



Research Article

Social Determinants of Health that Influence the Uptake of the PMTCT Program

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Abstract

Addressing the social determinants of health is crucial to achieve health equity. The authors explore the social determinants that influence and challenge the uptake of the PMTCT program in Rwanda. Critical ethnography was the research design used for this study. The intersectionality framework guided this project. The research population included HIV+ women; healthcare providers working in the PMTCT program; policy makers; and PMTCT leaders. Purposive sampling was used to recruit 55 participants. Observation and field-notes; individual and focus group interviews, and documents reviews were used to collect the data. Data analysis included reflexivity, thematic analysis, and use of ATLAS.ti software.

This study contributed to understanding the complex associations between poverty, health literature, and health outcomes that makes explicit the factors that challenge and influence the uptake of the PMTCT program. Each HIV+ women's stories and experiences represent different pathways and intersections that determine their vulnerability. The findings indicated that socioeconomic disadvantage, transportation barriers, poor health literacy, poverty and unemployment were the primary barriers that challenge the uptake of the PMTCT program. Social determinants of health are known to be a driving force of health inequalities and contribute to challenges in the uptake of the PMTCT program.

Keywords: Antiretroviral therapy; HIV; PMTCT; Social determinants; Women

day globally and more than 90% of these new cases are due to MTCT of HIV [4].

Introduction

Mother-to-child transmission (MTCT) of Human Immunodeficiency Virus (HIV) remains the most important mode of HIV transmission among children (World Health Organization [WHO], [1]). Despite the decline in global mortality rate of HIV and Acquired Immune Deficiency Syndrome (AIDS), HIV continue to be a leading cause of the worldwide burden of disease with approximately 38 million people living with HIV [2,3]. An estimated 180, 000 children under 15 years old acquire HIV every

The prevention of mother-to-child transmission (PMTCT) is a worldwide intervention program initiated by WHO to protect children from vertical transmission of HIV [5]. The PMTCT program experienced extensive transformation since its initiation (WHO, 2019 [1]). The PMTCT care retention and adherence, however, remains a challenge even though Antiretroviral (ARV) treatment have improved [6]. The increased risk of MTCT of HIV is associated with a complex set of social determinants of health factors. In addition, PMTCT program adherence and retention is influenced by the cultural, political, social, and physical conditions

in which women live [7,1].

Social determinants of health are the social and economic environments that play a key role in health disparities and health outcomes by shaping the health of individuals and communities holistically [8,9]. Multiple studies revealed that HIV positive (+) women with low economic status, food insecurity, and without health insurance are at high risk of MTCT of HIV [10,11]. In addition, women with lack of appropriate housing and poor access to health care are less likely to engage and be retained in the PMTCT program after commencing the ARV [12].

HIV+ women are disproportionately affected by economic and social inequalities such as poverty, unemployment, housing instability, and food insecurity [13]. Consequently, the factors and conditions that affect women's health include mental, social, physical, and spiritual dimensions [13]. Creating programs and models that improve health and the full range of the determinants must be considered. The quality of health services affects women's health, but employment, quality of housing, poverty, and access to education have a greater impact [14]. The transition from eradicating health disparities to eradicating health inequities and creating health equity underlines the necessity of placing issues of social justice, human rights, and the right to access healthcare in the forefront of any discussion of the health status of all population group [15].

In this study, we used an intersectionality lens to demonstrate how social determinants of health factors influence the health of HIV+ women and their decision to uptake the PMTCT program. Considering aspects of living daily with HIV, HIV+ women narrated the heterogeneity of the complex interaction of social determinants of health as well as the influence of their social location. Thus, we will substantiate the needs for structural interventions to change the social context in which these HIV+ women make health decisions.

Methods

Research Approach

Critical ethnography was the design for this study. Critical ethnography is an appropriate exploratory and descriptive method that supports a critical examination of the experience of mothers using PMTCT program [16]. It allows researchers to critique and potentially influence change in society through their work [17].

Intersectionality is an approach to investigating health disparities and focus on knowledge development *via* minority, non-dominant, and marginalized groups. It provides a better understanding of the social determinants of health, social inequality, and power structure [18] and in this study the extent of the HIV disease burden and disparity in health outcomes which is across racial, gender, and socioeconomic groups [18,16].

The Setting of Research Study

The research setting was at the Butare University Teaching Hospital (BUTH) in Rwanda. BUTH is in the Huye District, Southern Province, within the premises of the National University of Rwanda. BUTH is one of the national referral hospitals and serves mainly the Southern and Western provinces. The study was carried out in the PMTCT program. The PMTCT program at BUTH began in January 2006 as the center of excellence with the purpose of piloting a model of care for HIV infected and exposed children. The follow up of HIV+ mothers and their children is provided by HIV and PMTCT services, which include specialized services such as gynecology and obstetrics, internal medicine, and pediatrics. The staff at the PMTCT clinics consists of heads of departments, physicians, registered nurses, midwives, pharmacists, social workers, psychologists, nutritionists, PMTCT leaders, and policy makers. The PMTCT program is open daily and most of the clients contribute to medical insurance schemes. HIV+ patients and their children attend the PMTCT program each month and as they are provided with ARVs for one month. The PMTCT facility treats up to 158 patients HIV+ infants and children per month [19].

The Recruitment and Sample of the study

We used purposeful sampling and network strategies to recruit knowledgeable participants. Inclusion criteria included a sound experience of the phenomenon of interest, willingness to communicate their experiences, and to participate in the study. Those who accepted, consent by either signing a consent form, or thumbprint, or verbally. Upon agreement, an appointment was scheduled at a place convenient to them for further explanation about the study. A total of 55 participants were recruited of which 29 were HIV+ women using the PMTCT program with HIV+ and/or negative infants or children, 14 HCPs working at the PMTCT program for more than six months, four PMTCT leaders, and eight policymakers. Data were collected until we obtained a rich and in-depth understanding of the phenomenon under study [20].

We collected demographic information such as age, education, marital status, employment status of mothers and fathers, religion, time of first HIV testing, total number of children, number of children diagnosed with HIV, and number of children infected while they were enrolled in the PMTCT program. These data were collected to better understand the background characteristics of the patients' sample.

Data collection

Data were collected from January 2020 to May 2021 using a semi-structured interview guide developed for this project. We employed multiple sources of data such as participant document review, observation, field notes, and individual and focus group interviews to develop an understanding of the experiences of the mother using the PMTCT program to prevent HIV transmission

in Rwanda. Given our theoretical lens and emancipatory agenda of critical ethnography, the use of multiple sources of information was preferable in order to capture what was happening in participants' daily lives [21]. To protect the Rwandan people, national guidelines and policies around COVID-19 prevention and response to the pandemic was implemented.

The principal investigator (JK) conducted all the interviews. The principal investigator is a female, with proficiency in the national Rwandan language, share the same culture, values, taboos, misconceptions, and perceptions that shape the community where the participants live. The researcher introduced herself as an educated woman, mother, married women, nurse, who previously worked at BUTH.

Interviews were recorded using a digital audio recorder. Each recorded interview was assigned a unique identification number. Audio records and completed transcripts were stored on a password-protected computer. The researcher also collected field notes while conducting the interviews. Each interview lasted between 45 to 60 minutes.

Data Analysis

Data analysis commenced during data collection. It included reflexivity, thematic analysis, and the use of ATLAS.ti software to facilitate analysis and organization of the data. Data were collected and analyzed in Kinyarwanda. Since only one researcher understand Kinyarwanda, a subset of data was translated into English to ensure the rigor of the study. All researchers extracted codes independently for comparison. A coding framework was developed that was cross-checked and agreed upon by the other researchers. They actively participated in the process of derivation of categories, sub-categories, themes, and sub-themes. This helped to ensure that the analysis of data reflected the experiences shared by the participants and was able to answer the research questions.

Trustworthiness

We followed the framework described by Lincoln and Guba [22] as supported by Nowell et al. [23] to ensure rigor whereby trustworthiness is established through credibility, dependability, transferability, and confirmability. Credibility was achieved through prolonged engagement, persistent observation, negative case analysis, triangulation, member checking, external audits, peer review or debriefing, thick and rich descriptions, and preventing researcher bias. Transferability was achieved through a thick description. Field notes supported the contextualization of our observation and to get a better understanding of the research context. We met dependability criteria by describing the operational aspect of data generation in detail from data collection, analysis, and interpretation. Confirmability was achieved through self-reflexibility, regular interaction with research team.

Ethical Consideration

The University of Alberta Research Ethics Board approved the study (Pro00096520). Permission to access and collect data at Butare University Teaching Hospital (BUTH) was requested and received from the BUTH Ethics Committee (Ref: CHUB/DG/SA/02/0401/2020). Considering the varied literacy level, participants were given the option to give informed consent by either signature, or thumbprint, or verbally. With the permission of the study participants, their verbal approvals to participate in this study were recorded after assigning a unique identification number. All respondents were assured that the information would be treated with strict confidentiality.

Results

Demographic Characteristics of the Participants

Fifty-five participants were interviewed, which included 29 HIV+ women, 14 HCPs, eight policymakers, and four PMTCT leaders. The HIV+ participants' ages ranged from 24 to 50 years. The education level varied from illiterate to university education. Their marital status included being married (66%), single mothers (24%), widows (7%) and divorced and/or separated (3%). Most HIV+ women were housewives (73%). Their religious backgrounds included Protestants, Roman Catholic, and Seventh-day Adventist. Most of the HIV+ mothers (55%) were tested before ANC or pregnancy, 41% during ANC and 4% after delivery.

The healthcare providers (HCPs) participants' ages ranged from 24 to 56 years. Fourteen HCPs were interviewed, of which six were nurses, three physicians, three psychologists, and two social workers. The length of work experience at the PMTCT program varied from 6 months to 15 years. Out of fourteen of the 14 HCPs 51% of them did not choose to work in the PMTCT program and 57% did not get any training before starting their position at the PMTCT program.

Themes Emerged from the Collected Data

Six themes were identified from the data: 1) housing related factors, 2) poverty, 3) stress due to unemployment status, 4) low education and literacy, 5) transportation barriers, and 6) social and cultural consideration factors which play a role in exposing babies to the risk of MTCT of HIV and limiting the ability of HIV+ mothers to uptake the PMTCT program through seeking treatment, care, and support.

Housing related factors: Participants and HCPs stated that housing and accommodation have a negative influence on the PMTCT program uptake. One client explained: "Lacking a place to live, ... housing is an important issue I am facing, you can see it is a problem even to find a place to keep my drugs".

It was observed that the housing issue is an important factor that

exposes client to stop taking ARVs. One participant explained as below:

I was taking the ARVs, yes, I use to take my pills regularly, but I stopped to take it, uhuuu! I stopped them after my aunty drove me out to her house! I did not have any place to live! You can see I use to keep my pills to my aunt's house; I could not go back there... uhuuu I missed to take my pills doses.

Participants further reported that lacking enough place to live exposes HIV+ women to miss their ARVs doses because of fear of involuntary disclosure. One participant said:

.... I am a quiet lady who is living with my brother, we are two families of eight persons sharing a small house of two rooms. One family in the one room and another family in the other room. I used to miss my doses especially if there are people in the house...I would love to have my private room...I tried to hide it, but it is not easy. I do not want them to know that I have that disease.

HCP noted that sharing a house with in-law family significantly contributes to the dropout of ARV medications. An HCP stated:

What I have observed with these clients is how hard it is to live with a mother in-law in the same house. We have three families with more than 12 people living in the same house, the small one. Most of our clients want to keep their HIV status secret. With the overpopulated house, they miss a private place to keep their medications, and some decide to stop their ARVs adherence just to avoid involuntary disclosure.

Fear of disclosure of one's status was the most common reason for defaulting from ARVs especially for those in overcrowded houses. One participant explained:

Sometimes, it is hard to keep my HIV status secret with this overcrowding of people... I do not have a private space to keep my stuff! I decided to stop the ARVs... you can see they can discover my HIV status and I do not want them to know it...and I dropped out the ARVs.

Poverty: Poverty exacerbated the risk of MTCT of HIV. HIV+ mothers stated that they experienced extreme poverty and they struggled to provide basic needs (food, school fees, clothing, etc) to their children and to themselves. Most participants often went to sleep without food and stopped taking the ARVs. One participant explained:

Yes, I got the ARVs from the PMTCT program, after I did not return there, no, no! I stop to take the ARVs! You can see, the ARVs must be taken with food at all the times, and for me I used to sleep without food. Can you take the medication on an empty stomach?

Some participants reported that the side effects of ARVs were so severe if taken in empty stomach; they had difficulty sleeping at night and often struggled to function normally during the day. The quotes illustrates this: "The painful thing is that we do not have any food to eat at home. When I take my ARVs hungry, I get severe headaches and burns in my stomach". Another participants shared:

Most of times I do not have anything to eat! Without food, I can't take the ARVs. I took them three times and then I stopped! Yes, the ARVs are a problem if you take them hungry because you get dizzy, they make you shake, and have hallucination.

Some HIV+ mothers reported taking pills late because they did not have a clock, radio, or cell phone to help them keep track of time. Uncertainty of the daytime was a common reason cited for failing to take daily dosage on time. They reported that repeatedly asking "what time is it?" to their children, family members, or neighbour put added stress on those relationships, increasing the risk of involuntary disclosure of their positive status. One mother said: "...you know I don't have a radio or a clock...if I ask a neighbour what time it is so I can take my drugs...the neighbour gets angry and goes around telling people that I keep bothering them" (PMWPB3). Poverty was experienced as a more serious challenge than being or becoming HIV+ as shared by a participant: "Even [though] I am HIV+; this is not really a preoccupied problem in my mind; poverty and lack of something to feed my babies are my primary concern" (PMWPB9).

Stress related to Unemployment status: Some of the HIV+ mothers described feelings of stress related to unemployment as an important constraint on ARV adherence and PMTCT services adherence. Primary sources of stress included lack of financial resources to support their children. They reported sometimes forgetting to take pills due to emotional and stressful life events. One HIV+ mother said: "A problem I encounter is that I am unemployed... so sometimes... something happens because of stress... because I have too much stress and I forget taking my pills".

Poverty is linked with unemployment and was commonly reported by HIV+ mothers as having a negative influence on the uptake of PMTCT program. Unemployed HIV+ mothers reported insufficient financial resources and were facing difficulty to meet their appointment at the PMTCT program for treatment and care. An HIV+ mother stated:

My life is complicated! Yes, it is complicated! In general, if I did not get a job, it means that I will not eat! And I do not have any fixed job, every morning I have to go house by house in my village to see if someone can offer me any kind of farming job. Every time that I feel healthy and have strength, I wake up in the morning and go to find something to do! Sometimes I do not get any job.

Many HIV+ mothers expressed how difficult balancing their daily duties of being a wife and mother could be. This posed challenges in uptake of the PMTCT program and adherence to their ARVs. For instance, some HIV+ women were working but had to take time off work to make appointments for PMTCT services. Women reported that they sometimes have a hard time with their managers/supervisors, even though they provide a doctor's note to them. An HIV+ mother added:

I am poor and have to feed my family... I have to find a job daily. If I did not get job, it means that my family and I will suffer with no food that day. I sometime miss my appointment because of my house situation, and you know there is no afternoon and weekend appointments! Anytime I attend the PMTCT program, my family will not eat! Let me tell the truth, I missed my appointments because I had a job that day.

Most of employed HIV+ mothers reported that they did not disclose their HIV status to their employers and co-workers. A few women talked about occasionally missing appointments or failing to refill ARVs due to a supervisor at work refusing to give them time off. When they ask to attend a clinic appointment, direct supervisors demand a reason for going, which resulted in fear of disclosing their HIV status and being overheard requesting to pick up ARVs. Some of the women also experienced threats of job termination by their supervisor/boss when they requested time off to attend a PMTCT clinic appointment, one mother reported:

Like I've said... it is a problem at work. When I asked to come to the clinic from my boss, he told me to leave and never come back. I told him that the reason I asked is because I needed to pick up my pills... he refused and said if I leave, I leave for good. I stayed.

An HCP added: "But another big problem here at the clinic... are the firms, their bosses don't want them to take a day off to come pick-up their pills every month, even if we give them a sick note".

Low education and literacy: Although Rwanda introduced primary education in 2003, the majority of women in the sample have not gone to elementary school. Many women often failed to continue their education because they faced education costs like school materials and uniforms which they were unable to afford. One HIV+ mother said: "I failed to continue with school... I was required to have books, uniforms, notebooks, pens...and at that time I was staying with my aunt, and she could not help me with that... So, I quit". Losing parents compounded women's education. Children who had lost both or one of their parents often moved around within their extended families and sometimes faced neglect and abuse or had to care for siblings. This situation inhibited their education. One mother stated:

When I was about to finish primary school... Primary (level 5) ... my mother died, and she left me with a small baby of about seven months. My relatives refused to take care of the baby. As a result, I failed to continue school because I was taking care of the baby... I stayed with the baby for a year and later she passed away... I never went back to school despite the baby dying... there was no one to support me with school materials and I was not getting any support from anywhere.

Those with low literacy often had trouble understanding ARVs scheduled appointments. Some reported missing their PMTCT appointments because they could not read and/or were reluctant to ask someone to check the date of their next appointment on the ARV health card due to fear of disclosure of their HIV status. A participant emphasized:

Many times, I missed the date for my PMTCT appointment... Even now I do not know when I need to go back because I do not know how to read. I ask someone else to check the date for me, but it is not easy to find someone to trust. Last time, uhuuu, the person I asked to check reacted badly and disclosed my HIV status in the village. I was concerned about my accidental disclosure of my HIV status to the members of my village.

Some HCPs reported that women with certain characteristics such as having a high educational background and older people were more likely to adhere to PMTCT program and their ARVs, and said:

You know because we got different people up there... some are doing good job in terms of good adherence of ARVs...and you will find they are taking the tablets, like teachers...you understand what I mean, old folks... but the young ones and the illiterates, you know, oh God...nurse, I fed up drinking tablets; why I must drink this tablets every day; oh God...I fed up.

Transportation barrier to PMTCT program uptake: The economic status of the majority Rwandan women is very low. Even with free ARVs and increased availability of PMTCT services in remote health center, most HIV+ mothers seeking treatment had to travel long distance to avoid meeting people who know them. Transportation costs and travel distance were reported by the women and HCPs as contributing factors to non-adherence of the PMTCT program. Unemployed women with limited financial resources reported often that bus fares were unaffordable. Many were forced to walk long distances of more than three hours to and from the clinic. These financial and geographic challenges to healthcare access led to missed PMTCT appointments and poor adherence to ARVs with MTCT of HIV risk. One participant said:

It is too far... like me I get them from..., I need to have enough money for the bus fare. If I do not have money, I walk through the cane field by the time I get back my feet hurt. Then I need to come back and work here at home.

An HCP collaborated on the same and reported as follows: “Yes, lack of money for transport makes them skip PMTCT clinic visit... some live in areas where there is no public transport... they walk long distances through mountains to get to the clinic”.

Some participants mentioned the reason of doing this long travel even if nearer PMTCT service was available nearby. They did not want to be victims of gossip in the community. Patients reported fear of being scorned and gossiped about by community members if their HIV status was discovered:

I also find that I am worried that if I tell people I live with about my situation... they will go around telling everybody in the community. That is another problem that even if I go get the drugs at the PMTCT clinic... when people see me... they will laugh at me that I am taking these pills. They gossip about people in the community... I prefer to travel and get tired instead... they will never see me there... I keep my status secret.

Social and cultural consideration: Rwandan culture values sex and sexuality and tends to emphasize and strengthen the dominance of men and boys and subordination of women and girls. The advice from elders is that women must respect their husbands and not cause a fuss, and women’s economic position often leave women vulnerable to abuse. Cultural expectations to be good women and proper wives shapes their relationships with men. The advice at puberty also emphasizes respect for elders and husbands. One mother in our study described: “... good women are those who selflessly care for their families, are quiet, do not make noise in the house, and are reasonable”.

Being a good wife and getting married do not protect Rwandan women against HIV because extramarital affairs and polygamy are common even if these practices are illegal. It is culturally permissible and even expected that men will have multiple sexual partners. Findings showed that most HIV+ women experienced relationship between either one husband with multiple wives or one wife with multiples husbands. The problem with polygamy is that it exposes multiple people to STIs and HIV transmission as well as MTCT of HIV. One participant stated:

As we are talking here, he is already in bars drinking beer and having other wives you know the men are like that, they all need partners, men cannot endure without sex but for us we can endure and abstain!

Another woman described the many impacts of their husband’s girlfriends on their lives, marriages, and families:

When the husband has girlfriends, he supports them so much and gives no support at all to his own house and wife... he doesn’t leave food at home... children and wife suffer. You can see with other relationships; the result is contracting HIV and STIs.

Some women in my study were presently in or had been in polygamous unions:

At first, it was me alone... he later married another wife... I did feel bad...my heart pained... when he took a second wife, I did not want to stay with him. But, after the elders spoke to me saying that is how men behave, I changed and accepted.

Poverty exposed most of HIV+ mothers to multiple partners and prostitution. Women did not want to practice prostitution, but because they had no other option for financial survival, they sometimes engaged in it. A participant from the PMTCT leaders group shared his thought and said: “Once they are met with sugar daddy who gave them everything they need (phone, accommodation, food) in exchange for sex, they are not hesitant to accept the risk of unplanned pregnancy and MTCT of HIV”. A HIV+ mother who experienced multiple partners due to poverty added:

I was a single mother very poor; a lot of men approached me and wanted sex in exchange of money! I needed the money; you know it is not easy to refuse...I was in that life with multiple partners to feed my babies. This kind of life exposed me to unplanned pregnancies and one of my babies is HIV+ through MTCT.

Some participants expressed their vulnerable feeling to violence when they try to discuss household finances or address their husbands’ infidelity or polygamy. One participant explained:

When I try to reason with him about lack of clothes or other things, he ends up beating me because he thinks I am troubling him. Mostly men who behave like that were just born cruel, they lack some love. They take you as their slave, forgetting that they married you as a wife, this is a lack of love.

The dominance of men, women economic dependency, poverty, limited knowledge about PMTCT, and low decision-making power of women highly affects utilization of the PMTCT program. One PMTCT leaders mentioned:

Traditionally, a wife has to respect her husband. This exposes a wife to accept whatever the husband says and wants. A husband can have sex at any time he wants too and do not have to negotiate sexual intercourse. This exposes woman to sexual violence. He may also have multiple partners; she has to accept it. You can see that it is not sure if those partners are tested for HIV and not sure if they have good ARV adherence. In addition, most of husbands refused to use condoms. Those acts expose babies to MTCT of HIV.

In sub-Saharan Africa and Rwanda, women’s social status depends on their ability to produce children. Moreover, and in relation to HIV and MTCT of HIV, when having children is a goal

of marriage, advocating condom use will fail. Some husbands have negative attitudes on the use of condoms, and this influences the women's response to the PMTCT program. One participant said:

My husband does not like condom, he hates it, he uses to say: 'I am the man of the house, and I paid your dowry, I will not use the condom' this make the male partner to be unfaithful and it can lead to divorce.

Unsafe sex practices were common among some HIV+ pregnant women. They thought that having unprotected sexual intercourse with a HIV+ partner was fine if they were on ARVs. Some women did not understand and were not aware that re-infection can occur; they thought that taking ARVs makes it safe to engage in unprotected sex. Most women did not understand why their viral load were increasing whilst on treatment. One pregnant woman said:

I am sexually active... the last time I had sex was two weeks ago... I use a condom every time and I do not want to make any mistake. I am now pregnant with this child, I do not know what happened, may be the condom broke! I was having problems with my boyfriend... we would always use a condom, but for this pregnancy, during the intercourse, it was taken off... I felt like he knew something and took it off... always coming up with excuse during sex... like how he has a rash. I used to have high viral load while on treatment. I missed to understand why.

Discussion

Addressing the social determinants of health is crucial to achieve health equity. We use an intersectionality lens to demonstrate how factors of the social determinants of health influence the health of HIV+ women and their decision to uptake the PMTCT program. Considering the experiential aspects of living daily with HIV, HIV+ women helped us to illuminate heterogeneity of the complex interaction of the social determinants of health as well as the individual responses of participants to their social location. Women's health is closely related to the political, cultural, social, and physical conditions in which they live. The factors and conditions that affect women's health include psychological, social, physical, and spiritual dimensions [13]. To develop programs and models that can improve health, the full range of the determinants of health must be considered. While quality of health services can affect women's health, employment, quality of housing, poverty, and access to education have a greater impact [14].

HIV and MTCT of HIV transmission in women are complex. Women are individuals living at the intersection of multiple identities, all of which influence each other and together shape their constantly changing interactions and experiences [24]. Each of their stories and experiences represent different pathways and

intersections that determine their vulnerability. Manifestation of intersectional women's vulnerability to HIV operated at multifaced factors, such as socioeconomic advantage, transportation barriers, low health literacy, poverty, and unemployment. When considering multiple dimensions of health, socioeconomic disadvantage, low opportunity, and limited options for transportation may increase disparities.

Health literacy directly or indirectly impacted health outcomes and there were significant associations between inadequate health literacy and poor health outcomes [25]. For instance, a low level of health literacy is associated with a diminished likelihood of understanding diagnoses, treatment, drug label instructions, time for medication and clinical appointment [26]. Low health literacy affects womwn's understanding of the necessity of HIV testing and the benefits of using the ANC and PMTCT services. It is important to understand and promote health literacy levels to grow knowledge of HIV+ women to prevent MTCT of HIV.

A level of health literacy enables HIV+ women to notice health problems, contact an HCP at the appropriate time, adhere to the treatment and follow up the PMTCT program to limit the risk of the MTCT of HIV [27]. The current study revealed that HIV+ women have differences in vulnerabilities with multiple intersections of aspects related to health and HIV literacy. A lack of HIV literacy may disempower HIV+ women not only their health but also their family's health [28]. Some women with lower levels of education as well as economic dependence on their husbands' income were likely to only get tested for HIV after their husbands have been diagnosed and known their HIV status. The current study suggests HIV+ women who are educated and have HIV knowledge, despite their physical, psychological, social, and financial dependency on their husbands, can protect their health and their infants without blame and condemnation. Most of the participants in this study had not completed primary school education and it intersects with their ability to prevent the MTCT of HIV.

An inadequate understanding of health information contributes to less informed decisions for HIV+ women which can result in low ARV adherence and low uptake of the PMTCT program. Additionally, women's power is impacted by education level, wealth, and income level [11]. Most women in our study knew their HIV status only after their husbands had been diagnosed as HIV+ or the sickness or death of their husband and/or children; this because of low health literacy. The majority of HIV+ women who are coming from poor families with low education are less likely to get adequate information and even delay receiving the information from HCPs [29]. Furthermore, lack of HIV literacy may result in the misconception of HIV disease and prevent HIV+ women accessing the PMTCT services. It further contributes

to women's vulnerability to HIV and may result in increasing mortality risk due to AIDS [30].

Areas of extreme poverty not only reflect disadvantage but may also result in negative health outcomes for HIV+ women. Our critical ethnographic approach allowed us to understand the complex associations between poverty, health literacy, and health outcomes that makes explicit factors that challenge and influence the uptake of the PMTCT program [31,32]. The socioeconomic factors account for almost half of the factors that challenge the PMTCT program and health outcomes [13].

Poor women struggle with PMTCT adherence compared to HIV+ women with a high income and who are well educated [11]. HIV+ women's vulnerability is depicted by the intersections of poverty, health literacy, and dependency on husband's income. Most importantly, these findings may help us to understand why PMTCT program need to address multiples barriers and challenges caused by different intersecting factors based on women's experiences in using the PMTCT program at BUTH. Poverty contributes to differing health risks and ability to use health services due to lack of transportation [14]. Inconsistent and scarce employment opportunities within informal settlements limit choice for those seeking job, compounding poverty, and prevent escaping poverty and engaging in regular meaningful employment [14]. Poor women are more vulnerable to HIV and MTCT of HIV than wealthy women who have more options for accessing treatment and care. Most participants were economically dependent on their husbands with limited incomes due to unemployment and poverty for supporting their family. Besides, economically independent women had more decision-making power to access HIV test and PMTCT services compared to those who were economically dependent on their partner or husbands [11]. HIV+ women with supportive husband were more likely to be resilient to access the PMTCT program than those who had less support from their husbands [11].

Poverty can intersected with other social determinant of health, such as health literacy, geographic accessibility, and marital status. However, if HIV+ women who are well informed even if economic dependant on their husbands, they can protect their own health and their children without facing blame and condemnation. Most HIV+ women claimed that love for their partners was compared with valuing economic security [33]. Besides, many HIV+ women had multiple partners and/or boyfriends to meet their material needs and continued their marital relationships which exposed them to MTCT of HIV.

The combination of financial hardship and food insecurity due to unemployment and poverty, contributed to exposure to increased acute and chronic stressors, it caused a wide range of challenges and barriers that negated the ability of HIV+

women to consistently engage with initiating and continuing the ARVs and adhering to the PMTCT program [34]. The multiple intersections of unprivileged elements were found to contribute to the low adherence of HIV+ women to ARVs and low uptake of the PMTCT program [34]. For instance, HIV+ women with food insecurity did not mind discontinuing ARVs though they were aware of the negative consequences of doing so [35]. Furthermore, 63% of HIV+ people on ARVs experienced food insecurity due to unemployment and poverty; and this impacted access and adherence to the HIV clinics [36]. Given food insecurity and the presumed ARVs side effects, isolated PMTCT services may not succeed in ensuring uptake to the PMTCT program [35].

For HIV+ women, stable housing relates to emotional and physical wellbeing, reduction of risk behaviour, and ARV adherence [12]. The findings from the current study complement the empirical evidence, pointing to the importance of housing as a social determinant of health. In addition, when women are a single mother, a widower, or a divorcee, coming from poor families, with instable housing, they often see no other way to support themselves than having multiple sexual partners. This kind of behaviour may contribute to women's vulnerability to HIV and MTCT of HIV. In summary, poverty, unemployment, health literacy, multiple partners, and housing related factors are contributing to low uptake of PMTCT program and high risk of MTCT of HIV. These intersecting elements prevent HIV+ women from making informed choices to access ARV treatment and then access the PMTCT program [10]. In addition, low levels of health literacy, housing issues, and illiteracy imposed upon women and girls and have effects in other aspects of their social life, especially when negotiating key decisions that may affect their lives [37].

The financial burden expressed in this study that were related to transportation costs acted as a barrier in accessing the PMTCT clinics and considered the process of ARVs refilling economically demanding [38]. Related to financial accessibility, this study reported that geographical accessibility led to low ARV adherence and PMTCT program uptake. This builds on what participants reported that HIV+ patients who resided in rural areas and who were far from the hospital, defaulted from ARVs and PMTCT clinics because of the long distance [38]. However, some of HIV+ women served by BUTH are not from the rural areas which raises the possibility that the geographical accessibility observed in this study is strongly linked to the financial accessibility since there are few referral, provincial, districts, and private hospitals available as compared to health centers facilities. BUTH/PMTCT services could orient HIV+ women to alternative free PMTCT program at health centers closer to where one resides in the event that one is financially constrained.

African women are the most vulnerable population to be infected with HIV due to cultural, traditional, and social aspects.

The cultural construction of women is linked with their sexuality, which restricts what is permissible for them and makes it extremely difficult for women to navigate both expectations and negotiate lifestyles and safe sex that will protect them from HIV. Being a good wife and getting married does not protect a woman against HIV because extramarital affairs, infidelity, and polygamy are common even they are illegal. It is culturally permissible and even expected that men will have multiple sexual partners. Findings showed that most HIV+ women experienced relationships that were not exclusive. The problem with polygamy is that it exposes multiple people to Sexual Transmitted Infections and HIV transmission as well as MTCT of HIV.

HIV+ women in this study described the husband as the king of the household and primary decision makers. In some cases, women saw themselves as inferior to men, and they had to listen and obey men. This gender power dynamic is common in rural marriages where most HIV+ women held little economic power when compared to that of their husbands. Decision making dominance is useful in exploring the factors exposing HIV+ women to low uptake of the PMTCT program where power inequalities intersect with women's sexual relation, decision for HIV testing and ARV adherence, and decision for HIV disclosure to a spouse as participants in the PMTCT program. This social structure helps explain why many HIV+ women who are poor and live in rural and peri urban fear HIV disclosure and see few options for material and social security outside the marital relationship.

There are observable power imbalances such as access to and control over resources, economic power, and power to make informed decisions because of the tradition of giving power to men as patriarchs in the family. The power imbalance affects many HIV+ women who are dependent on men. When economic power is carried by men, dependent women in abusive relationships may, therefore, find it difficult to leave. These findings are similar to findings of others who have assessed how practices of inequality and gendered norms interact with structural violence (lack of power, exclusion, and poverty) to render HIV+ women vulnerable to a range of abuses, including husband violence [37].

We found that despite available laws and policy recommendations for inclusion of marginalized people within decision-making processes, social power relations influence decisions and outcomes. Invisible power remains in place and this results in failure to engage marginalized people to make informed decisions or choices and limits access to information [39]. We acknowledge how other forces and power such as the rule of elders over the younger generation contribute to the use of power to subordinate and control of women and girls in Rwanda. For instance, some participants in this study left school because of poverty, early marriage, or becoming responsible of their siblings after the death of one or both parents. This had a negative impact

on their capacity to secure the prerequisite skills, knowledge, and training to understand preventive measures of HIV and MTCT of HIV. Also, their lack of knowledge and skills inhibited their capability to find employment and to earn their own independent income, therefore stimulating a cycle of dependency on men and elders. This is in keeping with previous studies which acknowledge the influence of social hierarchies, political and economic division on citizens' participation within decisions, which function within existing hierarchies and patterns of power and privilege [40].

In the current study, HIV+ women expressed a strong desire for financial support. It would also be important to have female support groups to help address cultural and social practices that act as barriers to uptake and implement the PMTCT program. Level of health literacy can facilitate the development of HIV+ women's adherence strategies, family and community support, and good relationship between HCPs and patients [41-42].

In addition to the hardship faced by most women in the area, some also carried the burden of political, cultural, social, and physical conditions in which women live. Having the logistics of, for example, transport in place, programs and models with full range of determinants that can improve health, as well as health equity system underline the necessity of placing the issue of social justice, human rights, and the right to access health care, were necessary prerequisites.

A limitation in this study is that only one province in Rwanda was used for data gathering and did not combine both HIV+ women using and not using the PMTCT program with direct observations of the routine antenatal care consultation. Despite this limitation, the study does provide evidence to support structural interventions to change the social context in which these HIV+ women make health decisions.

Conclusion

Issues such of the intersection of social, traditional, and cultural aspects were highlighted. It is well known the delivery of the PMTCT program can constitute significant challenges to the uptake of program and therefore are susceptible to find a way to address them. It is clear from this study that the PMTCT program influences women's lives profoundly and the importance of health literacy, quality counselling, female support group, and male involvement may effectively impact the PMTCT program. A successful PMTCT program will need a comprehensive approach to address social determinant of health factors. Successful therapeutic interventions need to not only provide ARVs, but also address other intersecting barriers to the PMTCT program uptake.

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References

1. WHO (2019) HIV/AIDS: Mother to child transmission of HIV.
2. UNAIDS (2021) Global HIV & AIDS statistics: 2020 fact sheet.
3. KFF (2021) The global HIV/AIDS epidemic: Key facts.
4. UNAIDS (2020) Start Free Stay Free AIDS Free - 2020 report.
5. Nyamhanga T, Frumence G, Simba D (2017) Prevention of mother to child transmission of HIV in Tanzania: assessing gender mainstreaming on paper and in practice. *Health Policy Plan* 1: 22-30.
6. Gugsa S, Potter K, Tweya H, Phiri S, Sande O, et al. (2017) Exploring factors associated with ART adherence and retention in care under Option B+ strategy in Malawi: A qualitative study. *PloS one* 12 : 1-18.
7. Chersich MF, Rees HV, Scorgie F, Martin G (2009) Enhancing global control of alcohol to reduce unsafe sex and HIV in sub-Saharan Africa. *Global Health* 5: 16.
8. Bowleg L (2012) The problem with the phrase women and minorities: Intersectionality - an important theoretical framework for public health. *Am J Public Health* 102: 1267-1273.
9. Kamanzi J, Richter S, Paul P, Jarvis K (2021) Use of critical ethnography to study the PMTCT program. *Advances in Infectious Diseases* 12: 147-158.
10. Badriah F, Tahangnacca M, Alkaff R, Abe T, Hanifah L (2018) Implementation of Prevention of Mother to Child Transmission of HIV program in South Jakarta. *Kesmas: National Public Health Journal* 12: 159-164.
11. Lumbantoruan C, Kermodé M, Giyai A, Ang A, Kelaher M (2018) Understanding women's uptake and adherence in option B+ for prevention of mother-to-child HIV transmission in Papua, Indonesia: A qualitative study. *PloS One* 13: e0198329.
12. Delavega E, Lennon-Dearing R (2015) Differences in housing, health and well-being among HIV-positive women living in poverty. *Soc Work Public Health* 30: 294-311.
13. Abbott LS, Williams CL (2015) Influences of social determinants of health on African Americans living with HIV in the rural southeast: A qualitative meta-synthesis. *J Assoc Nurses AIDS Care* 26: 340-356.
14. McGibbon E, McPherson C (2013) Applying Intersectionality & Complexity Theory to Address the Social Determinants of Women's Health: Nova Scotia, Canada.
15. Bleich SN, Jarlenski MP, Bell CN, LaVeist TA (2012) Health inequalities: Trends, progress, and policy. *Annu Rev Public Health* 33: 7-40.
16. Kamanzi J, Richter S, Paul P, Jarvis K. (2021b) Intersectionality framework and its contribution to nursing knowledge related to the Prevention of Mother to Child Transmission (PMTCT) program. *Open Journal of Nursing* 11: 1052-1063.
17. McCabe J, Holmes D (2014) Nursing, sexual health and youth with disabilities: A critical ethnography. *J Adv Nurs* 70: 77-86.
18. Caiola C, Docherty S, Relf M, Barroso J (2014) Using an intersectional approach to study the impact of social determinants of health for African American mothers living with HIV. *ANS Adv Nurs Sci* 37: 287-298.
19. CHUB (2021) ART service monthly reports. Department of planning and statistics/HIV/AIDS, STIs and OBBI Division: Author.
20. Kumar R (2011) *Research methodology: A step by step guide for beginners* (3rd ed.) Great Britain: Sage.
21. Shi Z (2012) Opportunities and constraints with ethnography in examining the home literacy experiences of English language learners. *Alberta Journal of Educational Research* 58: 232-245.
22. Lincoln YS, Guba EG (1985) *Naturalistic inquiry*. Beverly Hills, CA: Sage.
23. Nowell LS, Norris JM, White DE, Moules NJ (2017) Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods* 16: 1-13.
24. Reid C, Frisby W (2008) 6 Continuing the journey: Articulating dimensions of Feminist Participatory Action Research (FPAR). In P. Reason, H. Bradbury (Eds.) *Sage handbook of action research: Participative inquiry and practice*. London, UK: SAGE.
25. Yee LM, Simon MA (2014) The Role of Health Literacy and Numeracy in Contraceptive Decision-Making for Urban Chicago Women. *J Community Health* 39: 394-399.
26. Lee SYD, Tsai T, Tsai YW, Kuo KN (2010) Health literacy, health status, and healthcare utilization of Taiwanese adults: results from a national survey. *BMC Public Health* 10: 1-8.
27. WHO (2016) *Health literacy: The mandate for health literacy*.
28. Shieh C, Halstead JA (2009) Understanding the impact of health literacy on women's health. *Journal of Obstetric, Gynecologic & Neonatal Nursing* 38: 601-612.
29. Grineski SE, Hernández AA, Ramos V (2013) Raising children in a violent context: An intersectionality approach to understanding parents' experiences in Ciudad Juárez. *Women's Stud Int Forum* 40: 10-22.
30. Sangaramoorthy T, Jamison AM, Dyer TV (2017) HIV stigma, retention in care, and adherence among older Black Women living with HIV. *J Assoc Nurses AIDS Care* 28: 518-531.
31. Gorden T, Holland J, Lahelma E (2001) Ethnographic research in educational settings. In P. Atkinson, A. Coffey, S. Delamont, J. Lofland and L. Lofland (Eds), *Handbook of ethnography*. London: Sage
32. Madison DS (2012) *Critical ethnography: Method, ethics, and performance* (2nd ed.). Los Angeles, CA: Sage.
33. Jewkes R, Robert M (2012) Sexuality and the limits of agency among South African teenage women: Theorising femininities and their connections to HIV risk practices. *Soc Sci Med* 74: 1729-1737.
34. Brawner BM (2014) A multilevel understanding of HIV/AIDS disease burden among African American women. *Journal of Obstetric, Gynecologic, & Neonatal Nursing* 43: 633-643.
35. Hadgu TH, Worku W, Tetemke D, Berhe H (2013) Undernutrition among HIV positive women in Humera hospital, Tigray, Ethiopia, 2013: Antiretroviral therapy alone is not enough, cross sectional study. *BMC Public Health* 13: 943.
36. Tiyou A, Belachew T, Alemseged F, Biadgilign S (2012) Predictors of adherence to antiretroviral therapy among people living with HIV/AIDS in resource-limited setting of southwest Ethiopia. *AIDS Research and Therapy*, 7:1-10.
37. Fulu E, Miedema S (2015) Violence against women: Globalizing the integrated ecological model. *Violence Against Women* 21: 1431-1455.

38. Shubber Z, Mills EJ, Nachega JB, Vreeman R, Freitas M, et al. (2016) Patient- Reported Barriers to Adherence to Antiretroviral Therapy: A Systematic Review and Meta-Analysis. *PLoS Med* 13: 1-14.
39. McCollum R, Taegtmeyer M, Otiso L, Tolhurst R, Mireku M, et al. (2019) Applying an intersectionality lens to examine health for vulnerable individuals following devolution in Kenya. *Int J Equity Health* 18: 24.
40. Abimbola S, Molemodile SK, Okonkwo OA, Negin J, Jan S, et al. (2016) The government cannot do it all alone: Realist analysis of the minutes of community health committee meetings in Nigeria. *Health Policy Plan* 31: 332-345.
41. Hilario C, Kamanzi J, Kennedy M, Gilchrist L, Richter S (2021) Peer support for youth suicide prevention: A scoping review protocol. *BMJ Open* 11: 1-5.
42. Hlartaithe M, O Grede N, de Pee S, Bloem M (2014) Economic and social factors are some of the most common barriers preventing women from accessing maternal and newborn child health (MNCH) and prevention of mother-to-child transmission (PMTCT) services: A literature review. *AIDS and Behavior* 18: 516-530.