the dedication and collaborative spirit of Rwanda's health research community. The abstracts reflect the breadth of research being conducted across various disciplines and highlight the critical role that evidence-based practices will play in overcoming the challenges that continue to affect our health system. This publication is not just a collection of scientific findings, it is a reflection of Rwanda's strong commitment to building a healthier, more resilient future through research and innovation.

I extend my gratitude to all researchers, partners, and stakeholders who contributed to the success of the 2024 Health Research and Policy Conference and the development of this special issue. I am confident that the knowledge shared here will inspire further collaboration, inform policy decisions, and contribute to the ongoing transformation of Rwanda's health system.



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Director General - The Rwanda Biomedical Centre (RBC)

The 2024 Health Research and Policy Conference 20-21 May 2024

RWANDA BIOMEDICAL CENTRE, KIGALI, RWANDA

Theme: Advancing Research for a Healthy Rwanda

The 2024 Health Research and Policy Conference, held on May 20-21, 2024, at the Kigali Convention Centre, Kigali, Rwanda, was poised to be a landmark event in Rwanda's ongoing efforts to advance health research and policy. With the theme "Advancing Research for a Healthy Rwanda," this conference brought together a wide range of stakeholders from the health sector, including researchers, policymakers, healthcare professionals, academic institutions, and development partners. The event served as a platform for fostering collaboration, sharing knowledge, and exploring innovative approaches to addressing Rwanda's most pressing health challenges.

This conference was a pivotal occasion, including with the launch of two critical frameworks: the National Health Research Agenda (2024-2029) and the National Strategic Plan for Research Innovation and Data Science (2024-2029). Both documents represent comprehensive blueprints for prioritizing and guiding health research activities in Rwanda, ensuring that research efforts align with the country's health needs and strategic goals. The National Health Research Agenda focuses on leveraging research to address key health issues such as communicable and non-communicable diseases, maternal and child health, mental health, climate change and emergency health issues, antimicrobial resistance and others. Meanwhile, the Strategic Plan for Research Innovation and Data Science emphasizes the transformative potential of data-driven decision-making and technological innovations in healthcare.

One of the key goals of this conference was to create a connected ecosystem where research, policy, and practice intersect to improve healthcare delivery and outcomes. Rwanda, like many nations, faces a range of health challenges, including the burden of both communicable and non-communicable diseases and limited resources. The conference provided a platform for addressing the existing challenges through collaborative discussions and knowledge exchange among participants. In addition, the conference features special sessions focused on building human resource capacities in research and development (R&D), with a particular emphasis on fostering a culture of innovation. These sessions showcased strategies for enhancing the skills and expertise of health researchers in Rwanda, ensuring that the country is well-positioned to lead future advancements in healthcare.

This included the Three Minute Thesis (3MT) competition. This competition encouraged young researchers to showcase their innovative work, fostering a new generation of health researchers dedicated to addressing the unique health needs of Rwanda and the broader East African region.

Overall, the 2024 Health Research and Policy Conference was a vital step in strengthening Rwanda's health research ecosystem. It built on the success of previous achievements and commitments to promoting research as a key driver of healthcare improvement. The insights and innovations shared through this conference, reflected in the abstracts within this publication, serve as a valuable resource for advancing research, policy, and practice in Rwanda's health sector for years to come.

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Very high epilepsy prevalence in rural Southern Rwanda: the underestimated burden of epilepsy in sub-Saharan Africa

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ABSTRACT

Introduction: The burden of epilepsy in Rwanda is significant, particularly in rural areas, where recent studies have revealed very high prevalence rates. Our study assessed the prevalence of epilepsy across different geographical areas in Southern rural Rwanda

Methods: We undertook a prospective cross□sectional, door□to□door survey in a rural village in Southern Rwanda from June 2022 to April 2023. First, trained enumerators screened villagers for epilepsy using the validated Limoges epilepsy screening questionnaire. Second, neurologists examined persons who had screened positively to confirm epilepsy diagnosis.

Results: Enumerators screened 1,745 persons (54.4% female, mean age: 24 ±19.3 years). Three hundred four persons (17.4%) screened positively. Epilepsy diagnosis was confirmed in 133 (52.6% female, mean age: 30 ±18.2 years), and active epilepsy in 130 persons. Lifetime epilepsy prevalence was 76.2‰ (95%CI: 64.2-89.7‰). The highest age-specific rate occurred in the 29-49 age group. No significant gender-specific differences were noted. The seizure onset occurred before 18 years of age in almost 60%. The diagnosis and treatment gaps were 79.4% and 92.2%, respectively. In 19.5% of the cases, only non-motor seizures occurred.

Conclusion: We report one of the highest epilepsy prevalence estimates documented, with almost 20% non-motor seizures, which are often underdiagnosed in rural Africa. In line with two previous Rwandan reports (2,3), we reiterate the burden of the disease in the country, with prevalence rates more than three times the estimated prevalence in SSA. Geographic variation in prevalence throughout Africa may result from differences in risk and etiological factors. Urgent case-control studies are underway to understand such differences to further clarify pathophysiological mechanisms and propose adapted epilepsy prevention policies.

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Comparative Analysis of LAM Test and GeneXpert in Detecting Tuberculosis in Immunocompromised Patients

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ABSTRACT

Introduction: Tuberculosis (TB) remains a significant global health concern, particularly among immunocompromised individuals, including those with HIV. Diagnosis of TB in such populations presents challenges due to atypical presentations and compromised immune responses. This study aimed to evaluate the diagnostic efficacy of LAM test, GeneXpert and TB culture, used in TB detection, especially ,in immunocompromized patients at Kigali University Hospital (KUTH).

Methods: A cross-sectional study was conducted at KUTH on 74 samples of urine and sputum or another samples from suspected extrapulmonary sites. Urine samples were tested using the LAM test, GeneXpert, and culture, while sputum and extrapulmonary samples were examined using GeneXpert and culture only. The sensitivity of each method was assessed, with culture serving as the reference standard, and the data were analyzed using SPSS to compare the performance efficacy of LAM and GeneXpert in detecting TB in both HIV-positive and non-HIV patients.

Results: Among non-HIV patients, the LAM test demonstrated a sensitivity of 57% in detecting TB, while GeneXpert exhibited a slightly higher sensitivity of 75% among culture-positive cases. In HIV-positive patients, LAM exhibited superior sensitivity at 80%, compared to GeneXpert at 60% among the same participant pool.

Conclusion: This study highlights the varying diagnostic performance of LAM test and GeneXpert in detecting TB in immunocompromised patients, depending on HIV status. While LAM showed higher sensitivity in HIV-positive patients, GeneXpert performed marginally better in non-HIV cases. These findings underscore the importance of tailored diagnostic approaches based on patient immune status to optimize TB detection accuracy. Integration of LAM test and GeneXpert into TB diagnostic algorithms for immunocompromised populations could improve early detection and treatment initiation, thus reducing TB morbidity and mortality. Further research with larger cohorts is warranted to validate these findings and inform TB diagnostic strategies in resource-limited settings.

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Knowledge, attitude, and practices towards tuberculosis prevention among HIV-positive patients at Kibagabaga District Hospital, Rwanda, 2021

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ABSTRACT

Introduction: Globally, an estimated 10.3 million people fell ill with TB in 2021, especially for people living with HIV. This study was conducted to assess the knowledge, attitudes, and practices (KAP) of TB prevention among HIV patients at Kibagabaga District Hospital (KDH). The study aimed to improve public health practices and the lives of people living with HIV by identifying knowledge gaps, tailoring prevention strategies, encouraging early TB detection, and informing policy development.
Methods: An analytical cross-sectional study was conducted at Kibagabaga District Hospital from November 2019 to February 2021. A sample size of 237 participants was calculated using Epi-info software and selected through a stratified simple random sampling method. Data collection employed self-administered questionnaires and analyzed using SPSS software version 23.
Results: Regarding the sociodemographic characteristics of the 237 HIV seropositive patients who participated in the study, the 39-48 age group represented the largest portion (35.4%), a majority were females by gender (60.3%), toward half (45.1%) being married, over half (52.5%) employed, nearly a half attained the primary education (51.1%). Upon the assessment of the knowledge level, attitude, and practice towards TB prevention, by aggregating the marks obtained from the respective questions, revealed a relative majority had a positive knowledge (86.9%), attitude (86.1%), and practices (91.6%) towards tuberculosis prevention.
Conclusion: While the study revealed positive overall knowledge, practices, and attitudes towards tuberculosis prevention among the HIV seropositive patients being followed up at Kibagabaga District Hospital, a potential knowledge gap regarding the specific cause of the disease was identified. This shows that improving health education efforts for HIV patients could benefit more. As far as comprehensive knowledge and ongoing positive behavior towards prevention are concerned, emphasis should be placed on understanding the causative agent of tuberculosis.

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Classification of Long COVID patients using factors score Method: A case study of Rwanda

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ABSTRACT

Introduction: On a global scale, long COVID (LC) has not received the attention it deserves; there is limited knowledge on long COVID among healthcare providers and the public. In Rwanda, as of June 2023, 133,194 COVID-19 cases have been reported, and 131,647 have been recovered. It is known that the prevalence in the general population ranges from 10% to 30% of all cases of acute infection, and anyone with COVID-19 can get Long COVID-19. Understanding factors influencing long-term COVID-19 conditions can help clinicians improve the management of identified cases.
Methods: We have designed a tool in the form of a Likert scale questionnaire labeled Long Covid Screening Tool (LCST). The population targeted are patients visiting outpatient departments and non-communicable diseases clinics at the district hospital level from June 2023 to March 2024. Data was collected by doctors using REDCap. Through a summated Likert scale, we assign a total score to each observation; based on the total factor score and red flags symptoms, we classify patients into Grade I, Grade II, and Grade III.
Results: A total of 180 patients were included in the analysis. The most affected group was adults aged 30-55 years at 60%; females accounted for most cases at 65%; 98% were vaccinated with at least 2 shots. The most common comorbidities were hypertension 19% and diabetes mellitus 5%. The most reported symptoms were 64% fatigue and 57% memory loss. Based on the analysis of the score factors with grade I (0-13), grade II (14-26), and grade III (27-40), the majority, 83,3%, were classified as Grade I, 15,5%, are in Grade II, 1,2% in Grade III.
Conclusion: Classification of LC cases using the factor score method helped to know the severity. Results show that severe cases account for 1.2% of the cases, and those patients need to optimize their care. Further studies are required to classify the complexity of post-COVID-19 conditions. The sensitivity of health care providers and the integration of LC symptoms in routine clinical practice can help identify more cases and optimize their management.

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Prevalence of Undiagnosed Hypertension and its Associated Factors in Ndera Sector, Gasabo District of Rwanda: A Cross-Sectional Study

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INTRODUCTION

Introduction: Hypertension remains a significant global health challenge, especially in low- and middle-income countries. It affects millions worldwide, with nearly half of the cases left undiagnosed. In Rwanda, a lack of adequate information and healthcare services impacts healthcare-seeking behaviors, contributing to undiagnosed hypertension in rural areas. Therefore, there exists a need to determine the incidence of undiagnosed hypertension and its associated factors.

Methods: A cross-sectional study of 393 adults was conducted in Ndera Sector, Gasabo District, through a multistage sampling technique. Data was collected using the WHO STEP-wise approach to non-communicable disease risk factor surveillance (STEPS) questionnaire; a physical examination was done for blood pressure and body mass index (BMI), after which the data collected were analyzed using SPSS.

Results: In Ndera Sector, 15% of the sample population had undiagnosed hypertension. Survey respondents had a mean age of 37 years (range 15 to 82), and 43% were male. Physical activity levels varied, with 41% reporting regular activity and 59% reporting a lack thereof. Significant factors associated with undiagnosed hypertension (p-value < 0.05) included age categories 45-54 years and ≥55 years, residing in Kibenga Cell, and having a BMI greater than 25.0 kg/m2. Bivariate analysis revealed significant associations of undiagnosed hypertension with age (≥55), having a BMI greater than 30.0 kg/m2 (obesity), and location of residence. The knowledge gap on hypertension also emerged as a significant factor, with those lacking awareness displaying a higher prevalence of undiagnosed hypertension. Sex, marital status, and other lifestyle habits showed no significant associations with undiagnosed hypertension.

Conclusion: A high prevalence of undiagnosed hypertension in the Ndera Sector was found to be associated with older age, high BMI, location of residence, and a lack of knowledge related to hypertension. This underscores the importance of health education initiatives, targeted healthcare initiatives in specific areas, tailored healthcare strategies for older age groups, and weight management initiatives to enhance awareness and early detection of hypertension.

The prevalence of teeth replacement among edentulous patients attending the University of Rwanda Polyclinic

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ABSTRACT

Introduction: Despite the reduced rate of tooth loss, the need for prosthodontic treatment is still high. The most important reason to seek prosthetic replacement for missing teeth is to improve appearance, restoration of speech, mastication efficiency, confidence, and psychological well-being. Nevertheless, the prevalence of edentulous people remains high. However, Rwanda has a lack of dental laboratories, materials, and skilled personnel. But the few available are not utilized to the maximum since the report shows that the number of edentulous outweighs those that replaced their missing teeth, showing that much has to be done to increase awareness about aesthetics and function in terms of temporal mandibular joint pain and disfiguring of the face.
Objective of the study was to assess the prevalence of teeth replacement among the patients who attended the University of Rwanda Polyclinic.
Methods: In this retrospective descriptive study, data was collected using Excel and analyzed using SPSS version 25 from patients' medical files at the University of Rwanda Polyclinic.
Results: The 486 patients' medical files from January 2018 to January 2020 were used for data collection. There were 277 (57%) males and 209 (43%) females. Out of 486 patients, the prevalence of tooth loss was 267 (54.9%). The prevalence of tooth replacement was 44 (16.48%) out of 267 patients with tooth loss. Among these prostheses, 43 were acrylic removable partial dentures and 1 removable complete denture.
Conclusion: The findings have shown a high prevalence of tooth loss and a low prevalence of tooth replacement. Only a small number of participants have received prostheses. Universities and health institutions should reinforce the workforce through skilled laborers in dental clinics and laboratories and invest in improving oral health infrastructures.

Promoting the learning of Point-of-Care Ultrasound among undergraduate students through SonoGames: A Case Study from Rwanda

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ABSTRACT

Introduction: Point-of-care ultrasound (POCUS) has been shown to improve clinical diagnosis and medical decision-making. However, the incorporation of POCUS into medical education still requires robust curriculum development and assessment, especially in environments with low resources. Gamification of POCUS has been shown to be well received by learners, but its role in medical education on the African continent is still limited. In this study, we aimed to evaluate the effect of SonoGames on POCUS knowledge acquisition among medical students in Rwanda.

Methods: Three cohorts of University of Global Health Equity (UGHE) medical students in clinical rotations from 3rd year to 5th-year students participated in the SonoGames competition. The students had received prior education on POCUS at different points in their clinical training. They were invited to participate in "SonoGames", a series of POCUS activities testing knowledge and skills acquisition. The students completed pre- and post-event surveys on POCUS knowledge, which consisted of image acquisition and image interpretation. Data were analyzed descriptively.

Results: 18 students participated in the SonoGames, including five 5th-year students, five 4th-year students, and eight 3rd-year students. 16/18 students (89%) completed the pre- and post-event surveys. In the pre-event survey, the mean grade on the ultrasound knowledge test was 75%. The mean grade on the post-event knowledge test was 86.5%. The students had very positive reviews of the session, with 14/16 students strongly agreeing that learning through the games improved their overall knowledge of POCUS, all students strongly agreeing that the games made them feel more enthusiastic about POCUS, and 15/16 students reporting that the games were a very effective educational experience. Additionally, 15/16 students strongly agreed that the games promoted team-building and student cooperation. In the survey results, most students requested ongoing SonoGames events at least annually.

Conclusion: Gamification of POCUS was very well received by students, who reported an increase in skills after the SonoGames event and demonstrated improved knowledge on pre-and post-testing. There is a need to continue to evaluate the curriculum so that medical students are equipped to practice clinically.

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Mortality and sudden unexpected death in epilepsy in a cohort of 888 persons living with epilepsy in Rwanda

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ABSTRACT

Introduction: Mortality among people living with epilepsy is two- to three-fold higher than in the general population, with a 5.4 standardized mortality ratio in Sub-Saharan Africa. Sudden Unexpected Death in Epilepsy (SUDEP) is the most common cause of epilepsy-related death. We prospectively estimated mortality and SUDEP rates in Rwandan people living with epilepsy.

Methods: We conducted a longitudinal study at the tertiary Ndera Neuropsychiatric Teaching Hospital (Kigali) and at three primary healthcare centers in the Musanze District, Northern Province. People living with epilepsy, aged ≥15 years, were enrolled between February and December 2018. People living with epilepsy did notattendg a close-out visit after 12 months were contacted. Upon report of a death, a neurologist traveled to meet family members and administered the WHO Verbal Autopsy Questionnaire to assess the cause of death.

Results: Out of a total of 888 people living with epilepsy, ten deaths were identified, yielding a mortality rate of 11.4/1000 person-years. Seven deaths had an identified cause, four of which were directly related to epilepsy, including death following head trauma, brain hematoma, prolonged seizure, and status epilepticus. No cause of death was identified in three cases, and these were interpreted as probable SUDEP, yielding a SUDEP rate of 3.4/1000 person-years. Mortality rates in tertiary and primary centers were comparable.

Conclusion: Mortality rates in people living with epilepsy are high and in line with previous reports from Rwanda. Improved treatment access and education of patients and families on death risks, including risk factors for SUDEP, should be provided to improve treatment compliance and better seizure control.

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Conference Proceedings

Open Access

Assessment of pseudomonas aeruginosa from trachea aspirates among Intensive Care Unit patients attending Rwanda Military Hospital

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ABSTRACT

Introduction: Pseudomonas aeruginosa (PA) is a non-fermenting Gram-negative bacillus that frequently causes nosocomial infections, particularly in the intensive care unit (ICU), contributing to substantial mortality. They are responsible for ventilator-associated pneumonia and hospital-acquired pneumonia, where they account for 24% of ICU respiratory infections. This research aimed to determine the rate of Pseudomonas aeruginosa among tracheal aspirates and assess its susceptibility towards different antibiotics at Rwanda Military Hospital, which could contribute to the infectious control team to design appropriate strategies for prevention of Pseudomonas aeruginosa-associated respiratory infection and antibiotic resistance stewardship.

Method: This is a retrospective study where the data of the patients suspected of respiratory tract infection hospitalized in the intensive care unit from January 2021 to June 2023 were collected and analyzed. The collected data were presented using Microsoft Excel 2016, and data were analyzed using SPSS Version16 statistical software.

Results: Out of 414 data collected, 181(43.7%) of samples reported growth of at least one organism (isolate); among them 89 (49.1%) were Pseudomonas aeruginosa, and 92 (50.8%) were positive for other species. Isolated Pseudomonas aeruginosa was sensitive to only PB (92.6%), totally resistant to CAZ (98.5%), and half of first-line antibiotics used above 80%.

Conclusion: The rate of Pseudomonas aeruginosa isolates was found to be high in intensive care units, potentially being a threat as it is known to be a strong hospital-acquired infection. The same applies to antibiotic susceptibility tests where resistance was found high. There is a need to provide measures to minimize the spread of resistance of Pseudomonas aeruginosa, which is observed to develop towards antibiotics more quickly than in most bacteria, and improvement in hospitals towards the use of aseptic techniques while performing procedures and working in infected environments also disinfection while using mechanical ventilation.

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Assessment of Intestinal Parasites and Risk Factors Among HIV Patients Attending Ntaruka Health Center, Burera District, Rwanda

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ABSTRACT

Introduction: HIV infection is still a public health problem worldwide and co-infections with other infectious agents, including intestinal parasites, are of particular concern, mainly in developing countries such as Rwanda. Therefore, understanding the epidemiology of intestinal parasitic infection is essential for the effective management of HIV infection. The aim of this study was to assess the burden of intestinal parasites and risk factors among HIV patients attending Ntaruka Health Center located in Burera District and this helps to take appropriate measures in the management of people living with HIV.

Methods: This was a cross-section study conducted from April to August 2023, where a total sample of 80 HIV-positive patients participated in the study. A questionnaire was designed to assess the risk factors. Stool samples were examined microscopically to assess the diagnostic forms of different parasites and negative sample results were concentrated using Formal – Ether technique. Blood samples were collected to analyze HIV viral Load and CD4. All data were presented and analyzed in SPSS version 22, and the Chi-square test was used to analyze the results.

Results: Among 80 participants, 54 individuals were infected with intestinal parasites, with a prevalence of (67.5%). The most prevalent intestinal parasites were Ascaris lumbricoides 25%, Trichuris trichiura (17.5%), Giardia lambria 13.75%; Entamoeba histolytica to 11.25%. In relation to gender, females were found to be infected than males at 63.8% and 36.2%, respectively. The illiterate individual was 53.75% compared to 46.25 % for literate. According to age groups, the highest predominant age group was the group above 50 years old (36.25%), the following were the age groups ranging from 41-50 years old (28.75%), 31-40 (21.25%) and the last age group was from 15-30 (13.75%). The following risk factors were statistically associated with parasitic infections: using water from lakes and rivers as domestic sources, eating unwashed vegetables and fruits, defecating in bushes near farms during farming, and using human feces as fertilizer. This study had no significant correlation between intestinal parasites with the number of CD4+ T cells and HIV Viral Load.

Conclusion: HIV patients should be screened routinely for intestinal parasites, and more research are needed countrywide in order to assess the magnitude of the problem.

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Evaluating the impact of Community-Based Sociotherapy on social dignity and mental health of different social groups in post-genocide Rwanda: A clustered Randomised Controlled Trial

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ABSTRACT

Introduction: Community-Based Sociotherapy (CBS) is a psychosocial community intervention implemented in post-genocide Rwanda since 2005. It aims at enhancing social dignity (an innovative construct in mental health research) and mental health within Rwandan communities. This study marks the first clustered Randomised Controlled Trial (RCT) to evaluate and compare the intervention's effects on social dignity and mental health among participating Genocide Survivors, Ex-Prisoners, and Others (people who were neither directly targeted nor perpetrators).
Methods: The study included 80 groups of 10-15 individuals from ten Rwandan districts, giving us a total of 833 participants. Half of these groups were randomly selected as intervention groups, while the other half were waitlisted. The intervention groups completed the CBS program over 15 weeks. Data was collected at baseline, endline, and 4.5 months post-intervention. Social dignity was evaluated through a newly developed Social Dignity Scale (SDS). Mental health was assessed through depressive symptoms (PHQ-9), PTSD symptoms (PCL-5), and psychological well-being (WHO-5). Statistical analyses were conducted in R using ANOVA and LMM.
Results: The analyses revealed that baseline differences between Survivors, Ex-Prisoners and Others in social dignity and mental health were largely attributable to covariates such as gender, relationship status, and trauma exposure. The intervention significantly improved both social dignity and mental health (Pseudo-R^2: 0.04 approx.). No significant differences concerning the intervention's positive impact were found between Genocide Survivors, Ex-Prisoners, and Others.
Conclusion: Our results suggest that CBS effectively enhances social dignity and mental health regardless of participant's social group. Future research should explore the rather small effect size observed in this study.

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Using Natural Language Processing to Evaluate Home-based care text exchange between patients and care provider during COVID-19 Pandemic in Rwanda: A Model to Support rapid Pandemic Decision Making

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ABSTRACT

Introduction: Isolation of cases is a cornerstone of public health measures to contain the spread of pathogens. The Rwandan government deployed a multi-language digital health tool that facilitated daily text message communication with patients diagnosed with SARS-CoV-2 cases and their contacts as part of national COVID-19 home-based care program. We evaluated the texting patterns and communication topics to gain insights into patient experiences in these circumstances.

Methods: We extracted data on all COVID-19 patients (cases and contacts) enrolled in the WelTel text messaging program in Rwanda between March 18, 2020 and March 31, 2022 and linked demographic and clinical data from the national COVID-19 registry. We examined texting patterns and message content from users. A portion of the total conversation corpus was translated into English and labeled with pre-defined medical and social topics of interest identified by medical experts. Several NLP topic classification models were trained and tested using the labelled untranslated or English-translated conversations, and compared for performance using F1-scores. The best performing models were applied to the unlabeled and untranslated conversations to label and classify the complete corpus. Topic frequencies were compared by demographic and clinical factors.

Results: In total, 33,081 patients, with mean age of 33.9 years old (0-100 years), and (44% female) including 30,398 cases and 2,683 contacts were registered in WelTel over 2 years of COVID-19 waves. This generated 12,119 interactive text conversations between patients and healthcare providers. Transformer models tended to yield better F1 performance scores than classical models when classifying English translated data, but classical machine models performed better when applied to the untranslated (mostly Kinyarwanda) corpus. The most frequent topic discussed was reporting whether symptoms were present. Discussions about prevention (e.g., transmission risk or vaccines), management (e.g. treatment of fever), social stressors (e.g. hunger or school attendance), and culture (e.g., religious references) also occurred. Targeted advice and education were frequently provided to patients who used the service in real-time.

Conclusion: Open language interactive text message-based systems can remotely support cases and contacts management in pandemics. NLP is a powerful computational approach that, if improved, could provide timely insights into the medical and social stressors that affect isolated patients.

Evaluation of risk factors for poorly controlled diabetes through glycated hemoglobin among diabetic patients attending Rwamagana level two teaching hospital, July 2023

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ABSTRACT

Introduction: The prevalence of diabetes in Rwanda has reached 3% of the total population, and other countries such as South Africa, Uganda, and Tanzania are reaching 8.39%, 4.42%, and 7.95%, respectively. For these patients, clinical management is essential to prevent morbidity and mortality. Glycated hemoglobin plays a vital role in diabetes management. An ideal value of <7% demonstrates control over the disease and enables prevention of its complications. This study in Rwamagana Hospital aims to understand the factors associated with poor prognosis of diabetes and recommend appropriate measures.

Methods: This study was cross-sectional prospective. Laboratory analyses were done to test HbA1c in blood, and medical files were reviewed. The study population was the clients with type 2 diabetes mellitus (236) received in July 2023 who accepted to participate voluntarily in the study, with a sample size of 149 participants, who were selected randomly. The difference in proportions by various clinical factors such as weight, sex, and medications were tested for their association with the outcome of having poorly controlled diabetes (HbA1c ≥7 %). The chi-square test was used to determine the association between variables. The significance was defined at p-value < 0.05.

Results: Among those with poorly controlled diabetes, 36.2% were males and 63.8% were females. For body mass index, 49.7% were normal weight and 50.3% were overweight/obese. There was a significant association between sex and diabetes control, with female patients being more likely to have poorly controlled diabetes (P-value < 0.032). Being overweight/obese was significantly associated with having poor control of diabetes (P-value = 0.039).

Conclusion: People with diabetes under follow-up at Rwamagana level two teaching hospital have increased HbA1c levels, which is linked with gender and body mass index, which require different stakeholders to mobilize the population to do physical exercises and consume a balanced diet to avoid obesity.

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Actors and Channels Preferred by Youth for Accessing Mental Health-Related Services in Rwanda

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ABSTRACT

Introduction: Following the 1994 genocide against Tutsi in Rwanda, government and international organizations implemented mental health services to support those suffering from the detrimental consequences. Despite the availability of these services, only 25% of individuals with reported mental disorders seek professional care, and the situation may be even worse for Rwandan youth based on anecdotal evidence. This study aimed to investigate youth's perspectives on access to mental health care; to explore 'actors' and 'channels' utilized by Rwandan youth for accessing mental health information and dealing with mental health-related issues.

Methods: This exploratory qualitative study involved 29 semi-structured interviews and two focus group discussions with youth who were purposively selected from both rural and urban areas of Rwanda. Data analysis employed thematic analysis with both deductive and inductive approaches to address the study objectives.

Results: This study revealed disparities in identifying factors influencing mental health among youth. Those from underprivileged families attributed mental health issues to spiritual causes, while those from privileged families cited family conflicts and societal pressures. Factors such as lived experiences, and socioeconomic status significantly shaped youth engagement with mental health information and services. Barriers, including lack of trust in actors and channels, lack of awareness, financial constraints, and stigma, hindered youth from engaging with mental health. According to the participants, addressing these barriers necessitates targeted awareness campaigns and youth-led initiatives to enhance mental health literacy and access to support services. For those seeking mental health-related information and/or support, friends, family members, nurses, and doctors were commonly used actors. Social media platforms, the internet, radio, peer discussions, and therapy were the most utilized channels.

Conclusion: Our findings underline the major challenges faced by Rwandan youth in accessing mental health services and information and identify the actors and channels used. The study contributes to the growing body of knowledge on mental health service access in Rwanda. It also offers valuable insights for policymakers, organizations, and individuals seeking to improve mental health services for Rwandan youth. By addressing the identified barriers, they can foster a more supportive environment for youth to seek and receive mental health support.

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Rwanda
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About the Rwanda Public Health Bulletin (RPHB)

The Rwanda Public Health Bulletin (RPHB) is a printed and open access, peer-reviewed journal, published as the flagship scientific and technical periodical publication. RPHB is a public health bulletin launched in March 2019 by the Rwandan Ministry of Health, through the Rwanda Biomedical Centre (RBC) in collaboration with the CDC Foundation and with support from Bloomberg Philanthropies Data for Health Initiative.

Mission

To serve as a scientific information dissemination platform of national and international significance, mainly in areas related to the Rwanda Ministry of Health's essential mission to strengthen national and local health systems and improve the health of the people of Rwanda. The Rwanda Public Health Bulletin publishes disease surveillance summaries, public health response guidelines, public health notices, case reports, outbreak reports, original research papers, and policy briefs among others. It generally features issues of importance to its targeted audience, which is health professionals, academic researchers, policymakers and anybody interested in health issues. Articles for publication are received from doctors, nurses, allied health professionals, students, policymakers, government bodies, non-governmental bodies and others.

Aim

To bridge the gap in public health information sharing between policymakers, researchers, health professionals and practitioners.

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INSTRUCTIONS TO AUTHORS

All works submitted to this bulletin will have to belong to the types of articles stated below:

1. ORIGINAL RESEARCH

Referred to as "Primary Research" pioneer in a determined domain. It can be from various aspects: Clinical features, pathophysiology, biochemistry, molecular biology, etc.

THE TITLE

The title of the article should be concise and informative. It should contain enough thoughts on the subject.

ABSTRACT

Abstract of 250 words maximum must accompany each manuscript and be divided into 4 paragraphs with the following headings and MeSH keywords:

Introduction: stating the purposes/aims of the work; the research undertaken, the hypothesis tested or the procedure evaluated.
Materials and methods: briefly stating what was done and what materials were used, including the number of subjects, the methods to assess the data and to control bias.
Results: Providing key findings of the study, including indicators of statistical significance, actual numbers, as well as percentages.
Conclusion: Summarizing in 1 or 2 sentences the work on the basis of the findings. It emphasizes new and important aspects of the study or observations.

THE MAIN TEXT

The text of observational and experimental articles is divided into sections with the following headings: Introduction: should always begin the text, and requires brevity and focuses. It conveys the nature and purpose of the work, and quotes the relevant literature. Only strictly pertinent background information is necessary for understanding why the topic is important. We suggest the final paragraph clearly states the hypothesis or purpose of the study.

METHODS

Details of clinical and technical procedures should follow the introduction. A clear description of the selection of the observational or experimental subjects should be given. The identification of all aspects of the study, its reasoning, and the related relevance should be explicitly justified. In case, the study was done in a particular way, the guiding principles should all be clarified. Exclusion and inclusion criteria or partial inclusion, the reliability index, the confidentiality index, the analysis step, and the data collection processes should be also carefully specified. This section should provide sufficient details on the methods, instrumentation, procedures, all drugs and chemicals used (including generic names, doses, routes of administration). It should allow other workers to reproduce the study if necessary.
This section should also state the self-evaluation of the study by: independent/consensus readings blinded or unblinded to other information and estimate the fluctuation of recall biases by random ordering of studies.

Be clear about the retrospective or prospective nature of the study. Finally, provide references to established methods, including statistical methods that have been published, forthcoming, or that may not be well known. New description or substantially modified methods may be used however, give reasons for the use of these techniques, and evaluate their limitations. Statistical methods should be described with enough details to enable a knowledgeable reader with access to the original data to verify the reported results. A general description of methods would be defined in the methods section, whereas a specific statistical method used into analysis would be summarized in the results section. Any general use of the computer program should be

specified, and more details have to be clarified about any randomization issues.

RESULTS

Logical sequence of presentation of results is required in the text; along with tables, and illustrations. Repetition of data from illustrations into the text should be avoided; however, emphasize or summary of only important observations would be helpful. Avoid the ''non-technical use'' of technical terms in statistics which should be defined and reserved for the right purpose. Moreover, define all those statistical terms aside with or including abbreviations and/or most used symbols. Any complication and/or unexpected finding should be reported and the more possibly explained and the author should report lost to follow up and dropouts from a clinical trial.

DISCUSSION

Use ample subheadings. Emphasize the new and important aspects of the study and the conclusions that follow from them. Avoid repetition of details included in other parts. This section requires the mention of the implication of the findings, and their limitations for future research, involving relating the observations to other relevant studies.

Finally, the conclusions should be linked to the goals of the study; though mostly avoiding:

Unqualified statement not completely supported by the data

Statement on economic benefits and costs unless the report includes economic data and analyses

Claim of priority and alluding to work that has not been completed.

Whereas new hypotheses could be suggested when warranted, but they should be clearly labeled as such and recommendations, when appropriate and needed, may be given.

Acknowledgments

List all contributors who do not meet the criteria of authorship, such as those who provided purely technical help, writing assistance, or a department chair who provided only general support; and their respective contribution will be headed as provided. Everybody must have given written permission to be acknowledged. References: References should be numbered consecutively in the order in which they were first mentioned in the text. They will be identified in the text, tables, and legends by arabic numbers. This bulletin uses the IEEE style (Institute of Electrical and Electronics Engineers) for referencing the citations. It is advised to avoid citations or personal communication unless they provide essential and pertinent information. In all case, the name of the person and date of communication should be cited in parentheses in the text.

2. CHECKLIST FOR SURVEILLANCE REPORTS

Disease surveillance summaries are reported following the checklist below:
Title: Compose a title that includes the name of the health condition, population, time and place.
Abstract: Provide a structured abstract including the following sub- headings: Background; Objectives; Methods; Results; and Conclusion.

INTRODUCTION

Context: Summarize the current situation regarding the health condition under surveillance and identify why it is important. Objectives: State the objective of the surveillance report.

METHODS

Setting: Describe the setting, locations and dates of the surveillance period.
Population: Describe the population under surveillance. Definitions: Provide definitions for each health event under surveillance, including

case definitions and any public health interventions. **Information sources**: Describe all data sources, including the objective of any surveillance systems, what data were collected and how data were gathered, transferred and stored. Supplementary data: If appropriate, note where to access supplemental material (e.g., www.opendata.gc.ca). **Data quality, missing data and reporting delays:** Describe how the data quality was assessed. Explain how missing data were addressed. If data is reported by date of diagnosis or symptom onset, include a statement about whether the data for the most recent periods may be revised.

DATA ANALYSIS

Describe any analytical methods used providing sufficient detail to enable a knowledgeable reader with access to the original data to judge its appropriateness and to assess the reported results.

RESULTS

Descriptive: Provide a summary of the descriptive data, including demographics.
Data Quality: Report on data quality (e.g., completeness, missing data, under reporting)
Analytic data: Provide a summary of the analysis including (when indicated) estimates of trends. When applicable, point estimates should include appropriate indicators of measurement error such as 95% confidence intervals (e.g., average annual percentage change used to describe trends or odds ratios used to describe subgroup differences).
Figures: Create the minimum number of figures to highlight key results. Create a title that includes person, time and place.

DISCUSSION

Key results: Summarize key results with reference to study objectives
Comparison: Consider these findings in relation to the current literature. Strengths and weaknesses: Discuss the strengths and weaknesses of the study (data quality, completeness, sources of potential bias). Interpretation and generalizability: Provide a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies and other relevant evidence.
Conclusion: Ensure conclusions address objectives and follow from the results.

3. PUBLIC HEALTH NOTICES / OUTBREAK REPORTS

Following the Center for Disease Control recommendations, for public heath notices and outbreak reports to be published they need to cover all four components as stated below:

INTRODUCTION

Generally, the introductory paragraph should begin with 1 to 3 sentences establishing the existence of the outbreak or underlying public health problem. E.g., "On January 2, 2008, the Nevada State Health Division contacted CDC concerning surveillance reports received regarding two persons recently diagnosed with acute hepatitis C." The introductory paragraph also usually contains: a) a statement that an investigation was conducted, when and by whom; b) the most important finding(s); c) the actions taken to stem the outbreak; and d) a statement of the public health implications and actions that should be taken in response to the investigation. Investigation and results: First, present the initial investigation and its findings. This might include: 1) a description of the setting and a statement of how the outbreak came to the attention of health authorities; 2) a clinical description of the index case or initial cases; 3) initial key test results; and 4) hypothesis generation activities and results. Next, summarize the full investigation, including: case definition, case-finding activities, method of investigation, and results. Cases should be counted and described by clinical characteristics, treatment, and outcome, as well as time, place, and person descriptive results. Next, present the methods and results of any analytic epidemiologic studies (e.g.,

cohort or case-control studies). Finally, provide the results of any relevant microbiologic, genetic, or toxicologic results, followed by the results of any testing of environmental samples. Public health response: When appropriate, a brief description summarizing any public health interventions taken and the results of the interventions follows.

DISCUSSION

Same as for a Full Report, except that a Limitations paragraph might not be required for an Outbreak Report.

4. POLICY BRIEFS

This bulletin will use guidelines on reporting/ publishing policy notes as they are suggested by the Center for Disease Control (CDC). As the CDC defines them; Policy Notes are intended to announce new official policies or recommendations (e.g., from ACIP or CDC). These reports can be thought of as briefs. Maximum word count at submission is 1,400 words. Up to three tables, figures, or boxes may be included. Policy Notes contain no Discussion or Limitations, and a summary box is not required. Although policy notes or brief might vary, following is a rough guide of what basic notes should have: Introduction: The introductory paragraph should be limited to 150–200 words. It might contain all or some of the following components: a brief introductory statement orienting the reader to the topic and placing it in context, a brief description of the public health problem, a brief statement of the rationale for the policy or recommendation, mention of the most important parts of the policy or recommendations, and one or two sentences stating the conclusions and the public health implications of the new policy or recommendations.

BACKGROUND

The Policy Note should include a paragraph after the introduction that summarizes background information relevant to the policy or recommendation that can help the reader understand the context and need for the policy or recommendation.

Methods: Should include a summary of the methods used to establish the policy or recommendation, including answers to some or all of these questions: Who was involved in the production of the guidelines or recommendations, and how? What evidence base was considered? What was the rationale for considering this evidence base? Was other evidence excluded from consideration and, if so, why? Rationale and evidence: The Policy Note should provide a concise review of the rationale for the policy or recommendation and a descriptive review of the scientific evidence used to establish it. It should include an explanation of how the policy or recommendation adds to, or differs from, relevant policies or recommendations established previously. Presentation of the policy or recommendation: The policy or recommendation should state clearly when it takes effect and to whom and under what circumstances it applies.

DISCUSSION OR COMMENT

The Policy Note should comment on the likely impact of the new policy or recommendation and plans for assessment of the policy or recommendation

5. CASE REPORTS

These are reports of an individual patient on their symptoms, treatment reactions on a disease or condition of interest. These reports normally focus on unusual reactions or occurrences. Similar cases to other research reports, case reports might include a literature review of previous similar. Case reports might also address positive patient outcome on particular treatment guidelines or individual impact of a particular intervention. These are mainly used for educational and decision-making purposes. Case reports are normally reported following a checklist found at the CARE Guidelines.

6. CASE STUDIES

We recommend authors to follow the "EQUATOR Network" for ample explanations and guidelines in the writing of such articles. They have to be well-described case studies on health care interventions of public health concern. These could be:

Rigorous assessments of processes and program interventions.

Recommendations on possible health interventions.

Never on individual patient (= case report)

7. COMMENTARIES / OPINION / METHODOLOGY ARTICLES

We recommend authors to follow the "EQUATOR Network" for ample explanations and guidelines in the writing of such articles. Though these articles are moderated, they should be:

Short, focused, opinionated to previous articles or any subject related to the journal entirely. Contemporary and focusing on specific issues. Normally up to 800 words.

Frank critics to the journal are bravely motivated and would be as much as possible published.

8. FORMATTING THE MANUSCRIPT

Please note that articles which are not correctly formatted will be returned to the authors

Format text: Style: No Spacing, Single column, Single Spacing
Font: Single Spacing, Times New Roman - size 12
Titles: Capitals and bold, size 14
Format tables: Times New Roman, Font size 9
No vertical lines. Horizontal lines in the table can be removed. No table should be larger than a single A4 page. Footnote should be size 9 and italic

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