

Understanding the impact of the COVID-19 pandemic on HIV/AIDS care and management in Tanzania: challenges, adaptations and lessons learnt – a review

Epafra Luka Mwanja ¹, Mansour Maulid Mshenga,² Alex Philemon Alexander,³ Margareth Stewart Makuchilo,⁴ Kheri Mwijage Kagya,⁵ Kololo Sidney Otladisa⁶

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For numbered affiliations see end of article.

Correspondence to

Dr Epafra Luka Mwanja;
mwanjaepafra@gmail.com

ABSTRACT

This review examines the impact of the COVID-19 pandemic on HIV/AIDS care and management in Tanzania, highlighting challenges, adaptations and lessons learnt. The pandemic has led to disruptions in service delivery, reduced access to testing and treatment, and increased stigma and discrimination. Adaptations and innovations, such as telemedicine (telehealth and virtual care), multimonth dispensing of antiretroviral therapy, decentralised drug distribution initiatives, have been implemented to mitigate the challenges faced in HIV/AIDS care and management. Integration of HIV/AIDS and COVID-19 services is crucial to ensure the continuity of care and management in the postpandemic by strengthening healthcare systems, improving supply chain management and enhancing community engagement.

BACKGROUND

The COVID-19 pandemic has had a profound impact on healthcare systems worldwide, and Tanzania has been no exception.¹ The first case of COVID-19 in Tanzania was reported in March 2020, and the country quickly experienced a surge in cases that threatened to overwhelm its already strained healthcare infrastructure.^{2 3} The pandemic exposed critical weaknesses in Tanzania's healthcare system, including shortages of medical supplies, equipment and trained personnel, as well as inadequate funding and infrastructure.⁴ Hospitals and clinics struggled to cope with the influx of COVID-19 patients, leading to disruptions in the provision of routine and essential healthcare services.⁵ The government's response to the pandemic was also met with criticism, as it initially downplayed the severity of the crisis and resisted implementing strict public health measures such as lockdowns and mask mandates. This approach,

coupled with a lack of transparent and coordinated communication, further exacerbated the challenges faced by the healthcare system.³ The intersection of COVID-19 and HIV/AIDS care in Tanzania has posed challenges and adaptations in the delivery of care, with fear and resource diversion contributing to lower utilisation of services. There were substantial disruptions in healthcare services, including screening for HIV and management of people living with HIV (PLHIV).¹ The COVID-19 pandemic has resulted in a decrease in the number of new patients seen at HIV clinics and a decrease in requested viral load tests.⁶ Efforts to end the HIV epidemic in the USA have been curtailed due to the pandemic, with disruptions across the HIV care continuum and increased barriers to care for PLHIV. Despite these disruptions, there has been stability in the retention of clinical care, adherence to treatment and viral suppression among PLHIV.⁷ However, innovative approaches have emerged, such as telemedicine (telehealth and virtual care), multimonth dispensing (MMD) of antiretroviral therapy (ART), decentralised drug distribution initiatives and self-collected testing, which may help in achieving HIV care goals.⁸ Understanding the impact of the COVID-19 pandemic on HIV/AIDS care and management is crucial for addressing the challenges, adaptations and lessons learnt in Tanzania and beyond.

Definition of terms

Patients living with HIV/AIDS are individuals who have been diagnosed with HIV/AIDS, regardless of their stage of the disease or treatment status with criteria of confirmed diagnosis of HIV infection, either through a

positive HIV test or a clinical diagnosis of AIDS; currently receiving or seeking treatment and care for their HIV/AIDS condition; experiencing a range of HIV-related symptoms, opportunistic infections and/or complications; may or may not have achieved viral suppression or stable CD4 cell counts and ongoing management and monitoring of their HIV/AIDS condition.⁹

Stable clients were defined per the Tanzanian HIV care and treatment guidelines as those above 5 years of age, having received ART for at least 6 months with >95% adherence, a suppressed viral load (undetectable or very low levels of HIV in the bloodstream), CD4 cell count within the normal range and no adverse drug reactions or current illnesses.¹⁰

MAIN TEXT

Impact on HIV/AIDS care and management

The COVID-19 pandemic has had a significant impact on access to HIV/AIDS treatment and care in Tanzania. The policy response to COVID-19 pandemic in Tanzania was erratic, leading to COVID-19 services being prioritised over regular healthcare services, including HIV/AIDS care.⁷ Patients living with HIV reported perceiving a decline in the quality of their care, which was attributed to increased structural barriers and reduced privacy in clinical interactions.¹¹ The following were some of the key affected areas:

HIV testing and diagnosis

Declined in testing at the community and facility level: The COVID-19 pandemic led to a reduction in HIV testing services, both at the community and facility levels. This was due to the healthcare system operating at a reduced capacity and strict visit restrictions, as resources were diverted to address the COVID-19 response.¹² Similar to Tanzania, there was a 44% decrease in HIV testing uptake among people who inject drugs (intravenous drug users) in India, the absolute number of HIV-positive cases registered during the COVID-19 year significantly declined (478 vs 822) compared with the pre-COVID-19 year among all the typologies.¹³

Retention in care

Interruptions to ART follow-up service: Lockdown measures, travel restrictions and fear of exposure to the virus made it difficult for individuals living with HIV/AIDS to visit healthcare facilities for their regular ART check-ups and medication refills. This led to interruptions in treatment adherence and management of HIV/AIDS, potentially resulting in negative health outcomes.¹⁴ In the Same-Kilimanjaro district of Tanzania, the number of clients lost to follow-up increased from 10–20 before COVID-19 to 80–90 during the pandemic, indicating disruptions in the continuity of care.

ART initiation and adherence

Disruptions in the continuity of HIV pre-exposure prophylaxis (PrEP): The COVID-19 pandemic led to a

decline or discontinuation in PrEP uptake among key populations, mainly due to perceived barriers to PrEP-related care, reduced sexual behaviours and a decreased perceived risk of HIV infection.¹⁵ Furthermore, the initiation and adherence to ART among PLHIV were significantly impacted. According to the study conducted in the Shinyanga region by Winters *et al*¹⁶ to assess the prevalence of depression and anxiety among adults initiating ART during the COVID-19 pandemic, the results showed a substantial increase in the prevalence of depression and anxiety among adults initiating ART during the pandemic compared with before, highlighting the mental health challenges faced.¹⁶ Additionally, disruptions in healthcare services due to fear of infection and limited access to medical care affected the continuity of care for patients with chronic conditions, including those requiring ART initiation and adherence.¹⁴

Supportive services

Inadequate infrastructure at CTC sites for infectious disease prevention: Most of the CTC (Care and Treatment Clinic) sites in Tanzania were not designed to support the prevention of highly infectious diseases like COVID-19. There was a lack of adequate space for social distancing, and the consultation rooms had no separate exit doors, which is a recommended approach for managing infectious diseases.¹⁷

Challenges in distinguishing respiratory infections: Healthcare providers faced difficulties in managing PLHIV with respiratory infections suspected to be COVID-19, as it was challenging to distinguish between pneumocystis carinii pneumonia, pulmonary tuberculosis and COVID-19.¹⁸ This led to some individuals being initially managed as COVID-19 cases but later testing negative.

Cross-cutting challenges

Vaccine hesitancy among PLHIV: PLHIV in Tanzania were hesitant to receive the COVID-19 vaccine, influenced by concerns about vaccine safety, limited knowledge about the vaccines, fear of the vaccine's impact on pre-existing conditions and doubts about vaccine efficacy.^{19 20} The influence of traditional and home remedies, as well as inconsistent messaging from community and political leaders, also contributed to vaccine hesitancy.^{21 22}

Healthcare adaptation

Healthcare system adaptations to ensure the continuity of HIV/AIDS care during the COVID-19 pandemic in Tanzania involved various measures. These included reorganisation of health facilities, reallocation of staff, rescheduling of antenatal and postnatal clinics, and reduced time for health education and child monitoring.⁸ Additionally, there were efforts to address the scarcity of essential commodities such as vaccines, equipment and medical supplies. Training of healthcare workers (HCWs) on infection prevention and control (IPC) was implemented, along with the distribution of IPC

reference documents and guidelines.¹⁴ The provision of water, sanitation and hygiene facilities, as well as emergency medical equipment, was also prioritised. These adaptations aimed to maintain essential health services (EHS) for HIV/AIDS care, including institutional deliveries, antenatal and postnatal visits, and immunisation. The interventions implemented during the pandemic helped to ensure the continuity of HIV/AIDS care and management in Tanzania, despite the challenges posed by the COVID-19 pandemic.

Healthcare adaptations during the COVID-19 pandemic in Tanzania included the adaptation of HIV/AIDS service delivery models to minimise in-person interactions and reduce the risk of COVID-19 transmission. This included telemedicine (telehealth and virtual care), MMD of ART, decentralised drug distribution.

MMD of ART

To reduce the frequency of clinic visits, the government implemented a policy of providing patients with a multi-month supply of ART medications, typically 3–6 months supply. The MMD strategy allowed for an increase in the number of ART packages that patients could collect at once, reducing the frequency of hospital visits and minimising potential exposure to the virus.¹⁶ This approach was part of the Continued Essential Services project, which aimed to maintain EHS, including ART delivery, during the pandemic.¹⁴ This approach during the COVID-19 pandemic has shown significant cost savings and efficiency gains. A study done in Tanzania by Hoko-roro *et al* evaluating the transition to MMD compared with monthly dispensing (MD), estimated that total treatment costs without MMD would rise from US\$189 million in 2018 to US\$244 million in 2030 while the introduction of 6-month MMD could reduce annual facility-based treatment costs to US\$205 million in 2030, resulting in total savings of US\$425 million over 13 years.¹⁴

Decentralised drug distribution

Tanzania leveraged existing community-based distribution networks, such as through community health workers and community-based organisations, to deliver ART medications to patients' homes or designated community distribution points. This initiative aimed to address logistic and organisational challenges in HIV viral load monitoring programmes by decentralising services to remote, resource-limited settings.^{11 23 24} The programme focused on maintaining EHS by strengthening capacity through training HCWs in IPC, distributing relevant guidelines and equipment and providing support to health facilities.²⁵ The programme ensured that PLHIV could access necessary medications and care without disruptions, contributing to stable indicators of care utilisation and processes of care during the pandemic.¹⁴ Data from various studies showed that despite the pandemic, the number of drug refills remained stable across different periods, with 1385, 1330 and 1411 refills during the pandemic, pre-pandemic and post-pandemic periods,

respectively.^{5 23} Additionally, the number of patients with undetectable viral loads was consistently high at 85%, 90% and 93% during the same periods, indicating sustained viral suppression rates.^{5 26}

Telehealth and virtual care

Telehealth or telemedicine refers to the exchange of medical information from one site to another through electronic communication to improve a patient's health. This practice frequently uses various communication technologies, such as synchronous dialogue conducted over a telephone or the sharing of information via video or images. Since the first case of COVID-19 in Tanzania was established on 16 March 2020,²⁷ many health facilities have resorted to teleconsultations for continued HIV/AIDS patient care. The utilisation of telehealth and virtual care platforms such as video conferencing and secure messaging applications was used to enable remote consultations between healthcare providers and HIV/AIDS patients. Telemedicine was adopted by 24% of clinics surveyed, allowing for remote consultations and reducing the need for in-person visits.²⁸ Prior to the COVID-19 pandemic, the use of telemedicine for HIV/AIDS care in Tanzania was relatively low. However, the onset of the COVID-19 pandemic significantly disrupted traditional in-person healthcare services, leading to a rapid shift towards telemedicine as a way to maintain access to HIV/AIDS care while mitigating the risks of virus transmission. A telemedicine initiative was implemented at the Aga Khan Hospital in Dar es Salaam, Tanzania, during the period of April–June 2020. The project involved promoting the availability of virtual consultations through social media campaigns, informing patients about the option to access care remotely across different clinics within the hospital. The project was considered relatively successful, as it received around 218 telephone inquiries from interested patients over the course of the implementation period. Of these inquiries, roughly 53% of the callers went on to complete a virtual consultation.²⁹ This allowed for the assessment of patients' health status, medication adherence and any emerging concerns, without the need for in-person visits.²⁸ Healthcare providers could monitor patients' progress, adjust treatment plans and provide guidance and support remotely, reducing the risk of COVID-19 exposure. Also, telehealth and virtual care platforms were used to provide adherence support and counselling services to HIV/AIDS patients. Healthcare providers engaged with patients through video consultations, interactive educational materials and medication reminders to address any challenges they were facing in adhering to their treatment regimens.² This personalised support helped to maintain patient engagement and retention in care during the COVID-19 pandemic. This approach allowed healthcare providers to monitor and support patients' health without the need for in-person visits, reducing the risk of COVID-19 transmission.

Public health responses

The MOHCDGEC developed the Interim Guidance on Provision of HIV Prevention and Care Services in the context of COVID-19 outbreak in Tanzania, which was published in 2019. The goal of that interim guidance was to maintain standard precautions against COVID-19 while ensuring continuity of service delivery to PLHIV in the COVID-19 context. The proposed measures include prevention of SARS-CoV-19 infection, reducing the number of PLHIV attending facility visits, strategies for decongesting care and treatment clinics, MMD and ART outreach which protect HCWs and PLHIV from getting new infections. Recommendations for health facility managers and HCWs for personal protection, such as personal protection by mass masking and the use of PPE at CTC, space optimisation, triage for symptomatic PLHIV and those with comorbidities, use of virtual services and postponement of routine investigations were implemented¹⁷ as shown in online supplemental table 1 illustrates public-private partnerships and activities implemented in response to the COVID-19 pandemic in Tanzania addressing the challenges in continuity of HIV/AIDS care and management. According to a country report done in Zanzibar by Mshenga *et al*,¹² the hidden effects of COVID-19 on HIV services in Zanzibar were assessed. The study narrated the response of the public health system in Zanzibar to increasing outreach services for HIV testing in 3 and 6 months of multimonths dispensing of ART. These interventions contribute to an increase in HIV positive identification from 0.6% in the period of January–June 2020 to 0.7% in July–December 2020.¹² Due to limitations on visiting health facilities, PLHIV presented their cards at facility entrances, potentially impacting attendance. Therefore, suggesting a differentiated service delivery (DSD) model, particularly for stable clients. Strategies such as community ART services, facility block system ART refills for stable clients in collaboration with Zanzibar Associations of People Living with HIV (ZAPHA+) are being implemented to ensure the continuity of care.

In response to the COVID-19 pandemic, a study conducted by Hamisi *et al*,³⁰ assessed global health security amid COVID-19: The Tanzanian government's response to the COVID-19 pandemic, emphasised the policy changes from traditional medicines to a science-based approach to follow WHO recommendations on vaccine use to combat COVID-19 virus.³⁰ Tanzania's government started publishing statistics and accepting foreign aid, including vaccines, under pressure from international health authorities. PLHIV were among the priority groups. The Center for Disease Control and Prevention (CDC) Tanzania supported the government in distributing over 11 million vaccinations by December 2022.^{31 32} Through the US President's Emergency Plan for AIDS Relief, the CDC integrated COVID-19 vaccination in HIV and TB clinics in 11 districts of Tanzania. More than 1000 COVID-19 stations were created in HIV clinics; trainings for vaccinators and advocacy meetings

are among the strategies to reach 70% of the population, including PLHIV.³³

According to the Tanzania HIV Impact Survey 2022–2023, interventions and activities implemented during COVID-19 pandemic to ensure HIV/AIDS continuity were effective.³⁴ Before and during COVID-19, as per country reports for 2018 and 2020, the percentage of PLHIV who knew their status decreased from 75% in 2018 to 60.6% in 2020. The percentage of PLHIV who knew their status and were on treatment decreased from 98% in 2018 to 93.6% in 2020. The percentage of PLHIV who were on treatment and had viral load suppression remained at 87% in both 2018 and 2020.³⁵ The data show that continuous access to HIV/AIDS care and treatment was affected during the COVID-19 pandemic. However, post-COVID-19, the percentage of PLHIV who knew their status increased from 60.6% in 2020 to 82.7% in 2022–2023, indicating an improvement in the effectiveness of interventions to ensure HIV testing and diagnosis after the COVID-19 pandemic. The percentage of PLHIV who knew their status and were on treatment increased from 93.6% in 2020 to 97.9% in 2022–2023, showing an improvement in the effectiveness of interventions to ensure continuous access to treatment after the pandemic. The percentage of PLHIV who were on treatment and had viral load suppression increased from 87% in 2020 to 94.3% in 2022–2023, indicating that the interventions were effective in improving viral load suppression after the COVID-19 pandemic³⁴ as shown in table 1.

Lessons learnt

Lessons and best practices derived from the intersection of COVID-19 and HIV/AIDS care

The intersection of COVID-19 and HIV/AIDS care has presented numerous challenges and opportunities, leading to valuable lessons and best practices in Tanzania. One of the key lessons is the importance of maintaining essential services for HIV/AIDS patients during a pandemic. While the focus has been on COVID-19, it is crucial to ensure that individuals living with HIV/AIDS continue to receive uninterrupted care, treatment and support.^{12 14 17} Tanzania has maintained the interventions of HIV care, treatment and care postpandemic with high efficiency by keeping flexibility in providing the services into facilities for community-led care in case of any emergency.³⁶

Another essential lesson is the need for a coordinated and holistic approach to public health. Addressing both COVID-19 and HIV/AIDS requires collaboration between healthcare systems, government agencies and community organisations. This integrated approach can enhance resource allocation, information sharing and the overall delivery of care.^{14 37} Engaging communities, involving them in decision-making processes and strengthening partnerships with local organisations are valuable practices that enhance the overall response to both COVID-19 and HIV/AIDS. The region has extended its effort to work with non-governmental organisations

Table 1 Percentages shown in the table refer to the conditional 90-90-90 and 95-95-95 targets

Year	People living with HIV know their status	People living with HIV who know their status are on treatment	People living with HIV who are on treatment and have viral load suppression
Joint United Nations Programme on HIV/AIDS (UNAIDS) 90-90-90 target by 2020			
2018	75%	98%	87%
2020	60.6%	93.6%	87.0%
Joint United Nations Programme on HIV/AIDS (UNAIDS) 95-95-95 targets by 2025			
2022–2023	82.7%	97.9%	94.3%

Sources: Tanzania HIV Impact Survey (THIS 2022–2023), Country progress report—United Republic of Tanzania (2020). Each row with their respective years represents the unconditional (overall) percentages for each indicator among all people living with HIV in Tanzania. The data highlight the effectiveness of interventions implemented during COVID-19 pandemic to ensure the continuity of HIV/AIDS care.

(NGOs), faith-based organisations and associations of PLHIV post-COVID-19 to target high provision of services of HIV services according to the needs of clients by involving them in different stages of their participation in these platforms they attended.³⁸

The COVID-19 pandemic highlighted the importance of strengthening healthcare systems and infrastructure to effectively respond to health emergencies. Lessons learnt from the intersection of COVID-19 and HIV/AIDS care in Tanzania emphasise the need to invest in healthcare workforce capacity, laboratory testing capacity and supply chain management.^{8 14 37} Building a resilient healthcare system capable of addressing various health challenges and adapting to unforeseen circumstances is crucial. The region has addressed this by purchasing the mobile van for surveillance and linkage to care services, which cooperates with the local street government in the implementation of its services.³⁹

The COVID-19 pandemic necessitated the adoption of technological advancements to overcome mobility and physical distancing challenges. The use of telemedicine and mobile application platforms proved to be effective in providing HIV/AIDS care and support services during the pandemic.¹¹ These tools allow for remote consultations, medication adherence support and mental health assistance, which improved access to care and minimise disruptions in service delivery.⁴⁰ Among the technological innovations that were implemented, few have been retained after the COVID-19 pandemic, especially the mHealth App (Jichunge). The Jichunge mHealth app was used to promote adherence to PrEP care among female sex workers in Tanzania. A significant challenge in retaining the mHealth app was the loss of access by a large proportion of users due to issues related to their phones, such as being lost, stolen, sold, changed or damaged.⁴¹

Lastly, in the wake of the COVID-19 pandemic, lessons learnt underscore the importance of strengthening health information systems to support data collection, analysis and decision-making. Robust and interoperable information systems enabled efficient monitoring of HIV/AIDS

care and management during emergencies, facilitating timely interventions and resource allocation.⁴² Lessons include the need for real-time data reporting, integration of various health information systems and data-driven decision-making to improve patient outcomes and programme effectiveness.

Successful interventions and areas for improvement in COVID-19 and HIV/AIDS care

The COVID-19 pandemic and the ongoing HIV/AIDS crisis have both presented significant challenges to global public health. As such, it is crucial to analyse successful interventions and areas for improvement in the care and management of these two health emergencies. One of the successful interventions is vaccination rollouts in Tanzania, which have significantly reduced the spread of COVID-19 and its severe outcomes. The success of vaccination campaigns in reducing the spread of COVID-19 and its severe outcomes cannot be overstated. As countries around the world continue to roll out vaccination programmes, the impact is becoming increasingly evident. One of the key factors contributing to the success of these campaigns is the high vaccination coverage achieved in many regions. This has not only led to a decline in the number of new cases but has also played a crucial role in preventing severe illnesses and hospitalisations.²² Implementation of public health measures such as mask mandates, social distancing and lockdowns is among the successful interventions that have proven effective in curbing the transmission of the virus and controlling the spread of infectious diseases, particularly during the COVID-19 pandemic. These interventions have not only proven effective in reducing the transmission of the virus but have also helped in protecting vulnerable populations and preventing healthcare systems from becoming overwhelmed.⁴³

Another successful intervention in the context of HIV/AIDS is the availability of ART, which has been a game-changer in the management of HIV/AIDS, particularly during the COVID-19 pandemic, whereby Tanzania opted for 3–6 MMD to all stable clients across the country.

This unprecedented access to treatment has turned what was once considered a fatal illness into a chronic condition that can be effectively managed, greatly improving patient outcomes and quality of life.⁴⁴ Also, the involvement of community organisations and support groups has helped reduce stigma and improve access to care for those living with HIV/AIDS during the COVID-19 pandemic, providing essential support but also contributing to raising awareness and promoting inclusivity. Looking for the interventions conducted in Zanzibar whereby the ZAPHA+ played a major role in the establishment of community outreach services for dispensing multimonthly for stable clients in its office in collaboration with the Zanzibar Integrated HIV, Hepatitis, TB and Leprosy Programme. Amid the pandemic, community organisations have adapted their services to ensure that those living with HIV/AIDS continue to receive the care and support they need. This has included the provision of virtual support groups, counselling services and assistance with accessing medications and healthcare.¹²

While significant progress has been made in addressing COVID-19 and HIV/AIDS, there remain areas that require attention and improvement, as outlined here under: First, providing comprehensive mental health services to address the psychological impact of the pandemic on individuals and continued efforts to combat discrimination and stigmatisation of PLHIV. Second, strengthening surveillance and response systems to better prepare for future pandemics and addressing the disparity in vaccine distribution to ensure equitable access for all populations. Third, ensure accessibility to HIV commodities, including HIV test kits, EID-DNA PCR for PMTCT and ARVs, to maintain essential services, particularly in resource-limited settings.

CONCLUSION

The COVID-19 pandemic posed significant challenges to the continuity of HIV/AIDS care in Tanzania, impacting access to treatment and the quality of care for patients living with HIV. Healthcare system adaptations, including reorganisation of facilities and training of HCWs on infection prevention, played a crucial role in maintaining EHS for HIV/AIDS care during the pandemic. Efforts to address interruptions to ART follow-up services, such as advocating for extended ARV refilling periods and providing psychosocial support, were key activities implemented to mitigate the impact of the pandemic on HIV/AIDS care in Tanzania. Collaboration between organisations like UNICEF and the national task force on HIV/COVID-19 was essential in developing guidance and standard operating procedures to ensure uninterrupted services for PLHIV during facility closures due to the pandemic.

Author affiliations

¹Department of Health, Social Welfare and Nutrition, Lindi Municipal Council, Lindi, Tanzania, United Republic of

²Zanzibar Integrated HIV, Hepatitis, TB and Leprosy Program, Zanzibar Ministry of Health, Zanzibar, Tanzania, United Republic of

³Department of Health, Social Welfare and Nutrition Services, Same District Council, Kilimanjaro, Tanzania, United Republic of

⁴USAID Afya Yangu Southern Zone, Management and Development for Health, Dar es Salaam, Tanzania, United Republic of

⁵Department of Health, Social Welfare and Nutrition Services, Regional Administrative Secretary, Lindi Region, Tanzania, United Republic of

⁶National TB Program, Department of Public Health, Republic of Botswana Ministry of Health and Wellness, Gaborone, Botswana

Contributors Conceptualisation and study design: ELM; writing—original draft preparation: ELM, MMM, APA, MSM, KMK and KSO; writing—review and editing, ELM, MMM, APA, MSM, KMK and KSO; main manuscript: ELM, MMM and KSO. All authors have read and agreed to the published version of the manuscript. ELM accepts full responsibility for the finished work and/or the conduct of the study, had access to the data and controlled the decision to publish.

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ORCID iD

Epafra Luka Mwanja <http://orcid.org/0009-0005-1931-8814>

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