

Title: Women living with HIV, diabetes and/or hypertension multimorbidity in Uganda: A qualitative exploration of experiences accessing an integrated care service.

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Abstract

Purpose: Women experience a triple burden of ill-health spanning non-communicable diseases (NCDs), reproductive and maternal health conditions and human immunodeficiency virus (HIV) in sub-Saharan Africa.. Whilst there is research on integrated service experiences of women living with HIV (WLHIV) and cancer, little is known regarding those of WLHIV, diabetes and/or hypertension when accessing integrated care.

Design: The INTE-AFRICA project conducted a pragmatic parallel arm cluster randomised trial to scale up and evaluate ‘one-stop’ integrated care clinics for HIV-infection, diabetes and hypertension at selected primary care centres in Uganda. A qualitative process evaluation explored and documented patient experiences of integrated care for HIV, diabetes and/or hypertension. In-depth interviews were conducted using a phenomenological approach with six WLHIV with diabetes and/or hypertension accessing a ‘one stop’ clinic. Thematic analysis of narratives revealed five themes: *lay health knowledge and alternative medicine; community stigma; experiences of integrated care; navigating personal challenges and health service constraints.*

Findings: WLHIV described patient pathways navigating HIV and diabetes/hypertension, with caregiving responsibilities, poverty, travel time and cost and personal ill health impacting on their ability to adhere to multi-morbid integrated treatment. Health service barriers to optimal integrated care included unreliable drug supply for diabetes/hypertension and HIV linked stigma. Comprehensive integrated care is recommended to further consider gender sensitive aspects of care.

Originality: This study whilst small scale, provides a unique insight into the lived experience of WLHIV navigating care for HIV and diabetes and/or hypertension, and how a ‘one stop’ integrated care clinic can support them (and their children) in their treatment journeys.

Key Words

HIV, non-communicable disease, diabetes, hypertension, integrated care, women, Uganda

Background

Globally, there is a rapidly increasing burden of non-communicable diseases (NCDs), with an estimated 41 million deaths annually, equivalent to 71% of all deaths globally (WHO, 2021). According to the World Health Organization (WHO) (2021), cardiovascular disease accounts for the majority of related deaths (estimated 17.9 million per year globally), followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million). Particularly diabetes and hypertension as chronic long term conditions represent a growing challenge to healthcare systems worldwide, with detection and treatment forming essential aspects of the health service response to NCDs (NCD Countdown 2030 Collaborators, 2020). Diabetes and hypertension are also the underlying causes of the bulk of NCD related mortality, disproportionately affecting people in low- and middle-income countries (LMICs). Of the 15 million NCD related deaths annually which occur in people aged 30-69 years, 85% occur in LMICs.

The WHO Global Status Report on non-communicable diseases predicts that, by 2030, 85% of NCD-related deaths among women will occur in LMICs, many of which are in sub-Saharan Africa (Alwan *et al.*, 2011). Women living in LMICs experience a triple burden of ill-health spanning NCDs, reproductive and maternal health conditions and communicable diseases (human immunodeficiency virus (HIV)) and as a result are significantly at risk of developing NCDs (NCD Alliance, 2022). The double burden of HIV and NCD related complications in pregnancy (including hyperglycemic disorders, hypertensive disorders, weight gain, and osteopenia) in LMICs with high burden of HIV disease constitutes a significant public health threat for women of child bearing age (Hoffman *et al.*, 2021). Women with cardiovascular disease in LMICs are also more likely to die from it than women in higher resource settings (NCD Alliance, 2022).

Sub-Saharan Africa

We report here from sub-Saharan Africa, where although HIV-infection is a leading cause of premature death amongst adults, the rapidly increasing burden of diabetes and hypertension in the region, have fuelled a dual epidemic (Adeloye and Basquill, 2014; Atun *et al.*, 2017). Urbanisation and poor nutrition/activity levels along with high levels of poverty exacerbate chronic ill-health and mortality rates (Adeloye and Basquill, 2014; Atun *et al.*, 2017). Estimates state that 78% of adults over 55 years in sub-Saharan Africa are living with hypertension (Ibrahim and Damasceno, 2012) and 28 million are living with diabetes, with diabetes prevalence anticipated to double between 2010 and 2030 (McCombe *et al.*, 2022). Patients are increasingly presenting with earlier age of onset of disease and co and multi-morbidity with HIV in sub-Saharan Africa (Guwatudde *et al.*, 2015; Jaffar and Gill, 2017; Chang *et al.*, 2019; George *et al.*, 2019). Women are also particularly vulnerable to contracting HIV, with 2020 UNAIDS data indicating 59% of adults living with HIV are women, and that women and girls account for 63% of all new HIV infections in sub-Saharan Africa (UNAIDS, 2021). The negative impacts of these conditions are notably more severe within vulnerable and poor populations, especially people living with HIV (PLHIV) and with women disproportionately affected by HIV and NCDs, particularly

diabetes and hypertension (Ibrahim and Damasceno, 2012; McCombe *et al.*, 2021; UNAIDS, 2021; Cheza *et al.*, 2021). For example in Kenya, PLHIV have a high prevalence of NCD diagnoses (Achwoka *et al.*, 2019), particularly concentrated in key populations living with HIV (which include female sex workers) (Achwoka *et al.*, 2020). NCDs are also the leading cause of both death and disability-adjusted life years for women older than 50 years in sub-Saharan Africa (IHME, 2017; NCD Alliance, 2022).

Integrated NCD/HIV Care in sub-Saharan Africa

Rising rates and concerns about the management of diabetes and hypertension among PLHIV constitute major health system challenges in sub-Saharan Africa (Jaffar *et al.*, 2021). Traditionally, health service coverage for diabetes and hypertension was low (Jaffar, 2016), with efforts to coordinate control and care programmes rising in recent years (Jaffar, 2016; Lupafya *et al.*, 2016; Jaffar and Gill, 2017). Care for both conditions is typically provided as verticalized disease programmes. Funding for services, medicines supply and robust research evidence to inform NCD and multi-morbid health policy is still developing (Katende *et al.*, 2015; Manne-Goehler *et al.*, 2016; Price *et al.*, 2018). Conditions such as diabetes and hypertension, and HIV require lifelong care, with integrated care of these conditions garnering increased interest amongst policy makers, scientists and academics in many sub-Saharan African countries (Edwards *et al.*, 2015; Rachlid *et al.*, 2016; Divala *et al.*, 2016; Some *et al.*, 2016; Ameh *et al.*, 2017; Golovaty *et al.*, 2018; Haldane *et al.*, 2018; Juma *et al.*, 2018; Masupe *et al.*, 2019; Iwelunmor *et al.*, 2019; Kwarisiima *et al.*, 2019; Kintu *et al.*, 2020). Integrated care is defined as *‘the coordination, colocation or simultaneous delivery of communicable and non-communicable services to patients who need it, when they need it’* (Vorkoper *et al.*, 2018; Singh *et al.*, 2021: p2) and has become a well-received intervention in sub-Saharan Africa when targeting PLHIV and people living with NCDs (Duffy *et al.*, 2017; Singh *et al.*, 2021).

Recent efforts originate from a European Commission Horizon 2020 funded pragmatic parallel arm cluster randomised trial (INTE-AFRICA) (Mfinanga *et al.*, 2021) which has published a Delphi consensus study on best practice on integrating diabetes, hypertension and HIV care in Africa (Murtagh *et al.*, 2021). There is also a growing interest in documenting and understanding patient and provider experiences of integrated NCD and HIV care in sub-Saharan Africa (mostly South Africa, Malawi, Uganda, Tanzania and Kenya) (Venables *et al.*, 2016; Ameh *et al.*, 2017; Matima *et al.*, 2018; Lebina *et al.*, 2020; Moucheraud *et al.*, 2020; Muddu *et al.*, 2020; Bosire *et al.*, 2021). Of further interest is the recognition that PLHIV experience NCDs and related risk factors differently and interventions need to be tailored to gender specifics of men and women (Choun *et al.*, 2017). The integration of NCD prevention and control efforts within existing health services for women is becoming increasingly important to support women’s health and socioeconomic well-being (Sando *et al.*, 2020; NCD Alliance, 2022). Whilst the bulk of research has focused on measuring incidence and prevalence and understanding healthcare utilisation and service experiences of women accessing integrated HIV and sexual and reproductive health (cervical cancers) services in the region (South Africa, Kenya and

Zimbabwe) (Colombini *et al.*, 2016; Clouse *et al.*, 2018; Cheza *et al.*, 2021), little is known regarding women's experiences of integrated care specifically for women living with HIV (WLHIV) and diabetes and/or hypertension.

Our study responds to that need, aiming to explore their perspectives when accessing a 'one stop' HIV/NCD (hypertension and diabetes) integrated care clinic in Kampala, Uganda.

Methodology

Notwithstanding efforts to tackle communicable diseases, Uganda is experiencing a growing burden of NCDs, especially diabetes and hypertension across all socioeconomic strata (Meghani *et al.*, 2021). From 2018-2020 a feasibility single arm intervention study (Management of Chronic Conditions in Africa MOCCA) piloted integrated HIV and non-communicable disease care in the Wakiso district in central Uganda (Bukenya *et al.*, 2021, Birungi *et al.*, 2021). Clinical and evaluation findings were encouraging and INTE-AFRICA subsequently implemented additional scale up of integrated care using 'one-stop' integrated care clinics for HIV-infection, diabetes and hypertension at selected primary care centres (trial protocol published elsewhere, Mfinanga *et al.*, 2021). Essentially 'one stop' integrated care clinics operated integrated health education and concurrent management of HIV, hypertension and diabetes by the same clinician or team of clinicians (nurses, counsellors other staff) in one facility.

Building on the MOCCA and INTE-AFRICA trials in Uganda which adopted a gender neutral approach, this study aimed to explore and illustrate the lived experiences of Ugandan WLHIV with diabetes/hypertension multi-morbidity, receiving care at a 'one-stop' integrated care clinic in central Uganda. It was situated within the INTE-AFRICA trial process evaluation (operated in 2022) which aimed to explore multi-stakeholder experiences, attitudes and practices programme implementation and to develop an understanding of the impact and importance of context, especially the broader structural and contextual factors on the implementation process of service integration (process evaluation protocol published elsewhere, Van Hout *et al.*, 2020). Ethical approval was granted by the Liverpool School of Tropical Medicine (UK), the AIDS Support Organisation (TASO) Research and Ethics Committee and Uganda National Council of Science and Technology (UNCST).

A purposive sample of 30 patients who had spent 6 months or more being treated at the 'one-stop' integrated care clinic in Wakiso district of Kampala-Uganda provided informed written consent and were interviewed as part of the INTE-AFRICA trial process evaluation between 11th August 2021 and 12th February 2022. Out of this group, only six patients were WLHIV with at least one co-morbidity (hypertension, diabetes or both). The remainder were male patients, or female patients with only HIV, or only hypertension and/or diabetes. Participants were all aged 42-55 years, and all but one had received a HIV diagnosis in less than 10 years. One detailed having been diagnosed one year prior to interview. See Table 1.

Insert **Table 1 - Participant profile** about here

A phenomenological approach to collecting and analysing data was adopted in order to reveal the structures of subjective experience and meaning of a lived phenomenon (in first person point of view) (Karlson, 1983). In depth phenomenological interviews explored their patient journeys, management of their conditions, and their perceptions and experiences of integrated care (Van Hout *et al.*, 2020). Specific questions were asked regarding their perceptions of receiving integrated HIV/AIDS care and NCD care, observed changes in health provider roles, attitudes and patient relationships; impacts of accessing integrated health care (medicine supplies, health education, consultations, waiting times and processes); and barriers to access, retention and medicines adherence. All interviews were audio recorded, transcribed and translated from the local language (Luganda) into English. Data analysis was iterative, moving between data collection and analysis to test emerging theories, and looking for convergent and divergent perspectives of care. The data were coded in a systematic and logical manner using a data-driven approach and analysed thematically with support from NVivo (Braun *et al.*, 2019). Five themes emerged: *lay health knowledge and alternative medicine*; *community stigma*; *experiences of integrated care*; *navigating personal challenges* and *health service constraints*.

Results

Lay health knowledge and alternative medicine

There were different experiences regarding diagnosis of HIV and diagnosis of diabetes and/or hypertension. HIV diagnosis occurred due to routine antenatal testing or when admitted to hospital for tuberculosis related illnesses. All participants described intense fear and shock around HIV diagnosis, but were reassured by clinicians and received antiretroviral treatment, including during pregnancy and childbirth. There were varied levels of women's health knowledge about their co-morbid conditions. Only one had an accurate understanding of how HIV is acquired, and how diabetes and hypertension develop over time. Several women were unclear in their understanding of their co-morbidities and indicated need for more information. Many described how the health workers at the clinic provided information regarding dietary and lifestyle changes, and that this guidance was welcomed.

"I really don't know. I would take half spoon of sugar in a cup of tea. I don't know whether it is due to taking less or a lot of sugar. So I need to know." (Single WLHIV with hypertension and diabetes, 50 years)

Local cultural beliefs relating to causes of diabetes and hypertension appeared to be important to them.

"I hear people saying that high blood pressure is caused by witchcraft, but I don't believe in those things. I believe in God." (Widowed WLHIV with hypertension, 44 years)

"Some people say that it is witchcraft. If they had not gone to the hospital, he/she might go to the shrine thinking that he was bewitched" (Single WLHIV with diabetes, 42 years)

There was some discussion around the common use of '*healers and witch doctors*' in the community and the seeking of advice on traditional treatments from members of the village.

“They first took her to traditional healers and witch doctors, but she did not improve. It was discovered that she had HIV. I decided to go to the hospital and if they did not discover anything, then I would go and consult with the traditional healers.” (Married WLHIV with diabetes, 42 years)

“I started to take sour herbs like ‘mululuza. (bitter leaf or vernonia amygdalina)’ and ‘bombo’ (momordica foetida). They told me that if I take them the blood pressure will reduce.” (Widowed WLHIV with hypertension, 44 years)

Decisions to take herbal medicine or consult traditional healers did not appear to be a result of pressure from members of the community, but rather represented a “cue to action” for some. For example, one participant revealed that:

“Because some people say that diabetes will heal when you take herbs, some say it can only be soothed and some herbs soothe.” (Widowed WLHIV with hypertension and diabetes, 50 years)

Community stigma

The women revealed a range of local community level (often pejorative) meanings attached to HIV, particularly centering on the devastating impact of HIV on families and communities, and the associated stigma of promiscuity attached to those living with HIV.

“In our daily life there are some people who call it “mpawo atalikaaba” which means that every person has cried because of HIV, it has reached to every family. Others call it “obulwadde bwabenzi” meaning the disease of people with many sexual partners.” .”/who are unfaithful”. (Widowed WLHIV with hypertension and diabetes, 50 years)

Participants spoke about how HIV linked stigma could be a barrier to using the clinic.

“Because people talk, if the person comes from your village and they see you picking up HIV drugs, they can tell everyone that you have HIV...some people will not come to the clinic.” (Widowed WLHIV with hypertension, 44 years)

Experiences of integrated care

All participants said that they wished to continue receiving care at the ‘one stop’ clinic. All described feeling their medical treatment and care was much improved, compared to use of separate HIV and non-communicable disease clinics, and described how their quality of life had improved. All reported that their conditions became stable when using the clinic, with many experiencing both psychological and economic benefits, including an increased ability to work and earn an income for their families.

“I wish to stay here. I only come once and I get all my treatment at a go. I have seen a lot of changes in my life.... when I started to come here for medication, I have improved my health, I no longer fall sick frequently. I’m not worried anymore that I will die. I get more

time in the garden and I grow crops that we eat at home and sell..” (Widowed WLHIV with hypertension and diabetes, 50 years)

The women described how their help seeking experiences became easier and more supportive when attending the ‘one stop’ clinic.

“The quality of services is really good to mewhen you come, they give you time to explain how you are feeling and they give you the necessary advice.” (Widowed WLHIV with hypertension and diabetes, 50 years)

One described a previous standalone HIV clinic where she was incorrectly prescribed a new HIV medication, contraindicated for patients with diabetes and hypertension.

“I was very sick before I came here....ever since I joined [here], they give me another medicine, I can see the change now.... headaches and body weaknesses have stopped. It encourages me to keep doing whatever the doctors tell me to do. I have never missed any single day [appointment] because I have got a big change in my life.” (Widowed WLHIV with hypertension and diabetes, 50 years)

Seating within the clinic was described as inclusive of people with all conditions, that is, there was no designated seating by condition. All observed how mixed seating could be a positive feature, especially given long waiting times, during which patients relaxed and chatted with each other. They discussed how women would often discuss diet and nutrition advice and tips with their fellow patients, as well as sharing the story of their medical journey with each other whilst waiting to be seen. They felt that this peer support represented an additional layer of support.

“I became free and strong that I’m not alone. I talk freely because now they already know that I have all the diseases. Through such talks, we all become stronger....We advise each other on what to do and not to do.” (Widowed WLHIV with diabetes and hypertension, 50 years)

Navigating personal challenges

All described the substantial impact on their lives of chronic ill-health, caregiver responsibilities, poverty, costs of non-communicable disease medicines, and challenges in adhering to the advised diets and medication regimes.

“I was badly affected by HIV. I was severely ill that I almost died, I got treatment and was able to get better. I have never worked again. I have a family to support. I have to look for money to be able to reach the doctors. So it is hard to get money and food.” (Married WLHIV with diabetes, 42 years)

“Sometimes I can only get very little money for buying food and so I cannot afford to spend it on medicine before I buy food.” (Widowed WLHIV with hypertension, 44 years)

When asked whether they experienced any changes in their economic activities, some revealed that they were unable to work and relied on receiving support from their families, particularly their children.

“I no longer work ever since the time I got paralyzed, I have never done any work. it’s my child that takes care of me.” (Widowed WLHIV with hypertension, 44 years)

In contrast, another widowed participant described how enrolling in integrated care and commencing medication led to her resuming her previous working activities and an increase in income.

“Income levels are low because you are not working actively like when you are strong. But me since I started to take medication, I started to work normally.” (Widowed WLHIV with hypertension and diabetes, 50 years).

All participants observed how medical care for several conditions in one clinic was useful to them in terms of reducing time and cost spent accessing care. Distances travelled to the clinic varied, with the majority still experiencing challenges relating to affordability of transport.

“Getting all the treatment in one place helps you save money used for transport. Sometimes I do not have transport so I have to make sure I look for money to come. Yet at home they might not have food. This discourages me a lot.” (Married WLHIV with diabetes, 42 years)

The time spent within the clinic was also still a challenge, with all reporting that they had to attend very early in the morning, and often still being there until late in the afternoon. Many described spending full days dedicated to accessing their treatment and care.

Service level constraints

Several participants said that, as the demand for care at the clinic was substantial, the lack of clinical staff should be addressed in order to alleviate wait times. This was especially important to them given their family responsibilities, patients who required an overnight fast, work commitments and frailty.

“I would like for them to add us more doctors. All the patients for diabetes, hypertension and HIV come together and wait. ... there are a lot of people....” (Single WLHIV with diabetes, 42 years)

Access to diabetes and hypertension drugs was illustrated as a recurrent problem for all because, while HIV drugs was freely available at no cost, these non-communicable disease medications were at the personal cost of the patient. Some described having to sell something from home, in order to have sufficient money for diabetes and/or hypertension treatment. One described inconsistent pricing of diabetes and hypertension drugs (ranging from 1000Ush to 1500Ush per tablet (approximately 0.28 – 0.43 USD). This was said to hinder adherence to treatment regimes.

“...a challenge is that the medicine is expensive... here at the clinic they don’t have the medicine for blood pressure, so sometimes I’m able to buy and sometimes I don’t afford it.” (Widowed WLHIV with hypertension, 44 years)

Some observed having to live with their symptoms until they had funds to purchase the medicines.

“A challenge is lack of drugs. The doctors treat us well and counsel us. ...There are times when they do not have drugs for diabetes. They give you one pack and tell you the buy the

rest. You may not have money for buying drugs at that particular time.” (Married WLHIV with diabetes, 42 years)

Drug shortages impacted on the general satisfaction with the clinic.

“If the medicine is available, then there are quality services. Because services without medication is not quality.” (Single WLHIV with hypertension and diabetes, 50 years)

Discussion

This study of Ugandan women’s experiences of accessing integrated care for HIV, diabetes and hypertension whilst limited by its small scale, provides a unique insight into their lived and contextual experiences of navigating care for multiple conditions, and how a ‘one stop’ clinic can support them (and their children) in their treatment journeys. It builds upon the suite of information arising from the general and gender neutral assessment of integrated care within sub-Saharan African countries such as South Africa, Kenya and Tanzania. It also complements the existing research base on integrated HIV and sexual and reproductive care for women living in the region.

The study essentially found that women living with diabetes and/or hypertension together with HIV experienced many difficulties in getting the care that they needed, but that clinics integrating NCD and HIV care were better than separate services in facilitating access and peer support. The women’s narratives revealed substantial satisfaction with the ‘one stop’ service, despite high demand causing long waiting times to see clinicians and disrupted care due to requirements to pay for diabetes and hypertension drugs. Health service barriers to optimal experience of integrated treatment centred on the unreliable drug supply for diabetes/hypertension and associated costs and HIV linked stigma. Difficulties in having to pay for diabetes and hypertension medication (in contrast to HIV drugs) and transport, and choosing between food and medicine, are also reported in other integrated care evaluations (and also by male patients) (Haldane *et al.*, 2016; Ameh *et al.*, 2017; Juma *et al.*, 2018; Iwelunmor *et al.*, 2019; Bukenya *et al.*, 2021; Shayo *et al.*, 2022).

The study illustrated how the day-to-day gender specific responsibilities and constraints which women within sub-Saharan Africa face can raise unique and gendered barriers to access to care, and adherence to treatment regimes. Whilst they experienced some commonalities with male patients in terms of cost of drugs and travel to the clinic, their experience was different to that of male patients. For example, the small group of six WLHIV and living with diabetes and/or hypertension described struggles in navigating HIV (often times stigmatised) and diabetes and/or hypertension, along with caregiving responsibilities, financial hardship, their families and children having to care for them, and personal ill health impacting on their ability to work and adhere to treatment. Despite accessing integrated care, HIV linked stigma appeared to be particularly acute for these women.

The engagement with peers is an important and untapped asset of integrated care; equally applicable to male patients, but particularly resonant for women. Many of these Ugandan women described personal fulfilment in engaging with other patients while waiting for care, with spontaneous sharing of life stories, advice and knowledge around their conditions. This is an untapped resource of

integrated care and could be further developed in future scale up initiatives, for example through ‘*patient clubs*’ and other ‘*peer*’ initiatives. The shared experience along with the anonymity provided to those with HIV constitutes a potent step in helping to reduce personal and community level HIV stigma. Long waiting times for both genders indicate the potential for adoption of a 24 hour integrated clinic. This could also be key in addressing stigma among patients who fear to be seen during day, busy patients and will also reduce the burden of frail patients.

The study yields useful qualitative findings to support the further development of cultural and gender sensitive integrated care in Uganda, and potentially other countries in sub-Saharan Africa. It illustrates the barriers and challenges experienced by women in accessing timely, adequate or affordable diagnosis and care, and how their ability to seek help is impacted by poverty, child rearing and family responsibilities. It illustrates how these Uganda women’s experiences and journeys can be used to support greater gender sensitivity in care, and potentially address the health inequities relating to HIV and NCDs such as diabetes and hypertension. Managing HIV infection like any other chronic condition however can potentially reduce the stigma, thereby increasing effective control of HIV infection (Garrib *et al.*, 2019). Staff training could include supporting WLHIV and NCDs with strategies to navigate stigma and discrimination, financial hardship, adhere to treatment for multiple conditions.

Gender sensitive approaches to capacity building of staff, and cognisant of the needs of female co and multi-morbid patients could enhance service uptake and retention, the ability for WLHIV to adhere to treatment, and support future planning and scale up of integrated care systems and models in Uganda, and other African countries. Specific actions to include more women with HIV/NCD co-morbidity in the ‘*one stop*’ clinic could include community mobilisation and outreach (for example mobile health units targeting women, visual health educational infographics), peer education, medicine clubs, economic empowerment (sustainable livelihoods) and psychological support programming, at the ‘*one stop*’ clinic, training of staff in the unique health needs of women who experience HIV/NCD co-morbidity, and child minding services to support uptake and retention in care.

Evaluations of integrated models of care in different contexts in sub-Saharan Africa are warranted in order to support context adaptation and a platform for the sharing of lessons learnt and best practices, develop and pilot standard operating procedures cognisant of gender and other patient vulnerabilities, and leverage for health system and policy reforms (Jaffar *et al.*, 2021; Mfinanga *et al.*, 2021; Van Hout *et al.*, 2020). Further research which involves women in the community and female patients receiving integrated care for HIV and NCDs at hospital and primary care levels is warranted on a larger scale and in other sub-Saharan African countries.

Conclusion

The 2030 Agenda for Sustainable Development recognises the importance of addressing HIV, NCDs and improve Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) as a collective, and includes targets to reduce the burden of related disease. The NCD Alliance is calling for

increased integrated of NCD prevention, treatment and control into existing health programmes and services for HIV/AIDS, along the RMNCAH continuum, and cognisant of a gender sensitive refined and strengthened approach (NCD Alliance, 2022). An evidence-based approach to protecting the health and well-being of women is crucial to tackling NCDs across the life course. This Ugandan study contributes to the African contextual evidence base which can be used to improve integrated care for HIV and NCDs generally, and specifically for women who experience distinct vulnerabilities and barriers to optimal access and service retention. We place great importance on better understanding of patient experience and reported outcomes, including a focus on their quality of life (Kall et al., 2020).

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References

- Achwoka, D., Oyugi, J., Mutaye, R. *et al.* (2020), "High prevalence of non-communicable diseases among key populations enrolled at a large HIV prevention & treatment program in Kenya", *PLOS*. Published: July 2, 2020. <https://doi.org/10.1371/journal.pone.0235606>
- Achwoka, D., Waruru, A., Chen, TH. *et al.* (2019), "Noncommunicable disease burden among HIV patients in care: a national retrospective longitudinal analysis of HIV-treatment outcomes in Kenya", 2003-2013, *BMC Public Health*, Vol 19, p372.
- Adeloye, D and Basquill, C. (2014), "Estimating the prevalence and awareness rates of hypertension in Africa: a systematic analysis" *PLoS One* [Online] Vol 9, e104300.
- Alwan, A., Armstrong, T., Bettcher, D. *et al.* (2011), "*Global status report on noncommunicable diseases 2010*" [Online], World Health Organization. Available from: http://apps.who.int/iris/bitstream/handle/10665/44579/9789240686458_eng.pdf;jsessionid=3623607F5FBFC4E96863D3DA9533FC4A?sequence=1. Accessed 6 June 2022
- Ameh S, Klipstein-Grobusch K, D'ambruoso L. *et al.* (2017), "Quality of integrated chronic disease care in rural South Africa: user and provider perspectives." *Health Policy Plan*; Vol 32, pp257–66. 10.1093/heapol/czw118
- Ameh, S., Klipstein-Grobusch, K., Musenge, E. *et al.* (2017). "Effectiveness of an integrated approach to HIV and hypertension care in rural South Africa: controlled interrupted time-series analysis". *J Acquir Immune Defic Syndr* Vol. 75, pp.472–9.
- Atun, R., Davies, J.I., Gale, E.A.M. *et al.* (2017) "Diabetes in sub-Saharan Africa: from clinical care to health policy". *Lancet Diabetes Endocrinology*, Vol.5, pp.622–67.
- Birungi, J., Kivuyo, S., Garrib, A. *et al.* (2021) "Integrating health services for HIV infection, diabetes and hypertension in sub-Saharan Africa: a cohort study." *BMJ open*, Vol. 11, No. 11, e053412.

- Bosire EN. (2021), "Patients' experiences of comorbid HIV/AIDS and diabetes care and management in Soweto, South Africa." *Qual Health Res* Vol 31, pp373–84.
- Braun, V., Clarke, V., Hayfield, N. *et al.* (2019), "Thematic Analysis. In: Liamputtong P, ed. by. *Handbook of Research Methods in Health Social Sciences*. Singapore: Springer; p. 843-860.
- Bukenya, D., Van Hout, M.C., Shayo, E. *et al.* (2021). "Accessing Integrated Health Care Services for HIV, Diabetes Mellitus and Hypertension in Selected Health Facilities in Kampala and Wakiso Districts, Uganda." *PLOS Global Health*. Early Online DOI: <https://doi.org/10.1371/journal.pgph.0000084>
- Chang, A., Gómez-Olivé, F., Manne-Goehler, J. *et al.* (2018), "Multimorbidity and care for hypertension, diabetes and HIV among older adults in rural South Africa" *Bulletin of the World Health Organization*, Vol.97, No.1, pp.10-23.
- Cheza A, Tlou B, Zhou DT. (2021), "Incidence of non-communicable diseases (NCDs) in HIV patients on ART in a developing country: Case of Zimbabwe's Chitungwiza Central Hospital-A retrospective cohort study (2010-2019). *PLoS One*. Vol 16, No 5, e0252180.
- Chhoun, P., Ngin, C., Tuot, S. *et al.* (2017). "Non-communicable diseases and related risk behaviors among men and women living with HIV in Cambodia: findings from a cross-sectional study." *International Journal for Equity in Health* Vol. 16, p125.
- Clouse, K., Motlathledi, M., Bonnet, K. *et al.* (2018). "I just wish that everything is in one place": facilitators and barriers to continuity of care among HIV-positive, postpartum women with a non-communicable disease in South Africa." *AIDS care*, Vol 30(sup2), pp5–10.
- Colombini M, Mayhew SH, Mutemwa R. *et al.* (2016), "Perceptions and Experiences of Integrated Service Delivery Among Women Living with HIV Attending Reproductive Health Services in Kenya: A Mixed Methods Study." *AIDS Behav*. Vol 20, No 9, pp 2130-40.
- Divala, O.H., Amberbir, A., Ismail, Z., . *et al.* (2016), "The burden of hypertension, diabetes mellitus, and cardiovascular risk factors among adult Malawians in HIV care: consequences for integrated services" *BMC Public Health*. Vol.16 No.1.
- Duffy M, Ojikutu B, Andrian S, *et al.* (2017), "Non-Communicable diseases and HIV care and treatment: models of integrated service delivery. *Trop Med Int Health* Vol 22, pp926–37.
- Edwards, J.K, Bygrave, H., Van den Bergh, R. *et al.* (2015), "HIV with non-communicable diseases in primary care in Kibera, Nairobi, Kenya: characteristics and outcomes 2010-2013" *Transactions of the Royal Society of Tropical Medicine and Hygiene*. Vol.109 No.7 pp.440–6.
- Garrib, A., Birungi, J., Lesikari, S. *et al.* (2019). "Integrated care for human immunodeficiency virus, diabetes and hypertension in Africa." *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 113(12), 809-812.
- George, S., McGrath, N. and Oni, T. (2019), "The association between a detectable HIV viral load and non-communicable diseases comorbidity in HIV positive adults on antiretroviral therapy in Western Cape, South Africa." *BMC Infect Dis* Vol.19 pp.348.

Golovaty, I., Sharma, M., Van Heerden, A. *et al.* (2018), “Cost of Integrating Noncommunicable Disease Screening Into Home-Based HIV Testing and Counselling in South Africa.” *AIDS Journal of Acquired Immune Deficiency Syndromes*. Vol.78 No.5 pp.522–6.

Guwatudde, D., Nankya-Mutyoba, J., Kalyesubula, R. *et al.* (2015), “The burden of hypertension in sub-Saharan Africa: a four-country cross sectional study.” *BMC Public Health*, [Online] 15:1211.

Haldane, V., Legido-Quigley, H., Chuah, F. *et al.* (2018), “Integrating cardiovascular diseases, hypertension, and diabetes with HIV services: a systematic review.” *AIDS Care* Vol.30 pp.103–15.

Haregu, T.N., Setswe, G., Elliott, J. *et al.* (2015), “Integration of HIV/AIDS and noncommunicable diseases in developing countries: rationale, policies and models.” *Int J Healthcare* Vol.1 pp.21–7.

Hoffman, R. M., Newhouse, C., Chu, B. *et al.* (2021), “Non-communicable Diseases in Pregnant and Postpartum Women Living with HIV: Implications for Health Throughout the Life Course.” *Current HIV/AIDS reports*, Vol 18, No 1, pp73–86.

Ibrahim M, and Damasceno A. (2012) “Hypertension in developing countries.” *The Lancet*. Vol.380 No. 9841 pp.611-619.

Institute for Health Metrics and Evaluation (IHME) (2017), “Global Burden of Disease 2017” [Online]. Available from: https://www.healthdata.org/sites/default/files/files/policy_report/2019/GBD_2017_Booklet.pdf

Iwelunmor, J., Ezechi, O., Obiezu-Umeh, C. *et al.* (2019), “Capabilities, opportunities and motivations for integrating evidence-based strategy for hypertension control into HIV clinics in Southwest Nigeria.” *PLoS One*. Vol.14 No.6 pp.0217703.

Jaffar, S. and Gill, G. (2017) “The crisis of diabetes in sub-Saharan Africa.” *Lancet Diabetes Endocrinol* Vol.5 pp.574–5.

Jaffar, S. (2016), “Diabetes and other non-communicable diseases in Africa: a potential disaster in the waiting.” *Lancet Diabetes Endocrinol* Vol.4 pp.875–7.

Jaffar, S., Ramaiya, K., Karekezi, C. *et al.* (2021), “Controlling diabetes and hypertension in sub-Saharan Africa: the lessons from HIV programmes” *Lancet Global Health*. Vol. 398 No.10306.

Juma, K., Reid, M., Roy, M. *et al.* (2018), “From HIV prevention to noncommunicable disease health promotion efforts in sub-Saharan Africa: a narrative review.” *AIDS*, Vol.32 Suppl 1:S63–73

Kall M, Marcellin F, Harding R. *et al.* (2020). “Patient-Reported outcomes to enhance person-centred HIV care.” *Lancet HIV* Vol 7, e59–68.

Karlsson G. (1993), “Psychological qualitative research from a phenomenological perspective” Almqvist & Wiksell International, 1993.

Katende, D., Mutungi, G., Baisley, K. *et al.* (2015), “Readiness of Ugandan health services for the management of outpatients with chronic diseases.” *Trop Med Int Health* Vol.20 pp.1385–95.

Kintu A, Sando D, Okello S, *et al.* (2020), “Integrating care for non-communicable diseases into routine HIV services: key considerations for policy design in sub-Saharan Africa”. *J Int AIDS Soc.* ;23, pp12–6.

- Kwarisiima, D., Atukunda, M., Owaraganise, A. *et al.* (2019), "Hypertension control in integrated HIV and chronic disease clinics in Uganda in the SEARCH study." *BMC Public Health*. Vol.6 No. 19(1) pp.511.
- Lebina L, Oni T, Alaba OA. *et al.* (2020), "A mixed methods approach to exploring the moderating factors of implementation fidelity of the integrated chronic disease management model in South Africa." *BMC Health Serv Res* Vol 20, p617.
- Lupafya, P. C., Mwagomba, B. L., Hosig, K. *et al.* (2016), "Implementation of policies and strategies for control of noncommunicable diseases in Malawi: challenges and opportunities." *Health Educ Behav* Vol.43 No.6, pp4S–9S.
- Manne-Goehler, J., Atun, R., Stokes, A. *et al.* (2016). "Diabetes diagnosis and care in sub-Saharan Africa: pooled analysis of individual data from 12 countries." *Lancet Diabetes Endocrinol* Vol.4 pp.903–12.
- Masupe T, Mashalla Y, Seloilwe E. *et al.* (2019), "Integrated management of HIV/NCDs: knowledge, attitudes, and practices of health care workers in Gaborone, Botswana". *Afr Health Sci*. Vol 19, No 3, pp2312-2323.
- Matima R, Murphy K, Levitt NS. *et al.* (2018). "A qualitative study on the experiences and perspectives of public sector patients in Cape town in managing the workload of demands of HIV and type 2 diabetes multimorbidity." *PLoS One* 13:e0194191.
- McCombe, G., Lim. J, Van Hout M.C., Lazarus, J. *et al.* (2021) "Integrating Care for Diabetes and Hypertension with HIV Care in Sub-Saharan Africa: A Scoping Review." *International Journal of Integrated Care*. Vol.22(1) No. 6 pp.1-22. DOI: 10.5334/ijic.5839
- Meghani, A., Ssemugabo, C., Pariyo, G. *et al.* (2021) "Curbing the Rise of Noncommunicable Diseases in Uganda: Perspectives of Policy Actors." *Global Health: Science and Practice* Vol. 9 No.1 pp.149-159.
- Mfinanga, S., Nyirenda, M, Mutungi, G. *et al.* (2021). "Integrating HIV, Diabetes, and Hypertension services in Africa: study protocol for a cluster randomized trial in Tanzania and Uganda." *BMJ Open*. Vol.11 No.10: e047979
- Moucheraud C, Hing M, Seleman J. *et al.* (2020), "Integrated care experiences and out-of-pocket expenditures: a cross-sectional survey of adults receiving treatment for HIV and hypertension in Malawi." *BMJ Open* Vol 10, e032652.
- Muddu M, Tusubira AK, Nakirya B. *et al.* (2020), "Exploring barriers and facilitators to integrated hypertension-HIV management in Ugandan HIV clinics using the consolidated framework for implementation research (CFIR)." *Implement Sci Commun* Vol 1, p45.
- Murtagh, S., McCombe, G., Bachmann, M. *et al.* (2021). "Integrating diabetes, hypertension and HIV care in Africa: Delphi consensus study on international best practice" *BMC Health Services Research*. Vol.21 No.1235. Early Online. DOI: <https://doi.org/10.1186/s12913-021-07073-0>

- NCD Alliance (2022). “*Women and NCDs*”. Available at: [Women and NCDs infographic WEB fv.pdf \(ncdalliance.org\)](#) Accessed 21 August 2022
- NCD Countdown 2030 collaborators (2020). “NCD Countdown 2030: pathways to achieving Sustainable Development Goal target 3.4.” *Lancet* Vol. 396 No.10255 pp.918–934.
- Price, A. J., Crampin, A. C., Amberbir, A. *et al.* (2018), “Prevalence of obesity, hypertension, and diabetes, and cascade of care in sub-Saharan Africa: a cross-sectional, population-based study in rural and urban Malawi.” *Lancet Diabetes Endocrinol* Vol.6 pp.208–22.
- Sando D, Kintu A, Okello S, *et al.* (2020), “Cost-effectiveness analysis of integrating screening and treatment of selected non-communicable diseases into HIV/AIDS treatment in Uganda. *J Int AIDS Soc.*;23.
- Shayo, E., Garrib, A., Birungi, J. *et al.* (2020). “Ethical issues in intervention studies on the management of treatment of diabetes and hypertension in sub Saharan Africa.” *BMJ Global Health*. Vol.5 No.7 pp. e002193.
- Shayo, E., Kivuyo, S., Seeley, J. *et al.* (2022). “The acceptability of integrated healthcare services for HIV and non-communicable diseases: Experiences from patients and healthcare workers in Tanzania.” *BMC Health Services Research*. Vol.22 No.655. DOI: <https://doi.org/10.1186/s12913-022-08065-4>
- Singh S, Kirk O, Jaffar S. *et al.* (2021). Patient perspectives on integrated healthcare for HIV, hypertension and type 2 diabetes: a scoping review. *BMJ Open*. Vol 11, No 11, e054629.
- Some, D., Edwards, J. K., Reid, T. *et al.* (2016) “Task shifting the management of non-communicable diseases to nurses in Kibera, Kenya: does it work?” *PLoS One* No.11 pp.e0145634
- UNAIDS (2021) “*Fact Sheet- World Aids Day 2021*” [Online]. Geneva: UNAIDS. Available from: https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf . Accessed 6 June 2022
- Van Hout, M. C., Bachmann, M., Lazarus, J. V. *et al.* (2020) “Strengthening integration of chronic care in Africa: protocol for the qualitative process evaluation of integrated HIV, diabetes and hypertension care in a cluster randomised controlled trial in Tanzania and Uganda.” *BMJ Open*. Vol.10 No.10 pp.e039237. DOI: 10.1136/bmjopen-2020-039237
- Venables E, Edwards JK, Baert S. *et al.* (2016), “They just come, pick and go.” The Acceptability of Integrated Medication Adherence Clubs for HIV and Non Communicable Disease (NCD) Patients in Kibera, Kenya. “ *PLoS One* Vol 11, e0164634.
- Vorkoper S, Kupfer LE, Anand N. *et al.* (2018), “Building on the HIV chronic care platform to address noncommunicable diseases in sub-Saharan Africa: a research agenda.” *AIDS* Vol 32 Suppl 1:S107–13.
- World Health Organization (2021), “Noncommunicable Diseases” [Online] World Health Organization. Available at: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>. Accessed 6 June 2022

Table 1 - Participant profile

Age	Marital Status	Family Status	Occupation (Self-Described)	Disease Status	Time since HIV diagnosis	Time since hypertension/diabetes diagnosis
50	Widow	Children (number unknown)	Business Woman	HIV Hypertension Diabetes	20 years	6 years
42	Married	4 Children	Farmer & Washer Woman	HIV Diabetes	3 years	2 years
44	Widow	1 Child	Washer Woman	HIV Hypertension	Undisclosed	1 year
50	Single	2 Children (1 deceased)	Business Woman	HIV Hypertension Diabetes	Undisclosed HIV status	10 years
42	Single	Unknown	Farmer	HIV Diabetes	30 years	3 years
55	Widow	Children (number unknown)	Unemployed	HIV Hypertension	Couldn't remember	6 years