



Research article

Client-reported challenges and opportunities for improved antiretroviral therapy services uptake at a secondary health facility in Ghana

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ABSTRACT

Antiretroviral therapy (ART) regimens in African countries, including Ghana, are often faced with the challenge of treatment default. To maximize ART utilization and efficiency among people living with HIV (PLHIV), it is pertinent to ensure that ART-related challenges that clients encounter are identified and addressed holistically. A phenomenological qualitative study of thirty participants recruited through the purposive sampling technique was conducted using in-depth interviews from June to July 2021. Independent coding was done using Atlas ti. Sub-themes were developed from the codes, using the most expressive phrases, and grouped under two broad themes, challenges, and opportunities to maximise ART uptake. Ten different challenges, grouped into the health system and individual constraints were reported. Health system constraints included stigmatisation and discrimination by healthcare workers, queuing outside while waiting to be served, long waiting periods, non-communication of laboratory test results to clients, lack of proper education on side effects associated with ART, and language barrier. Individual constraints included financial constraints, perceived non-improvement in health outcomes, food insecurity, and forgetfulness. Opportunities identified for improved ART uptake were assuring ART clients of improved health outcomes, leveraging the good rapport between ART clients and healthcare providers, leveraging the better counselling services offered to PLHIV at the ART clinic, provision of varied ART treatment regimens to clients, routine communication of laboratory test results to clients, and leveraging clients' satisfaction with ART services at ART clinic. We recommend health system reforms targeting healthcare service delivery to PLHIV to encourage linkage, continuity, and retention in care and augmenting ART regimens with financial and nutritional support while encouraging status disclosure to a trusted family member.

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1. Introduction

The Human Immunodeficiency Virus (HIV), which leads to Acquired Immune Deficiency Syndrome (AIDS), is an opportunistic-infection-driven disease that impairs the defense mechanism of its host, making them immunodeficient and gradually setting its host up for many other invasions, including cancers and other chronic diseases [1]. Although there has been a significant drop of 49 % in new HIV infections in West and Central Africa between 2010 and 2022 [2], the disease continues to impact the health of populations. The global case count of HIV/AIDS at the end of 2022 was pegged at 39 million by the World Health Organisation [3]. Ghana has its fair share of the global HIV/AIDS burden, with a total of 354, 927 persons currently living with the virus in the country. Of those diagnosed with the virus in Ghana, 87 % are enrolled in sustained antiretroviral therapy (ART) [4]. The Volta Region, which is one of the sixteen regions of the country, has an estimated total of 20, 949 persons living with HIV (PLHIV) [5].

Antiretroviral therapy remains the most effective management method for HIV with improved health outcomes [6]; hence, its uptake and adherence ought to be encouraged among PLHIV. Moreover, with the global outbreak of COVID-19 and its impact on morbidity and mortality rates among PLHIV [7], there is an urgent need to adhere to antiretroviral therapy (ART) more than before. ART adherence is essential as it reduces morbidity and mortality, improves the quality of life of PLHIV and helps reduce viral transmission by causing viral suppression among PLHIV [8]. Viral suppression consequently leads to low HIV-related morbidity and mortality among PLHIV [9]. Affirming Yang and colleagues' assertion, Dzansi et al. [10] attributed an estimated 35 % decline in global AIDS mortality to access and adherence to ART.

In all efforts to tackle the HIV/AIDS menace, Ghana's government outlined several policies to propel the 2030 agenda for sustainable development, as directed by the Joint United Nations Programme on HIV/AIDS (UNAIDS) in 2014 [11]. One such policy is the comprehensive treatment policy, which is embedded in the 95-95-95 strategy. Thus, 95 % of PLHIV should be aware of their status and know the availability of an efficient therapy. Out of this number, 95 % should be on treatment, and 95 % of those on treatment should achieve viral suppression by 2025 [12]. This has led to the nationwide rollout of ART services in most tertiary health facilities across Ghana [13], including the Volta Regional Hospital.

Globally, ART regimens are often faced with the challenge of treatment default. In Indonesia for instance, stigma and discrimination by families, community members, and even by healthcare workers in healthcare settings have been reported by PLHIV, including denial of treatment by healthcare workers [14,15]. In Europe, the perceived lack of need, the fear of consequences, and ART inaccessibility have been reported as some of the barriers among men having sex with men living with HIV [16]. In Canada, younger age, migration, incarceration, and non-injection drug use are some of the reasons found for non-adherence to ART among sex workers [17]. In Australia, unmanageable treatment burdens, such as the relentless demands of the treatment regimen, intolerable medication side effects, and the impact of emotional, psychological, and social issues such as isolation, depression, and alcohol and other substance use have all been found to affect treatment adherence [18]. On the African continent, some of the commonly reported barriers to adherence to ART include forgetfulness, travel distance, being busy with other things, feeling depressed, being stigmatised, and poor treatment efficacy [19]. Other reasons include high out-of-pocket expenses for receiving and accessing ART, treatment delays from treatment facilities, scarcity of ARVs, concerns with adverse ARV drug effects, and ART-related leave of absence leading to work insecurity [20].

Ghana also faces the challenge of ART default. Among patients receiving ART at the Pantang Hospital, a secondary health facility, about 30 % of clients were lost to follow-ups [21]. However, adherence to antiretroviral therapy (ART) is essential in enhancing the quality of life and preventing drug resistance development among PLHIV [10]. It has longed been mentioned that the lack of money to pay for user charges at the ART site and transportation, employment status of clients, lack of food to take ARVs, side effects, stigma and discrimination, lack of support as well as religious and cultural factors as factors affecting adherence to ART in Ghana [22]. Despite the improvement in enrolment for ART services at the Volta Regional Hospital over the past five years, the defaulter rate has also increased. Anecdotal evidence from the hospital database showed that in the year 2020, about 8 % of their ART clients were lost to follow-up although they were not reported to be deceased. ART default, if not checked, could lead to virological failure leading to the emergence of resistant variant(s) of HIV [23].

To maximize ART utilization among PLHIV in Ghana, it is pertinent to ensure that ART-related challenges faced by clients, per the uniqueness of the characteristics of the facilities where ART is accessed, are identified and addressed. Moreover, although some ART-related studies have been conducted in the country, client complaints and opportunities have not been fully explored.

For instance, while status disclosure among ART clients [24], quality of ART services [25], the effectiveness of first-line ART medication [26], and utilization of ART services [27] have been assessed in some parts of Ghana, client challenges and opportunities for the maximization of ART have not been comprehensively assessed. One of the few studies that closely delved into client complaints only quantified the barriers and facilitators of Ghanaian adolescent ART clients and not the adult ART client population [28]. Thus, understanding the challenges associated with the ART program from clients' perspectives and identifying opportunities for addressing these challenges could help to maximize ART uptake in the country. Moreover, the study's findings could add to the body of literature on ART-related research in Ghana and Africa by elucidating client-reported complaints and opportunities for the maximization of ART from a qualitative perspective. Consequently, these have informed the current study's design and mode of conduct.

1.1. Objectives of the study

The study aimed to identify ART-related challenges faced by PLHIV and their proffered opportunities for improved ART uptake and adherence, leading to improved health outcomes among PLHIV, as presented in Fig. 1.

2. Materials and methods

2.1. Context

The study was conducted at the ART unit of the Volta Regional Hospital, Hohoe, Ghana. The hospital used to be the Hohoe Municipal Hospital, a government-owned hospital, until its conversion into the Volta Regional Hospital in January 2022. It serves as a referral hospital for all healthcare centres in the Hohoe municipality and other hospitals in the Volta region. Also, it is one of the health facilities in the region where ART services are extensively provided, owing to the high HIV prevalence in Hohoe municipality and further functions as the regional hospital [29]. Hence, its selection for the study.

2.2. Study design

The study was premised on the interpretative phenomenological analysis (IPA) design to describe participants' lived experiences regarding the challenges they faced with ART services and their proposed recommendations. The approach was preferred as it allows individuals to create meaning in their world through interaction with other people within their environment [30], in this case, the interaction between PLHIV and their caregivers. Adopting the IPA enabled us to capture the concerns that a group of PLHIV had about their ART services provision at a tertiary health facility in Ghana. The design also afforded the researchers the leverage to make presuppositions in line with the tenets of qualitative research, as opined by Hammersley [31]. Thus, the design allowed us to probe participants in soliciting their views on HIV-related challenges and recommendations for addressing those challenges.

2.3. Researchers' characteristics and reflexivity

The research team consisted of an associate professor experienced in qualitative research (MD), two senior lecturers (EM & JS), two lecturers (POA & GK), and a PhD student (FYA), all with qualitative research backgrounds. None of the researchers knew or were related to any of the study participants, nor worked at the hospital where the data were collected get them emotionally attached to the study leading to personal sentiments creeping into our findings. Moreover, to ensure that interviewer biases did not influence our findings, each interviewer was accompanied by an additional research team member during the data collection process, whose duty was to ensure that the interviews did not markedly sway from their intended objectives.

2.4. Study sample and sampling strategy

Thirty (30) PLHIV participants, aged twenty-five (25) years and above and who had been on ART at the ART unit of the Volta Regional Hospital for at least five years, were recruited for the study. Aside from the age and duration of ART, participants had to be of sound mind and willing to participate in the study. Individuals aged 25 years and above were considered for the study because they are mature enough to have been on ART for at least five years. Hence, they were more likely to have extensive experiences relating to ART services to better articulate the challenges they encountered. Potential participants who met the inclusion criteria but were critically ill to be interviewed or did not consent to partake in the study were excluded. A purposive sampling technique was used to recruit individuals who met the inclusion criteria. Purposive sampling is the deliberate choice of a participant due to the qualities they possess [32]. In this instance, PLHIV that had been on ART for not less than five years were purposefully recruited as they were deemed information-rich due to their longevity on ART. To do this, the Principal Investigator introduced himself and the rest of the research team and briefed potential participants on the aim and purpose of the study, as well as on the inclusion and exclusion criteria of the study. Participants' rights and privileges were also clearly spelled out to them to better inform the clients about their willingness to partake in the study or otherwise. This was done after the head of the ART unit of the hospital had pre-informed the clients of our impending visit to ensure that ART clients were not apprehensive about our intrusion and the study owing to the stigma associated with HIV. Participants who had been on ART for up to five years and were willing to participate in the study voluntarily without any

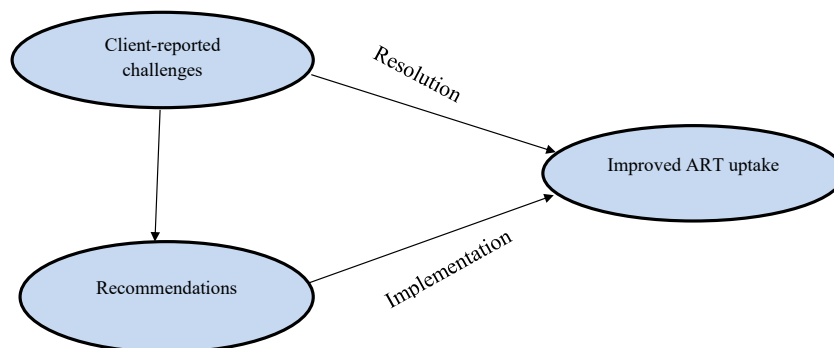


Fig. 1. Conceptual framework of the study.

form of coercion, after the purpose of the study had been explained to them were then sampled. With their permission, it corroborated the participants' claim of longevity on ART by inspecting their ART record books. Individuals found to have been on ART for the minimum duration of five years were then recruited for interviews.

2.5. The interview guide

An in-depth interview guide was used to collect the data. The guide contained questions on three broad areas; socio-demographic characteristics of participants, the challenges participants faced with ART services uptake, and the opportunities they felt existed for maximizing ART services utilization at the hospital. The tool was first subjected to peer review by experienced qualitative researchers at the Fred N. Binka School of Public Health and then piloted on three participants from an ART clinic in a different district in the Volta Region. The pilot study aided the researchers in rephrasing ambiguous questions for clarity and identified areas that needed probing. However, the sample for the pilot study were not part of the original sample of the study. The guide was developed in the Ewe language and then translated into English and translated back into the Ewe language to ensure that the intended meaning of the questions was not lost during the translation process.

2.6. Data collection procedure

Data collection commenced after all the required protocols and procedures had been met. First, we sought ethical clearance for the study from the Research Ethics Committee at the University of Health and Allied Sciences. Then, we sought permission from the Volta Regional Hospital, Hohoe, through the Volta Regional Health Directorate.

Data was collected by two trained research assistants (RAs), a male and a female, who are native speakers of the Ewe language, under the supervision of the Principal Investigator (E.M), and two of the co-authors [J.S and, P.O.A], from the 10th of June 2021 to July 30, 2021. The data was collected within a secluded area in the ART clinic of the hospital. The research assistants had master's degrees in public health and were junior staff members at the Fred N. Binka School of Public Health. They were selected based on their prior experience in conducting in-depth interviews as both their undergraduate and postgraduate research projects were qualitative. They were trained on the objectives of the study, the key research questions to be asked and their expected probes, how to avoid biases during interviews, as well as on the ethical procedures, participants' rights and privileges that encompassed the study. They were then made to moderate the pilot study interviews in the presence of the principal investigator and the two co-authors to assess their competency and familiarity with the tool. To ensure confidentiality, the research team, the RAs, and the transcribers of the interviews were made to sign a confidentiality agreement promising not to divulge information about the study or the participants to anybody outside of the research team. As an additional confidentiality measure, the recordings were immediately taken from the RAs by the principal investigator to ensure that no one outside of the research team had access to them. The transcripts were then password protected and saved on dedicated laptops which were used for the analyses. Each interviewee was assigned a unique code to ensure that participants did not divulge their personal information during interviews and for differentiation and easy identification of transcripts. Each interview lasted for approximately an hour and was recorded with a voice recorder after the participants permitted us to do so. Data collection ended when data saturation was deemed to have been reached during the analysis process, that is when new codes and themes did not emerge from the data [33]. This was possible as data collection and analysis were iterative [34].

2.7. Ethical considerations

The Research Ethics Committee of the University of Health and Allied Sciences (UHAS-REC) granted clearance for the study (UHAS-REC A.4 [1]20–21). Written permission was sought from the Volta Regional Health Directorate for the study to be conducted at the Volta Regional Hospital, Hohoe. Informed consent was obtained from all participants before interviewing them. Literate participants i. e., those who could read and write gave their consent by signing the informed consent after they had read the information on the form which had also been further explained to them by the PI. For participants that were illiterates, informed consent was obtained through thumb printing. This was after the purpose and procedures involved in the study had been thoroughly read and explained to them and they had agreed to participate in the study. Participation was entirely voluntary, with participants having the right to withdraw from the study whenever they felt uncomfortable. Interviews were conducted in secluded areas within the ART unit without the full glare of other patients and individuals. Participants were assigned unique numbers to conceal their identities. Under no circumstance were participants' names or identifiers revealed in our documents. Participants derived no direct benefits from the study. The data collectors adhered to the laid down COVID-19 protocols in the country at the time. Participants wore face masks and applied hand sanitisers before they were interviewed.

The study was carried out following the relevant guidelines and recommendations concerning the involvement of human subjects in research, per the UHAS-REC guidelines for conducting research.

2.8. Data processing and analysis

First, the voice recordings were translated and transcribed from the Ewe language to English by a professional language translator. The translator was in constant consultation with the interviewers during the transcription process to clarify the meanings of the participants' mannerisms that were captured on tape so that such meanings were not lost during translation. The datasets (transcripts) were then labeled to keep track of the participants they emanated from, per the numbers assigned to them. The transcripts were then

thoroughly read to verify their content [35]. Coding was done independently by two members of the research team (F.Y.A and J.S), using the Atlas ti software. Each coder independently coded all 30 transcripts. The two coders then held a meeting with the remaining two members of the research team (E.M. and M.D) and reviewed discrepancies that emanated from the double-coding process. Differences were resolved through consensus using the most expressive words for each set of codes. Sub-themes were then developed from the codes by using the most expressive words and phrases. We then grouped related sub-themes under the two broad themes, challenges, and opportunities to maximize ART uptake at the Volta Regional Hospital. After the non-emergence of new codes and sub-themes during the analysis process, data saturation was deemed to have been achieved [33].

2.9. Quality control processes

In line with the requirements for trustworthiness in qualitative research, we ensured that our processes could yield credible, dependable, confirmable, and transferable results. First, the study protocol was submitted to experienced qualitative researchers for a critique of the proposed processes to be followed for the study. As a result of the sensitive nature of the study, we had to gain the trust of the participants to get them to agree to partake in the study. The PI achieved this by explaining how significant participants' responses could be in addressing future ART-related challenges that PLHIV faces at the health facility and with the assurance that their identities and responses would remain anonymous. This ensured that credible responses were obtained from the participants [36]. Also, after data collection and transcription, the transcripts were sent to the same individuals for vetting and the final write-up for validation and improvement purposes to ensure that our findings were dependable. Also, the interviewers were trained by the research team on how to strive to bracket or suspend biases during the interviewing process to maintain objectivity and obtain credible, unbiased responses. This was also applied during the coding process. Also, as none of the researchers was an employee of the hospital or a worker of the Ghana Health Service, we had no conflict of interest in terms of the study findings that could have led to biased interviewing and reporting. We also reverted to our participants with the initial transcripts and findings of the study for verification and confirmation.

3. Results

3.1. Background information of participants

Seventeen (17) females and thirteen (13) males were interviewed. All the participants were aged twenty-five (25) years and above. All participants also had been on ART at the facility for not less than five years. Also, twenty-five (25) had at least a primary school level of education and twenty (20) were married. Twelve (12) of them were either public or civil servants, seven were privately employed and the rest (11) were self-employed. Out of the total number, twenty-eight (28) were Christians and two (2) were Muslims. In terms of ethnicity, twenty-seven (27) were Ewes, the dominant tribe in the municipality, and the rest were non-Ewes.

3.2. Challenges with ART service delivery

A total of ten challenges, grouped under the health system and individual constraints, were reported by participants.

3.2.1. Health system constraints

Regarding the health system challenges clients faced with ART services at the Volta Regional Hospital, six constraints were identified. Participants noted that they were sometimes stigmatised and discriminated against for missing ART clinics. Also, they sometimes queued outside while waiting to be served, waiting for a long period to be served, non-communication of laboratory test results, non-communication of side effects of ART, and language barriers with some healthcare providers were the challenges encountered by the participants in accessing ART services.

3.2.1.1. Stigmatisation and discrimination from healthcare providers. Twelve of the participants, seven females and five males explained that health workers sometimes stigmatised and discriminated against them by punishing them for failing to attend ART sessions, a practice that does not happen to persons with other health conditions at the hospital. Such punishment included being deliberately attended to late or being verbally abused. One of them narrated:

Sometimes they [nurses] attended to us late because we could not come for the previous appointment. They [nurses] will even serve those who came after you and make you wait without any reason. It is very annoying and sad (Male, 40 years old).

Recounting how she was embarrassed for defaulting on an appointment, a female participant said:

The shouting is too much. Last month, I was unable to come for my medication on time due to some family issues. When I finally came, the way the nurse on duty shouted at me was very embarrassing. So, I have learned my lesson. I will always try to come on time to avoid such embarrassment. It is not easy living with this disease [HIV] (Female, 35 years old).

The results show the frustrations PLHIV go through at the ART clinic simply because of their HIV status, as they are often neglected and discriminated against by healthcare providers. This could affect the self-esteem of PLHIV leading to the development of inferiority complex and adversely affect their psychological well-being.

3.2.1.2. Queuing outside for ART medication. Queuing outside while waiting to be served was another challenge reported by participants. Thirteen participants, eight females and five males, complained about this issue. They complained about how it infringed on their privacy, which could lead to stigmatisation by community members should they be identified as PLHIV. Below are excerpts from the interviews:

Sometimes the place [ART clinic] gets full to the extent that we are made to wait outside to be served. This is bad. If you are not lucky, you could be seen by someone that knows you, and they go and spread it [HIV status] (Female, 28 years old).

A male participant corroborated this same assertion.

I will say the biggest challenge is when they let us wait outside. People know what we [PLHIV] come here for, so making us queue outside to be recognized by them is bad. Sometime back, a lady who had been living with this condition [HIV] for so long without the knowledge of her brother was identified here by the same brother [sic] when we were waiting outside. It [queuing outside] has to stop (Male, 34 years old).

This finding portrays the lack of privacy that is accorded PLHIV receiving ART at the hospital. With PLHIV being discriminated against, it is pertinent to protect their identity. However, this seems not to be the case for participants and needs to be addressed by the hospital management.

3.2.1.3. Long waiting hours. Delay in receiving healthcare was another major health system challenge that the participants highlighted. Participants lamented that they had to wait for long hours to receive their medication without offering them reasons for such delays. Seventeen participants, comprising ten females and seven males, alluded to this. A participant said that:

Sometimes you come and spend the whole day here. They [nurses] won't attend to you early for you to go home, and we don't even know what they are up to. It [long waiting hours] is so annoying (Male, 45 years old).

A female participant also recounted:

Last month, I spent more than three hours here. And the more time you spend here, the more likely someone you know might see you. So, it could be why some people don't come for their medication because they think they may not be served early to go home and may be seen by someone they know (Female, 32 years old).

Again, the issue of privacy and anonymity comes into play here. The longer the time PLHIV spends at the ART clinic, the likelihood of them being seen and discriminated against by known persons in their communities. Moreover, some of these persons are self-employed and could not afford to waste much time at a health facility as that could affect their daily income earnings, and thus should be prioritized for healthcare provision by healthcare givers.

3.2.1.4. Non-communication of laboratory test results to patients. Non-communication of test results, specifically CD4 count test results, was mentioned as another health system challenge facing ART services delivery and uptake by participants. They complained that their blood samples are routinely taken for analysis, yet they do not receive feedback on these tests, making it difficult to know how they are faring with ART medically. A total of eleven participants, six males, and five females mentioned this challenge. A female participant explained:

Ever since I started coming for [ART] treatment here, I have yet to receive a single [CD4 count] test result, although they keep on drawing blood from me. I don't even know what they use the blood for (Female, 27 years old).

Expanding on the point, a male participant said he has been asking for his CD4 test results to no avail:

For me, my biggest challenge is not knowing what is wrong with me or what is going on well with me. I have been asking for the results of my laboratory tests for the past two months, but I haven't received them. This is a big worry for me. I cannot be taking the medication without knowing whether the virus in me is dying or not (Male, 35 years old).

PLHIV needs to know whether there is an improvement in their condition or not, post enrolment in ART. Hence, when there is lack of communication of laboratory test results, including viral load count test, to clients, it could lead to disinterest in conducting such tests and ultimately lead to non-adherence to ART appointments. Hence, prompt communication of laboratory test results to PLHIV could help to retain them on ART and also ensure medication adherence.

3.2.1.5. Lack of education on side effects of ART to clients. Another significant health system challenge participants faced with ART treatment was the lack of education on the side effects of ARTs on PLHIV. Some participants complained that they often felt weak after taking their medication, while others reported diarrhoea as one of the common side effects of their treatment, side effects they were not expecting and were not pre-informed about. Nineteen participants, comprising ten females and nine males, complained about this lack of communication from healthcare workers. One female participant stated:

Hmmm, for me, my biggest challenge with this treatment is the lack of education on the side effects of the treatment before I began. I feel sick after taking the drugs [Antiretroviral drugs (ARVs)]. I go to the toilet a lot [sic] and also feel too weak to work. I am a hairdresser,

and most of the time, I am unable to work because I feel weak and tired, and the sad thing is that no one bothered to tell me all these before I started the treatment (Female, 30 years old).

A male participant narrated how he was never informed about the side effects of ARVs before the commencement of ART. He said,

You see, I always feel like vomiting after taking the medication. As a civil servant, you cannot be vomiting all over the place. People always ask what is wrong with me, but I cannot tell them. It could have been better if I had been pre-informed about all these [side effects] before I started the medication. At least, I could have conditioned my mind and dealt with it. It is better that way (Male, 33 years old).

Without proper education on the side effects of ARVs, PLHIV may not know how to identify and manage these side effects. As such they might see ARVs as worsening their health condition and decide to abstain from taking their medication. Hence, proper education and ART and their associated side effects should be provided to PLHIV who are enrolled on ART in order to minimize misconceptions about ART and improve adherence to ART uptake.

3.2.1.6. Language barrier. Also, the language barrier, leading to a communication barrier with nurses, was one of the health system challenges noted by participants. In the Volta region of Ghana, the predominant spoken language is Ewe. However, nurses from various parts of the country are assigned to ART clinics, leading to language differences. This sometimes affects healthcare provider-client communication. Ten females and seven males cited this challenge. A female participant explained that:

Some of the nurses do not understand the Ewe language, and I also do not understand English or the Akan language. So, sometimes, it becomes difficult to communicate with the nurses when an Ewe nurse is not on duty. I think they should allow the nurses who speak the Ewe language to attend to us (Female, 42 years old).

A male participant further explained:

Some of the nurses often don't understand us properly when you explain things to them. Although I can speak English, there are some things which you can only better [sic] explain in your mother tongue. You know English is not our language (Male, 39 years old).

This finding exposes the issue of lack of professional interpretation services within the healthcare setting of Ghana. With Ghana having multiple local languages and dialects, the Ghana Health Service must train HIV/AIDS counselors in the major languages and dialects to ensure that at each ART facility, there would be a counselor for the predominant language in the area in order not to always depend on the English language for counselling whenever a counselor is deficient in the predominate language of the people.

3.2.2. Individual constraints

Four challenges were reported under this sub-theme. These are financial challenges, perceived lack of improvement in their health condition since the commencement of ART, food insecurity, and forgetfulness.

3.2.2.1. Financial constraints. Some participants also noted a lack of financial support as one of the individual challenges they faced with accessing ART services. They explained that due to stigmatisation, they have to travel long distances from their communities to access ART at the Volta Regional Hospital at Hohoe, despite the proximity of other health centres to them. They do this to avoid being seen by people they know. Therefore, they pay high transportation costs monthly to collect their medication. In this light, some participants indicated that the side effects of the medications affect their productivity as they are unable to work the way they should. Consequently, this affected their ability to earn money to support themselves. Twenty participants, twelve males and eight females, cited financial constraints as one of the challenges they faced with ART uptake. A female participant stated that:

For me, money is my main problem. You know this condition [HIV] is not supposed to be known by the community, or else you cannot even live with them again. So, I have to travel over 100 km every month to come here for my medication without support from anyone because I cannot even tell them what I come here for. So, that is a real challenge for me (Female, 36 years old).

A male participant also had this to say:

I am a barber who needs to work every day since I do not receive any salary from the government. But sometimes, I feel so weak that I cannot work, and that means I am losing money. If there was an organization [non-governmental organization] that could support us financially, it would help a lot (Male, 27 years old).

Participants trying to conceal their identity have to travel longer distances to ART facilities where they are not known for their medication. The money they spend to cover these long distances sometimes serves as a disincentive to reporting to ART facilities for their medication. Some also feel weak and unable to work after they have taken their medication. Hence, to preserve energy and work for income, they default on their treatment. Thus, financial support by the government for PLHIV could go a long way to improve ART adherence among PLHIV.

3.2.2.2. Perceived non-improvement in health condition. Some participants were worried about the non-improvement in their health, which according to them, is a major challenge to ART services uptake. Although they have been on ART for over five years, they felt their health had not improved to their satisfaction. Hence, they sometimes think about quitting the treatment. Fourteen participants expressed this concern. One participant narrated:

One of the challenges is how long I am going to be on this medication before I get better [sic]. I have been coming here for the past six years, but there is something wrong with me every day. I do not think my health is improving, although the nurses think so. It is their encouragement that keeps me coming. (Female, 45 years old)

Her male counterpart also mentioned how disappointed he was with the lack of improvement in his health despite being on ART for about ten years. He explained:

I know I would have been dead if I was not on medication. However, I should have also been better than this, because I have been on this medication for all these years. But I am not complaining; some of the people I started this treatment with [ART] are dead, so who am I to complain? (Male, 52 years old).

It is evident from the findings that participants wished they were in a better health state than their current condition since they were on ART, however, it also explains their lack of understanding of how ARVs work. Hence, they were expecting a speedy recovery than expected. Hence, PLHIV should be sensitized on how ART works in order to normalize their expectations in terms of recovery.

3.2.2.3. Food insecurity. Five of the participants also mentioned that they felt extremely hungry upon taking their medication and they lacked the means to meet these nutritional needs. Hence, to avoid getting hungry, they sometimes defaulted on their medication. One explained:

I feel very hungry whenever I take the medicines and I do not have the money to keep on eating the way I should, so I sometimes do not take the medications. I have other responsibilities to focus on so I cannot use all my money to buy food (Female, 42 years old).

Another participant added:

The hunger you feel after taking the medicines is out of this world. If you refuse to eat you will feel dizzy, so sometimes I do not take the medicines, especially when I do not have much food at home (male, 35 years old).

The finding portrays that PLHIV struggle to meet the nutritional demands of ART. As a result they deliberately default on their medication in order not to feel hungry after taking ARVs. Augmenting ART with food handouts would thus go a long way to keep PLHIV on ART.

3.2.2.4. Forgetfulness. Forgetfulness was another personal challenge to ART uptake that participants mentioned. Seven participants explained that they sometimes forget to attend their scheduled ART sessions or even forget to take their medication as required mainly since they do not have someone to remind them. One of them narrated:

I am someone who forgets easily. So, there are times when I forget to take my medication. Even sometimes I forget that I have an [clinic] appointment. ... I have not disclosed my status to any of my family members yet, so no one supports or reminds me as they do not know what is wrong with me (Female, 36 years old).

A male participant added his voice:

My main challenge with the treatment [ART] is forgetfulness. Luckily for me, my wife travelled outside the country before I was diagnosed with HIV, so she doesn't know, and I have not informed any family members about it either. If my wife should hear of this [HIV status] I am sure she will come and divorce me, so I cannot inform anybody. Because of this, even when I forget to take my medication, there is no one to remind me (Male, 39 years old).

From this finding, there is the need to augment the ART regime with treatment support system where PLHIV would be provided with personalized treatment supporters to remind them on their medication, or, to set up a reminder system to remind PLHIV about their appointments and medication uptake.

3.3. Opportunities for improving ART uptake

Aside from the reported challenges, participants also stated some opportunities that could be leveraged to optimize ART uptake at the facility. For instance, participants mentioned that the assurances they receive from nurses encourage them to attend ART clinics. Also, leveraging good rapport, non-discrimination, offering effective counselling services for a better understanding of ART, providing varied treatment regimens to clients, communicating laboratory test results to clients, and clients' satisfaction with ART services, could help improve its uptake.

3.3.1. Assuring clients of improvement in their health status

When participants were asked what could be done to improve ART uptake, some participants just wanted assurance that their health would improve through ART. As a result of the non-communication of CD4 test results to participants, verbal assurance from healthcare providers was all some disillusioned participants needed to continue with the ART. At least, seven participants alluded to this. A female interviewee said:

At least, receiving some encouragement [on health conditions] from the nurses could help some people to keep coming for the treatment [ART]. But some of us have been here [ART clinic] for years without receiving much encouragement from some of them [nurses]. It [lack of encouragement] hurts me (Female, 33 years old).

Another participant corroborated this assertion.

For me, I think the nurses should do their best to keep encouraging and assuring us to come. You know, with this sickness, you are always in a bad mood, so when we come, and they don't assure us that all will be well, we get disappointed. I see them as my parents now because they are the ones who understand what I am going through (Male, 28 years old).

This finding highlights the vulnerability of PLHIV as they are uncertain about the future in terms of their health. Hence, assuring PLHIV would help boost their confidence and trust in ART and thus motivate them to comply. Hence, healthcare providers should be compassionate enough and assure PLHIV of improved health outcomes should they adhere to treatment.

3.3.1.1. Leveraging the good service provider-client relationship. Despite the challenges that were reported, the poor attitude of health workers was not one of them. Some participants received friendly services from health workers, encouraging them to attend ART. Twelve participants, seven females and five males, were of this opinion. A female participant noted that:

I think if the nurses continue their friendly attitude towards us, it will encourage us to keep coming. I started attending a clinic in a different facility, but the [nurses] were somehow rude. Some of them think we are promiscuous, that is why we get [sic] this sickness [HIV], and they disrespect us. But here, it is not like that (Female, 54 years old).

Her male counterpart added:

This sickness makes people look down on you, including nurses. But since I started this treatment, I have never experienced that from any of the nurses. Their boss is very friendly, and I am sure he talks to them [nurses], so they are also very friendly. If they continue like that, people will have no reason not to come [for treatment] (Male, 44 years old).

From this finding, there is the need for the hospital management to encourage and motivate healthcare providers to be compassionate enough and improve on their interpersonal relationship with PLHIV for them to feel accepted and belonged in order to feel comfortable to report for ART regimes. This is so because, when they feel accepted and belonged, it encourages them to adhere to ART.

3.3.1.2. Leveraging better counselling services offered at the ART clinic. Another aspect of ART services that clients were happy with was the quality of counselling they received from nurses at the ART clinic. Participants stated that they were counseled well enough to understand the disease [HIV] and accept living with it by taking their medications regularly. Eight women and nine men were of this opinion. One female participant said:

The counselling they provide here is very good. I had no idea what this sickness [HIV] was about. I thought it was a death sentence and was just waiting to die. But when I was brought here, the [nurses] counseled me so well that I was no longer afraid. I have been on treatment for nine years now, and I am still fit (Female, 39 years old).

A male respondent also said:

The way I was told I had HIV made me lose hope in life. I was thinking of killing myself because I didn't know how I was going to cope. But when I was brought here, they [nurses] explained it [HIV] to me so well that I had hope. They [nurses] made me understand that you can live with the disease for many years and do what every healthy person does if you are on medication [ART] (Male participant, 41 years old).

It is good to know that despite the challenges that PLHIV reported, they receive better counselling services at the ART clinic. There is therefore the need to continuously train and motivate counselors at the ART unit to keep on giving their best to ensure that clients adhere to ART.

3.3.1.3. Improving and varying ART regimes. Participants were also of the opinion that if different treatment regimens of ART were made available aside from the current ones, it would improve ART uptake at the Volta Regional Hospital, Hohoe. According to them, the single treatment option available, pills, makes it difficult for some participants to adhere to treatment. They wished long-lasting injectable versions of the various treatment regimens were available to minimize the frequency of taking the drugs orally. A total of nineteen participants, ten females, and nine males, expressed this wish.

A female participant said:

For me, if they [healthcare workers] can inject us for at least a month before we come back again, that will help. Sometimes you forget that you have to take a pill, and it affects your health. Also, when the nurses realize that you did not adhere, they shout at you, so some people stay home out of fear (Female, 32 years old).

Also, a male participant responding to the same question said:

Swallowing pills every day is not easy at all. Some people have died of this sickness because they could not continue taking their medication regularly. Just like how some people fear injections, the same way some people don't like taking pills. So, if they can provide

an injectable version of the treatment [ART], those who don't like taking pills will be injected, and no one will have a reason not to attend [ART] (Male, 36 years old).

This finding highlights the importance of continuous improvement of HIV medication. However, with the single dose of ARV now on the market, participants' challenge of having to take a cocktail of drugs in a day which was hampering ART adherence, could be a thing of the past.

3.3.1.4. Routine communication of laboratory test results to clients on ART. Regarding the opportunities that healthcare providers could leverage to improve ART uptake at the Volta Regional Hospital, Hohoe, some participants suggested prompt communication of laboratory test results to clients. They explained that if clients knew how they were fairing with ART, it would encourage them to adhere to the treatment regimen. When their test results are not communicated to them, it decreases their motivation for attending ART sessions. Seven females and eight males expressed this opinion. A female participant said:

I think if they keep telling us our [CD4 count] test results, it will motivate us to keep coming, and you can also give hope to someone that just got infected to keep up with the treatment. But since they don't do that, I personally do not know how healthy I am, and that is a turn off. They should at least tell us something (Female, 27 years old).

Similarly, a male participant explained that:

I think if they can improve how they do things here concerning our [test] results, it will improve our attendance. They should be telling us what is wrong with us so that we know we are not taking the medicines for nothing [sic]. But they keep drawing blood from us without getting back to us, and that could demotivate some people, you know! (Male, 39 years old).

This finding brings to light the importance of communicating test results findings of PLHIV to them, as it was earlier mentioned as one of the challenges they face with ART administration. Hence, the hospital management should endeavour to improve in this regard to gain the trust and confidence of PLHIV in ART.

3.3.1.5. Leveraging client satisfaction with ART services at the hospital. Another factor that the hospital could leverage to improve ART uptake is maintaining client satisfaction with ART services. Participants indicated they were happy with the services offered at the ART clinic. Hence, ensuring such a standard is maintained would help to improve client attendance at the facility. Fifteen participants, seven females, and eight males alluded to this notion. A female participant said:

If they keep up with the good work, people will keep coming. Some of us were not initially receiving our medication here, but we were told that the nurses here don't gossip and are very professional that is how I came here. And since I came, they have been professional. They should keep it up (Female, 45 years old).

A male participant added:

They should just keep doing what they are doing. They shouldn't change. If they do that, I have nowhere to go, and more people will come to this facility. They are very professional. May God bless them. That is all I have to say (Male, 38 years old).

Client satisfaction is key in the uptake of healthcare services. Hence, it is important for healthcare providers at the ART unit of the hospital to strive to ensure that they provide quality services that would make clients satisfied with the services they offer in order to retain them on ART.

4. Discussion

Ghana appears to have lost hope of achieving global targets in the campaign to improve the lives of PLHIV. For instance, at the end of 2018, Ghana's performance was 66–37-64, far from the 90-90-90 target to combat HIV infection by 2020 [37,38]. Thus, this paper primarily examined the challenges and opportunities faced by PLHIV in accessing antiretroviral therapy (ART) services in the Volta Regional Hospital, Hohoe, Ghana. Selected men and women who were seropositive and receiving ART participated in the study. We found multiple opportunities and challenges relative to ART uptake from the results. We have interpreted and presented these findings in three broad areas. The first two areas describe the inherent challenges of accessing ARTs, while the final domain provides some hope for attaining optimal ART service delivery and utilization. We have reported the findings under three broad headings: (i) health system challenges on ART uptake (such as stigmatisation and discrimination from caregivers, queueing outside for ART, delay receiving care, non-disclosure of laboratory results, and language barrier); (ii) individual level constraints (financial constraints in accessing ART clinics, perceived non-improvement in health outcomes and hunger) and lastly, (iii) opportunities to improve ART uptake. These include assuring clients of health improvement when they take ARTs, leveraging on good provider-client relationships, better counselling services, ethical conduct of providers, introducing different treatment regimens, including injectables, and communicating laboratory test results to clients.

4.1. Health system challenges that affect ART uptake

Firstly, Ghana's health system presents critical challenges that affect ART delivery. For example, ART appointment defaulters reported stigmatisation and discrimination from nurses when they honoured subsequent appointments. This demoralizes and

discourages PLHIV from adhering to treatments when they finally receive ARTs. Some participants also reported delayed care even when they honoured appointments. However, when the Ghana AIDS Commission was established in 2002, plans and policies were initiated to reduce stigmatisation and discrimination in access to ARTs and treatment of PLHIV. This finding corroborates earlier studies on the access and acceptability of ART treatment in the Ashanti region of Ghana [39] and Ethiopia [40]. The study in Ethiopia reported that PLHIV refused to adhere to treatment when nurses stigmatise and discriminated against them by punishing them for defaulting appointments, which led to the loss of lives. A recent systematic review found the model of care and the punitive measures for ART defaulters were significant barriers to adherence in low-middle-income countries (LMICs) [41]. A study in Eswatini noted that discrimination and maltreatment by healthcare workers discouraged HIV patients from returning to the clinic for their refills and may lead to patients being lost to follow-up and defaulting appointments [42]. Punishing clients violates their rights and compromises ethics in the health profession. However, it is worth noting that the more PLHIV delay in receiving attention, the more likely they are to infect others with HIV, should they indulge in unprotected sex. Furthermore, stigmatisation and discrimination against PLHIV violate the Patient's Charter by the Ghana Health Service, which began in mid-2000 [39]. This charter is a compendium of the rights and responsibilities of patients and the general moral principles and rules of behaviour for all public health personnel [39]. Thus, the code of ethics stipulates that all healthcare providers in the country must respect the rights of their patients/clients and colleagues and safeguard their patients/clients' confidence.

In addition, we found a crucial health system challenge in PLHIV queueing at ART clinics. In Ghana, ART clinics are located within the mainstream public health facilities/hospitals that provide general outpatient and inpatient care to the public. Therefore, allowing PLHIV to queue outside ART clinics exposes their HIV status to the public. Participants expressed fear of status disclosure and the associated effect of stigma through such practices. This finding had been reported in a previous study on HIV patients' privacy and confidentiality in the Ashanti region of Ghana [39] and Zambia [43]. Dapaah and Senah [39] found that HIV patients lacked confidentiality regarding the attitude of health workers during ART, which disincentivizes them from using healthcare facilities. The hospital therefore has to manage ART appointments in such a way that PLHIV does not cue outside to the full glare of other hospital attendees.

Another challenge reported was long waiting periods outside ART clinics, which were a fundamental privacy concern in this study, as the practice also exposed clients' HIV status to the public. Moreover, a systematic review of people within the low-middle-income group reveals that at the individual level, PLHIV reported experiencing mental fatigue due to being retained in care, experiencing psychological issues, developing anger issues, feeling lost, and not being in control of their lives. Others felt depressed and hopeless due to long waiting times at ART clinics [41].

A practical approach to measuring health outcomes and improving PLHIV health outcomes is through routine laboratory investigations. However, while HIV-related healthcare includes regular monitoring of the patient's condition, it was found that participants in this study do not receive their results from these laboratory investigations. Meanwhile, PLHIVs were keen on knowing their status after medication to ascertain their bodily responses to treatment. Therefore, access to viral load status at the point of care was recommended for care improvement [25]. This present study's finding corroborates an earlier study in Ethiopia, where laboratory results for PLHIV were unnecessarily delayed [40]. In contrast, a previous study in Ghana reported that laboratory investigations were readily available for PLHIV [39]. Hence, the finding in the current study could be a localized problem. Nevertheless, the complaint from the participants in this study calls for hospitals in the country, especially the Volta Regional Hospital, to step up in disclosing laboratory results and providing appropriate medical counsel to clients living with HIV.

We also found that information about the side effects of ART on patients had not been adequately explained to them. Drug effects such as dizziness, bodily weakness, frequent vomiting, and diarrhoea, coupled with the implications on their jobs, nutrition, and livelihood activities had not been well explained to participants. Earlier studies reported such complaints and adverse drug reactions among PLHIV in Ghana [44,45], Nigeria [46], and other low-middle-income countries in Africa and beyond [47,48]. These studies noted that HIV patients could miss or fail to adhere to treatment modalities due to these unexplained adverse reactions from ART uptake [44,47,48]. In addition, participants were critical of the likelihood of job losses and HIV-status disclosure with such health conditions. Therefore, adequate education about the side effects of ARTs must be given to clients during HIV counselling sessions to equip them with the right information to anticipate and better cope with these side effects should they happen. Thus, treatment guidelines for PLHIV in the country should ensure that healthcare providers inform ART clients of the varied side effects of ART drugs on the health of PLHIV during counselling sessions.

A final health system challenge recorded by the study was a language barrier. Access is the extent to which the healthcare system fits, inhibits, or initiates individuals' willingness and ability to enter, receive and benefit from the outcomes of and gain satisfaction from health services [40]. In this study, most participants were native Ewes and could not speak English or Akan. However, some ART clinic nurses did not speak Ewe, which significantly hampered their interactions with clients. Yakob and Ncama [40] describe this phenomenon as a barrier to accessing essential and quality care. The finding also confirms an earlier study on HIV clients' satisfaction with preventing mother-to-child transmission service delivery in the Volta Region. Ewe-speaking clients were more satisfied communicating with Ewe-speaking healthcare providers [49]. Language barriers in healthcare affect provider-client communication, which could affect the quality of care offered and patient safety [49]. This finding is a concerning issue that affects equity to access HIV care even in more advanced countries. For example, in high-income countries, such as Canada and the US, bilingual healthcare workers have problems communicating with HIV patients who speak a language that is not the providers' first language [50,51]. The language barrier also led to role stress among bilingual healthcare workers since they had to take on interpretative roles on top of their regular work [50,51]. In this study, language barriers could disenfranchise PLHIV from access to quality care when nurses who can speak Ewe are not on duty. Thus, we suggest a policy dialogue to ensure multi-lingual nurses, especially prioritizing native nurses to be stationed at ART clinics to increase PLHIV access to essential healthcare.

4.2. Individual level constraints

We found that PLHIV faces substantial challenges accessing ART clinics. A crucial factor relative to ART uptake was a financial one. For instance, PLHIV's inability to afford transport fares to clinics outside their community was a major hindrance to accessing ART. PLHIV's fear of their HIV status being disclosed, and health workers' behaviours have compelled some of them to seek ART services at clinics outside their community of residence. Meanwhile, there was no social safety net to finance PLHIV's travels to clinics. Although ART is free, the indirect cost of ART is still high in the study area [41,52]. Notably, arrangements to refill medicines outside their locality resulted from the fear of the breakdown of their social networks, such as marriages and families, if their HIV status was known through the negligence of healthcare providers. Notably, PLHIV relies exclusively on social networks and family support to cope with financial constraints in poor resource settings [41]. Hence, without such support, it becomes difficult for some PLHIV to fund their routine medical appointment trips, hampering ART adherence. In this regard, non-governmental/profit organisations, if not the government, could be encouraged to cater to the transportation cost of PLHIV that may need such support services.

Secondly, some participants felt that they had not seen any significant improvement in their health status upon commencement of ART. They were therefore discouraged from continuing ART and thus defaulted on their treatment. This could stem from the fact that clients' laboratory test results on their viral load and CD4 counts were not made readily available to them, creating the misconception of non-improvement in their health status, as already reported. Research has shown that when people lose trust in their healthcare giver or in a treatment regime or both, they are likely to default on treatment [53]. Hence, health caregivers at the ART unit letting their clients know the strides they are making in terms of their health status through periodic testing and feedback on their test results could go a long way to retaining them on ART.

It was also found that the hunger associated with ART medications was another personal factor that affected adherence to ART uptake. Participants complained that they felt extremely hungry upon taking their medication and with their precarious financial standing, were unable to always satisfy their hunger. Hence to avoid being hungry, they deliberately default on their treatment. This finding explains the nexus between food security and ART adherence. This finding has been corroborated by other studies on the African continent. PLHIV on ART in South Africa complained that they needed to eat while on ART, hence, defaulted on their treatment when they were food insecure [54]. While the focus has mostly been on the provision of ARVs to PLHIV, less attention is given to their nutritional support. Hence, Ghana's HIV treatment guidelines could consider food supplementation for PLHIV to improve adherence to treatment and treatment outcomes as already done in some African countries [55].

Lastly, participants mentioned forgetfulness as one of the main personal reasons they were not able to comply with ART uptake. This was mainly a result of a lack of treatment supporters. They sometimes forget their medical appointments or even forget to take their medication as required. However, as they were not ready to disclose their HIV status to their close ones due to fear of stigmatisation, they lacked the support they needed in the form of daily reminders to adhere to treatment. The role of treatment supporters in ART adherence has long been recognised. In South Africa, PLHIV who had support from close family members such as their mothers, partners, and siblings adhered to ART better [56]. Similar findings have been reported in Uganda [57] and in Thailand [58]. Hence, encouraging PLHIV to trust and identify a treatment supporter could go a long way to help improve the uptake of ART.

4.3. Opportunities to improve ART uptake

Despite the many challenges to ART uptake recorded by this study, participants suggested some opportunities to improve clients' experiences of ART services. Firstly, it was found that assuring patients of improved health outcomes when they take ARTs would give them hope. Research has shown that no improvement in patients' symptoms is likely to make them lose hope in the effectiveness of their treatment regime and default on treatment [59]. Hence, PLHIV needs constant assurance from healthcare providers about improved health outcomes as loss of hope in treatment could lead to other health concerns such as mental health issues.

Also, it was found that healthcare providers' good relationship with their clients as well as the good counselling practices they provide to PLHIV leads to satisfaction with ART services provided at the hospital. It also motivates a good number of participants to remain in care and could thus be leveraged to improve ART uptake at the hospital. Leveraging practical interrelationships with PLHIV has been found to have a colossal potential for a corresponding effective and optimum ART uptake [52]. On the contrary, it has been found that PLHIV changed their ART clinics due to inhumane treatments, general disdain, and verbal abuse from healthcare providers [60]. Hence, a great attitude of nurses towards PLHIV at the ART clinic of the Volta Regional Hospital could encourage them to continue treatment, adhere to ART guidelines, and honour ART appointments as they would be satisfied with the quality of care they receive. It is also an ethical requirement for nurses to respect and behave well toward clients globally and in Ghana [61,62]. The suggestion from participants provides a window of opportunity for nurses to increase ART uptake by treating PLHIV with dignity and respect for them to be satisfied with the services they receive at the hospital and thus motivate and encourage them to adhere to treatments and attend routine clinical care. Clients' super-sensitivity to nurses' attitudes suggests an urgent need to implement tailored models of care for PLHIV in tandem with the rapid scale-up of the 'treat all' era [52,63]. To achieve quality counselling services and build holistic relationships among PLHIV and healthcare providers would require that the heads of ART clinics need to have an oversight responsibility over the varied behaviours of nurses and how they dispense their duties to ensure an increase in the uptake, continuity, and retention of ART care.

Our findings have shown that communicating clients' laboratory results to them was another opportunity to leverage and address the numerous challenges associated with attempts to increase ART uptake. It is more pertinent now than ever because recent analysis suggests that future reductions in HIV-related mortality in low-middle-income countries like Ghana will depend partly on the increase in the median CD4 value at ART initiation and continuity [64]. In this study, participants expressed deep worry about their lack of

knowledge of the side effects of ART when they commenced treatment. In this light, previous studies in South Africa demonstrated that without the knowledge of their CD4 count results, patients who would have continued treatment ignored their HIV diagnosis and refused to visit clinics [65]. Patients have the right to access their results and know their bodily response to prescribed drugs. Therefore, healthcare providers must leverage this to encourage PLHIV to trust the efficacy of ARTs and, thereby, continue their treatment.

We also found that participants would have preferred varied treatment regimens for ART. Thus, the findings suggest ARTs should be produced in various forms, including injectables, to reduce the burden and discomfort of taking oral medications daily. While injectable ARVs are on the market in the developed world [66], they are yet to be rolled out on the African continent. This poses a challenge to healthcare providers on the African continent, including Ghana, to vary the treatment regimens they offer PLHIV, highlighting equity issues in the global fight against HIV [66]. Albeit the lack of injectable ART on the continent, antiretroviral therapy (ART) programmes have rapidly expanded on the African continent over the past decades, dramatically improving access to HIV treatment and leading to improved health outcomes for PLHIV [67,68]. Hence, although the daily intake of oral ARVs and their adverse side effects might have demotivated some clients from continuing ART [69], educating them on the need to adhere to treatment with the anticipation of possible switch to injectable forms of ARVs soon could motivate PLHIV to remain in care and adhere to treatment.

5. Conclusion and recommendations

In this study, we found multiple health systems and individual challenges facing PLHIV's uptake of antiretroviral therapy (ART) and opportunities that could be leveraged to increase ART uptake. Concerning the health system challenges, we recommend health system reforms targeting healthcare service delivery to PLHIV to encourage linkage, continuity, and retention in care. We also suggest an urgent need to intensify oversight responsibility on ART clinic nurses in their relationship with PLHIV. Moreover, the Ghana AIDS Commission and other non-governmental organisations could consider augmenting ARV regimes with financial and food aid while encouraging PLHIV to disclose their status to at least a trusted family member to serve as treatment supporter that would remind them to adhere to their clinical appointments and medication to avoid adverse health outcomes. Lastly, we recommend that both regional and national HIV/AIDS policymakers in the country consider the suggestions proffered by PLHIV as to how to best deal with ART-related challenges in the Volta region and the country for improved ART uptake.

5.1. Strengths and limitations of the study

Due to the thoroughness of our processes, we believe that our findings are trustworthy enough and could add to the body of literature on ART and inform policy on ART adherence in Ghana and in low-resourced settings with similar characteristics. However, although proper audit trail of our methods exists to ensure the credibility of our findings, as a single-centre study, with only thirty participants, our findings should be interpreted with caution.

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CRedit authorship contribution statement

Emmanuel Manu: Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Joshua Sumankuuro:** Writing – review & editing, Resources, Methodology, Data curation, Conceptualization. **Mbuyiselo Douglas:** Writing – review & editing, Writing – original draft, Resources, Methodology, Formal analysis, Conceptualization. **Fortress Yayra Aku:** Writing – review & editing, Software, Resources, Formal analysis, Data curation, Conceptualization. **Prince Owusu Adoma:** Writing – review & editing, Resources, Project administration, Methodology, Investigation, Conceptualization. **Gideon Kye-Duodu:** Writing – review & editing, Validation, Software, Resources, Project administration, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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