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Impacts of the COVID-19 pandemic on HIV care and treatment services among adolescents attending a tertiary hospital in Dar es Salaam, Tanzania: a qualitative study

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ABSTRACT

Background The COVID-19 pandemic has caused substantial disruption on HIV care and treatment programmes, especially for adolescents living with HIV (ALHIV) who are known to have poorer health outcomes compared with adults. Efforts made to overcome the pre-existing challenges were hampered by the emergence of the pandemic which interrupted adolescent-friendly healthcare services. Therefore, the aim of this study was to assess the impacts of the pandemic on HIV care and treatment services from healthcare providers and adolescents' experiences at a tertiary hospital in Dar es Salaam, Tanzania.

Methods A descriptive qualitative study using in-depth interviews was conducted with 17 study participants. Purposive and convenient sampling techniques were used to recruit healthcare providers and adolescents, respectively. Swahili semistructured interview guide was used to conduct interviews. Thematic analysis was conducted to generate themes and subthemes describing the experiences on effects brought by COVID-19 on HIV care and treatment among adolescents.

Results The study revealed that alteration of approach in delivery of healthcare and limited human and non-human resources in healthcare facilities during the COVID-19 pandemic decreased effectiveness and quality of care which resulted in adolescent's poor adherence to medication and loss to follow-up. Loss of family income, food insecurity and limited socialisation posed threat to adolescent's mental health and overall quality of life.

Conclusion Our findings underscore the impacts of COVID-19 and its immediate responses that significantly affected adolescent HIV care and treatment services. Reinforcement of sustainable ALHIV programmes and funding supports to these programmes are essential to promote retention and engagement to care during pandemics.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The COVID-19 pandemic has caused serious disruptions in provision of adolescent-friendly HIV services.

WHAT THIS STUDY ADDS

⇒ Apart from the disruptions that were necessary to reduce COVID-19 transmissions, which negatively impacted the HIV-infected adolescents, pre-existing inadequacies in the HIV care and treatment services among the adolescents were exaggerated during the pandemic, leading to mental health distress, loss to follow-up and even increase in viral load.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ There is need to instigate customised pandemic preparedness measures, especially for vulnerable populations affected with chronic diseases such as HIV-infected adolescents to ensure continued engagement and retention to care even in unfavourable circumstances. Moreover, pre-existing disparities, such as limited number of staff and infrastructure and unavailability of home-based care for follow-up, among others, need to be addressed, as these factors exaggerated the impact of the pandemic.

BACKGROUND

Sub-Saharan Africa is a home to 88% of 2.7 million HIV-infected adolescents and children globally. In 2020, approximately 150 000 adolescents were newly infected with HIV, while 32 000 of 1 750 000 adolescents living with HIV (ALHIV) died from AIDS-related causes.[1] East and South Africa bear about 60% of the global HIV burden, which accounts for 1.74 million ALHIV worldwide.[2] In Tanzania, HIV/AIDS was the primary cause of death among adolescents aged 10–14 years in 2019 and second leading cause of death among adolescents aged 15–19 years.[3]

ALHIV have unique needs and responses to care and treatment due to varying preferences and expectations. Moreover, they are in a period of developmental transition, which makes them vulnerable and puts them at risk

for abandonment of care and increased mortality.[1 4 5] The COVID-19 pandemic has caused intertwined health, social and economic impacts worldwide[6 7] while capacity to overcome the disruptions was limited, especially in low middle income countries.[8–10] Disruptions were caused either by pandemic itself or by global responses to COVID-19 which halted ongoing HIV programmes.[11 12]

Unlike other African countries, in Tanzania, COVID-19 was lightly esteemed where lockdowns were not instigated[13] and a part of the population did not believe COVID-19 to be a problem in the country.[14] On the other hand, the population with immune debilitating diseases such as HIV were reported to be migrating out of Dar es Salaam, the region with the highest prevalence to prevent contracting the disease. Different reports have shown the drop in access to HIV care and treatment in Tanzania, especially for ALHIV[15]; this study went further to explore both the caregiver and the adolescent's perspective. Like other countries,[16] Tanzania had to create adaptive measures to ensure continuation health service, and most of these changes have been maintained to date. The effect of these measures is not adequately explored; hence, it is important to know how ALHIV related to these so as to take the necessary actions to ensure continuity, adequate retention and engagement to care, currently and in the face of another pandemic. Therefore, this study was conducted to assess impacts of COVID-19 from adolescents' experiences with HIV care and treatment services they received at a tertiary hospital in Dar es Salaam, Tanzania.

MATERIALS AND METHODS

Study design and setting

A descriptive qualitative study was conducted from September 2022 to January 2023 to assess the impacts of COVID-19 on HIV care and treatment from perspectives of healthcare providers and adolescents. This study was conducted at Muhimbili National Hospital, a largest tertiary hospital in Tanzania which provides health services to people from various areas of Dar es Salaam region and upcountry. HIV services are provided at Care and Treatment Center in the outpatient facility. The hospital attends an average of 140 children and ALHIV monthly. Saturdays are designated as a special day for adolescent clubs that provide ALHIV-related entertainment and education.

Study participants and recruitment

Purposive and convenient sampling technique was used to recruit healthcare providers with experience of at least 3 years of attending ALHIV and adolescents, respectively. A researcher (EK) identified participants under assistance of the clinic in charge. Each identified participant was approached by the researcher, that is, to whom they were introduced, who explained the purpose of the contact and set up an appointment for interview. Adolescents who were present at the clinic during data collection period were first approached by their immediate healthcare provider on duty who introduced the researcher to explain the purpose of the study and asked their parents/caregiver to provide their consent to be interviewed. We finally recruited a total of 17 participants, 2 healthcare providers who exclusively provided services to adolescent on Saturdays and 15 adolescents. Recruitment of adolescents was stopped after data saturation was observed, that is, when there was no new information being obtained from the study participants and the redundancy had been achieved.[17]

Data collection

We developed semistructured interview guides in English and translated into Swahili for conducting of interviews. We opted for the semistructured interviews because of its effectiveness in gathering qualitative data and the flexibility in asking open-ended questions at a particular sequence to gain comprehensive understanding of study topic. The guides were prepared based on researcher's experience with care and treatment of ALHIV in Tanzania and relevant literature on challenges of healthcare delivery with regard to the COVID-19 pandemic.[6 7 9–14 18] One researcher (EK) was trained by supervisors (LN and DLM) on the informed consent and research procedures before beginning of data collection. Researcher (EK) conducted interviews, while research assistant took notes and audio recorded sessions. Informed consents and assents were signed after participant's satisfaction and understanding of the study objectives before the commencement of interview. Each interview lasted between 30 and 45 min. All audio-recorded files were stored in a password-protected folder on a researcher's computer and were shared with other researchers for analysis.

Data analysis

Audio-recorded data were transcribed verbatim. Transcripts and field notes were read and re-read to familiarise with content and context before actual analysis process. We observed data from both groups and then combined all results. Braun and Clark's thematic analysis approach was used to analyse data because it provided a flexible method of data analysis and allows researchers with various methodological backgrounds to participate.[19] We began with development of initial codebook based on study objectives, field notes and interview guides. Codebook was refined from themes that emerged during analysis. Data analysis was conducted by three researchers (EK, LN and DLM). Each group was first coded separately. To ensure reliability, first two transcripts were coded by each researcher separately, and then they compared the codes for agreement on the final codes and coding. Generated codes were then grouped into respective predetermined codes through comparisons. Then, frequency of appearance of related codes generated a subtheme, and finally, themes were developed following the contextualisation and conceptualisation process. The process of subtheme

and theme generation involved all authors. Finally, findings were presented with support of succinct quotes to represent participants' accounts.

RESULTS

A total of 17 participants were interviewed, of whom 15 were adolescents and 2 were healthcare providers. Healthcare providers interviewed were a nurse counsellor and medical doctor, both with bachelor's degree education level and 10 years and 4 years of experience, respectively, of attending ALHIV. Among the 15 adolescents, 9 were male, while healthcare providers were both females. Adolescents' ages ranged from 11 to 19 years, with education levels ranging from primary to secondary.

Analysis of responses on the effects of the COVID-19 pandemic on ALHIV generated four main themes, three cross-cutting themes, that is, alteration of approach in delivery of healthcare, inadequate financial and social support and mental health related impact, and one healthcare workers' generated theme, that is, inadequate human and non-human resources.

Cross-cutting themes

The adolescent and healthcare worker group identified similar challenges that were observed to have an impact on the HIV care and treatment was delivered and how it was perceived by the adolescents. The identified challenges were summarised into the following four themes which also had subthemes within them, where fourth theme is the healthcare workers' generated theme:

1. Alteration of approaches in delivery of healthcare.
2. Inadequate financial and social support.
3. Mental health related impact.
4. Inadequate human and non-human recourses.

Theme 1: alteration of approach in delivery of healthcare

Participants claimed about overall change in approach used in delivery of healthcare services to adolescents during the COVID-19 pandemic. Changes in terms of consultation time, schedule changes and engagement activities affected adolescents.

Less time for consultation

Participants reported that consultations were shorter per individual compared with consultations before pandemic, in an effort to shorten duration of contact between healthcare providers and clients. Participants claimed they were rushed through their appointments and given less time with their counsellors as a precaution against COVID-19. One participant commented:

> Customers were served very hastily, exception was for unstable clients…., this was done in order to reduce overcrowding of clients as precaution against COVID 19. (Medical doctor)

On the other hand, clients reported to spend little time with healthcare provider, as one participant stated that:

> There was not much time to spend with doctor compared to the past, but that did not affect me…, I didn't have much to talk about anyway. (16–19 years, female)

Prolonged interval for follow-up visits

Participants reported a significant prolongation of duration for follow-up visits, accompanied by administration of long-term medication for at least 3–6 months, in an effort to reduce client overcrowding at clinic; however, decision to prolong visits was based on viral load and clinical stability. To closely monitor the condition of those who were unstable, such as severely ill patients and those with a high viral load, they were seen every month as usual. One participant was quoted saying:

> So many changes happened during COVID 19 especially in the policy of returning to clinic for follow up and drug refill, there was schedule changes compared to past as we were giving medications per month but during COVID 19 for those who met criteria were given medications for 3 to 6 months. (Nurse counsellor)

On the other hand, some participants reported prolonged intervals between follow-up visits led to forgetting to take medication and forgetting refill dates, resulting in poor adherence and high viral load, although the reduced frequency of visits reduced their transport costs.

> I was given drugs for longer time, about 6months, but this gave me challenge as staying at home for longer time, some time I forget to come back for medication or follow up, however it reduced cost for go and return to clinic. (16–19 years, female)

Compromise of communication privacy

As a precaution against COVID-19, social distance was also implemented in delivery of healthcare. Participants expressed that social distance between consultant and client during consultation compromised their privacy, as they were required to sit at least 1 m away from the physician or counsellor. In addition, the sharing of the consultation room between doctor and counsellor caused a healthcare provider to speak louder, even when the information was required to be kept confidential. According to patients, this impacted their freedom of expression and candour with their physician and counsellor. On the other hand, it was challenging for physicians to inquire further about sensitive issues, thus some concerns remained unaddressed due to a lack of privacy and confidentiality. A nurse counsellor said:

> We were forced to keep 1metre distance between client and health care provider in a single room for consultation of adolescents which has both nurse counselor as well as medical doctor, at the same time conversation between client and service provider has to be private, patients were required to talk loud so that we could hear each other … this compromised freedom of clients to express themselves especially on sensitive issues as there was no privacy anymore. (Nurse counsellor)

Cessation of retention and engagement activities

Participants stated that COVID-19 affected most of engagements and retention activities for adolescents in care. These include cessation of social clubs, which were used as strategies to bring ALHIV together to socialise and enhance their motivation for drug adherence, sexual and reproductive knowledge and methods for preventing new infections. Participants also acknowledged that cessation of these activities and support resulted in negative outcomes, including loss to follow-up, occurrence of early pregnancies and increase in viral loads for some clients. In addition, home-based follow-up was supplanted with a phone call, which had minimal retention effects on adolescents. As stated by one participant:

> Before COVID 19 we had social clubs for ALHIV every month, in which we provided education to them on various issues related to their health status including disease itself, importance of drug adherence and consequences of not adhering. Sexual and reproductive education was also provided, this attracted much attention to adolescents and improved their attendances and drug adherence. However, during COVID 19, we stopped social clubs to prevent gatherings as a precaution against COVID 19 transmission also our partner who funded these clubs withdrew. In case they lost follow up, community health workers would track them by phone call to remind them. (Nurse counsellor)

On the other hand, clients expressed that social clubs not only taught them a lot of good stuff about their health but also served as a platform for socialisation among themselves.

> Our social clubs were stopped, and we didn't have platform to socialize and enjoy together we also learned a lot from clubs. (15–19 years, female)

Theme 2: inadequate financial and social support

Family income constraints

Majority of participants from poor families frequently mentioned lack of transport fare; they expressed their desire and awareness of importance of attending clinic regularly for either follow-ups or drug refills; however, lack of money for transportation to and from clinic and lack of money to purchase face masks, which were required to enter to hospitals or clinics during the COVID-19 pandemic, resulted in missed clinic attendances. In addition to transportation costs, participants reported that a lack of food at home led to poor drug adherence because they could not take medications without eating. They also mentioned a loss of family income for previously well-off families and those from impoverished families was worse during the COVID-19 pandemic.

> I am from poor family living with my grandmother who is old and she doesn't have a permanent job, even before COVID 19, I have been struggling with transport cost to and from clinic, sometimes I come to clinic past dates because I don't have fare, also availability of food is another challenge, at clinic we are advised to take food before taking medication but to me that's not possible as most of times I eat one meal per day, during COVID 19 our situation became worse as there were no jobs anymore at times it can pass a day without eating, sometimes neighbors will give us food but that is not every day, sometimes I skip a day or two without taking medication. (14–16 years, female)

On the other hand, according to healthcare providers, lack of money for transportation was a problem, particularly for adolescents from poor families and orphans, resulting in low clinic attendance. As stated by a healthcare provider, the clinic cannot provide them with financial support due to budget constraints.

> for orphans and those coming from poor families, lack of money for transport has been a challenge even before COVID19, because you will find that most of them are living with their grandmothers who's their income is low, COVID19 has made the situation worse as life became more difficult, this affected the adolescents in terms of attendances to clinic,…. As a clinic we only provide medical support and sometimes, we counsel and give them hope however there is nothing we can help them financially because we don't have a budget for that. (Nurse counsellor)

Withdraw of supporting partners

Participants reported that majority of partners who greatly supported HIV programmes withdrew during the COVID-19 pandemic as a result of the economic crisis, resulting in discontinuation of some programmes that were conducted prior to COVID-19. This included elimination of social clubs, school supplies for orphans and transportation-related expenses, all of which negatively impacted those who relied solely on aid from partners. As quoted by one of the participants:

> Most of adolescent services including clubs are being supported and funded by partners who withdrew during the COVID 19 pandemic, while some of them reduced the amount of funds they offered due to economic hardship. (Nurse counsellor)

Theme 3: mental health related impact

Limited socialisation

Participants reported that schools and social clubs were the main areas of socialisation. Majority of participants expressed their concern that closure of schools, cessation of social clubs and indoor restrictions during the COVID-19 pandemic restricted interaction with their peers. Some claimed that their parents and guardians were advised to leave their children at home to visit hospital on their behalf for drug refill or other concerns. Some of the issues were addressed via phone calls which impacted their ability and freedom of expression.

> I was very lonely, school were closed and at home I was not allowed to play with my friends I always stayed at home, even clinics I couldn't go, clubs which were conducted at clinic were stopped, my mother went there to take my

medications I had to adhere to that because I also wanted to live. (13–15 years female, MNH)

Emotional depressive symptoms

Due to their condition, the majority of participants reported emotional depressive symptoms such as feelings loneliness, hopelessness, self-isolation and excessive sorrow, but none reported suicidal thoughts or ideas. Some participants reported receiving psychological and emotional support from their parents or guardians, as this helped them to cope with it more quickly, while others reported receiving no support from guardian or clinic because their parents were too busy earning money to take care of them.

Stress and fear

The majority of adolescents reported extreme anxiety and fear during the COVID-19 pandemic. They expressed concern about contracting or dying from COVID-19. Participants stated that there was widespread information on media indicating that individuals with low immunity have a high risk of developing a severe form of COVID-19 and may die from the disease. This caused stress and fear in them, so they were required to take precautions against contracting COVID-19. However, this was not reported by healthcare providers.

During COVID 19, I was afraid, when I hear people are dying, what will happen to me if I get COVID 19 and my immunity is low, I will die that was constant in my mind, all over the media and people were saying that those with low immunity can get COVID 19 easily and die because their body cannot fight against it, I always stayed indoor I was prohibited to go out or play with my friends, I felt sad and lonely. (12–15 years male, MNH)

Disclosure to children and ALHIV

Participants reported that late disclosure of the HIV status was a hindrance to medication adherence. During the pandemic, parents and guardians were forced to explain to their children that they should have no interaction with the outside community, due to their immune status. This led to increased stress and fear in the adolescents who had just found out they were HIV infected and were now forced to come to the hospital centres, seeking HIV care and treatment services. Participants insisted on early disclosure to children to facilitate understanding of disease and importance of taking medication without missing doses. This will give a child sufficient time to understand his or her condition and reason for taking medication without missing and she or he can eventually cope with it.

parent's late disclosure to children has been a challenge as most of adolescents they are past recommended age of disclosure that hinders medication adherence because they don't know the reason for taking medication every day and they don't understand the disease late disclosure is difficult for them to cope with the condition. (Medical doctor)

Healthcare workers' generated theme

The healthcare workers identified inadequacy of human and non-human resource as a challenge that impacted the HIV care and treatment during the COVID-19 pandemic. Although some challenges within this theme pre-existed the pandemic, like a lack of home-based follow-up, but their lack was more pronounced during the active pandemic and continue to exist post pandemic.

Theme 4: inadequacy of human and non-human resources in healthcare facilities

Lack of home-based follow-up services

During the COVID-19 pandemic, the lack of home-based care was more evident than other times, because of the abrupt drop of adolescents seeking care and the limited capacity to make the necessary follow-ups. Participants acknowledged role of home-based follow-up services in the retention of adolescents to care. They admitted that tracking those who lost follow-up by phone is not sufficient because some adolescents do not have mobile phones and sometimes those coming from remote areas face network issues.

Even before COVID 19 in case they lost follow up, community health workers are responsible for follow up not only by phone but also to their home however here at our center there is no such services, as they only track them by phone and if they don't respond that's over, so it is important to follow them to their home so as to be aware of their challenges and help them because some of them they don't even have a mobile phone. (Medical doctor)

Shortage of human resource

Participants reported a constant low number of healthcare providers in HIV clinic even before COVID-19. During the pandemic, the situation became worse because some healthcare providers were tasked to provide health education and care for COVID-19 patients. Some healthcare providers were unable to report to work due to pandemic, resulting in decreased efficacy and effectiveness of services provided. They also claimed to have an overwhelming number of clients, which adversely affected quality of care.

We had a low number of health care providers at our center even before COVID 19 and during pandemic the situation was worse because some were required to go to street to provide information on awareness of the disease while others were taken to take care of affected patients at various COVID 19 centers. There were also some health care providers who were infected by COVID 19. (Medical doctor)

Lack of equipment and supplies

Participants reported a lack of personal protective equipment (PPE), such as masks and hand sanitizers, which were cornerstone of COVID-19 precautions for delivery of healthcare services. None of participants reported inadequate supply of medication. Participants acknowledged importance of non-medical support, such as financial support for transportation and food, for ALHIV from

low-income families, as this facilitate clinic attendance and medication adherence. As it was reported that clinics can only provide medical assistance but not financial support.

> The only thing we could provide was opportunity to wash hands when they visit our clinic, however we had shortage of face masks as it was mandatory for any person attending clinic to wear face mask. Some of our adolescents failed to attend clinic because they didn't have face masks or money to buy it, and we couldn't do anything to help them because we didn't have enough supply. (Medical doctor)

DISCUSSION

The COVID-19 pandemic resulted in devastating effects on social, economic and health systems. Immediate measures in healthcare delivery which were adapted to ensure continuity of care while adhering to standard precautions of COVID-19 affected adolescent services. Shift of healthcare system's attention towards COVID-19 had significant impacts on engagement and retention of ALHIV to care.

The current study reported limited consultation time to prevent overcrowding of clients deprived opportunities for counselling on sexual and reproductive health services which could benefit clients. Similar findings were reported in South Africa where limited consultation time not only reduced access to critical knowledge and counselling but also limited time to build trust with providers.[20] This study found that prolongation of clinic visits, which was based on patients' clinical stability and viral load levels was adapted while accelerating multimonth dispensing (MMD),[21] however it resulted in increased viral load and loss to follow-up. Findings from Haiti shows programmatic shifts towards antiretroviral therapy delivery models involving MMD resulted to poor adherence and loss to follow-up,[11] missed opportunities to identify and manage opportunistic infections was reported from other studies[20] while few other studies reported unintended pregnancies[9 12 20] due to disruption of sexual and reproductive health services during pandemic.[22] In contrary, other studies proved some success on MMD.[12] Although MMD had a positive effect in reduction of transport costs as revealed in our study, ALHIV required regular monitoring and frequent follow-up since they are at risk of poor adherence and loss to follow-up.[23]

Moreover, our findings show that some participants faced difficulties in refilling medications due to increased transport costs, lack of PPEs as well as fear of contracting COVID-19. Similarly, the studies done in Kenya indicated that the disruption of the ART supply chain led to a stockout of ARTs; as a result, patients were no longer able to refill their medication on time.[24–26] Overall access to HIV services was negatively affected by lockdowns.[27] Privacy, which is critical in provision of HIV services, was also compromised by social distancing between client and provider compounded with limited physical space; similarly, a study conducted in Kenya reported loss of dedicated space for adolescent clinics which resulted in discomfort for adolescents.[12]Hence, improvements and renovations of facilities providing services is needed as a preparatory step for future pandemics.

The reallocation of healthcare workers away from routine HIV services to provide COVID-19 services was frequently mentioned in the current study, although persistent shortage of staff pre-existed COVID-19. Staff shortage during the COVID-19 pandemic and turnover of familiar staff in the adolescent clinic added threat to adolescent-friendly HIV services.[12] Other studies also reported staff shortages due to high infection rates.[27] Thus, adequate staffing is necessary to cater for future unforeseen disease events, in order to maintain engagement and retention.

Furthermore, our study showed a decline in social entertainment programmes such as social club activities impaired adherence and retention to care, similar finding were reported elsewhere.[28] Moreover follow-up by phone in the current study had minimal effect on retention, while home-based follow-up was crucial during lockdowns; however, home-based follow-up was unavailable in the current study and hence exacerbated the unmet needs and expectations of adolescents.[5] In the event of another pandemic, formation of small support groups such as WhatsApp support groups and use of youth peer mentor in providing psychosocial counselling and support could help improve adolescent retention[12].

Participants also reported that loss of family income, food insecurity and lack of fare for transport to and from clinic resulted in missed clinic attendances and poor adherence to medication, which were also reported elsewhere.[10 12] Lack of constant and reliable support for food and transport costs to ALHIV who were from poor families is highly concerning and threatens their overall quality of life.[25 28] Food insecurity not only compromises nutrition[19] and adherence to ART[13] but also uplifts involvement in high-risk behaviours which increases risk to reinfection, contracting other sexual transmitted infections as well as viral load.[12] Moreover, in this study, it can be seen that withdrawal by supporting partners and of fund exacerbated the impacts of the pandemic on HIV care. This is also reported elsewhere.[23 29] There has been a report of uneven distribution of social assistance and protection schemes from government to people living with HIV (PLHIV) which was not well inquired in our study.[30] In future, government preparedness for continued support of chronic illnesses is necessary, especially for vulnerable populations who are likely to develop adverse outcomes.[31 32]

ALHIV are at risk of developing mental health problems such as anxiety and depression.[13] Our findings highlight that participants experienced symptoms of depression and anxiety such as persistent negativity trapped adolescents into fear and stress about their risk to COVID-19 and related complications. However, there was no formal evaluation for these symptoms similar to findings from unmet mental health needs in ALHIV.[33]

In line with our findings, Kenya reported 5%–6% of adolescents who met thresholds to further evaluation for possible depression or anxiety.[12] There is a need for formal evaluation of adolescents' mental health who are already anxious to respond to future unpredictable pandemics environments. Kumar *et al* also found more than one-fourth of participants who experienced mild-to-severe post-traumatic stress symptoms during the survey that aimed to assess the system level interventions and strategies that improve mental health outcomes during COVID-19 in lower-middle income Countries.[28]

Compounded HIV stress and COVID-19 news increased psychological tension in ALHIV,[9 24] since COVID-19 resulted in breakdown of social support networks such as school closures and lockdowns; hence, leveraging and maintenance of strong social support networks is crucial in enhancing adolescent's mental health.[10 12] Furthermore, improvement of parent–child relationship quality was found to be protective against pandemic-related mental health challenges in times of lockdowns as adolescents could benefit with emotional support from and closeness to their parents.[34 35 24] Given the highlighted role of mental health on ART adherence,[26 32] incorporation of programmes to promote mental health well-being to adolescents HIV services is mandatory.[36 37]

Methodological considerations

The study did not include parent's/caregiver's experiences which led to missing behaviours of adolescents as mental health is concerned; hence, further qualitative studies should be done to explore the experiences of parents/caregivers of ALHIV since their observation might have been worse or better than what was reported. Trustworthiness refer to the degree of confidence in data, interpretation and methods used to ensure quality of study.[38] Lincoln and Guba[39] outlined four general criteria which can be used to asses trustworthiness which are credibility, transferability, dependability and confirmability.[40]

Credibility in our study was ensured by the use of face-to-face in-depth interview to ensure important events from participants are captured for establishing good rapport with the participants. In addition to the triangulation of data collection techniques, contextual settings and researchers add to credibility and confirmability of the study.

Furthermore, detailed description of study settings, participant's selection, data collection and analysis process and finally present the findings of the study and where the findings can be applied contributed to transferability of our study.

In-depth interview was conducted using open-ended questions to enable the free expression of participants; however, questions were pre-prepared from themes generated from the literature. The interview guide followed a logical sequence to avoid abrupt changes in topic to ensure dependable results are captured. An in-depth interview was carried out in the Swahili language to prevent the language barrier

Finally, data collected from the in-depth interview was audio recorded to ensure reflection of participant's perspective rather than that of the researchers; multiple researchers analysed the data until a consensus was reached (confirmability and credibility), adding to confirm ability results description by themes and subthemes using quotes obtained from participants as well as thorough documentation of the whole research process.

CONCLUSION

Overall impacts of COVID-19 and its immediate responses affected adolescent-friendly services. Our study revealed that alteration of approach in delivery of healthcare and limited human and non-human resources in healthcare facilities during COVID-19 decreased effectiveness and quality of care which resulted in adolescent's poor adherence to medication and loss to follow-up. Loss of family income, food insecurity and limited socialisation posed threat to adolescent's mental health and overall quality of life. ALHIV were at risk of poor adherence, loss to follow-up and mortality because of their vulnerabilities. What happened during COVID-19 proves that ability of healthcare system to respond to needs and expectations of ALHIV is inadequate. Thus, formation of emergency response team in order to ensure that there is no compromise of other services in times of pandemic is crucial. Moreover, government investment in pandemic preparedness is crucial for continuity of services for chronic diseases, better health outcome and overall quality of life for ALHIV.

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Contributors EK: Prepared data collection tools, collected data, performed analysis, wrote the manuscript and proofread the manuscript. LN: study design, supervised data collection, contributed to data analysis and proofread the manuscript (guarantor). DLM: Performed the qualitative data analysis and comprehensive review of the manuscript. AJ: contributed to study design, supervised data collection, analysis and proofread the manuscript. All authors read and approved the final manuscript.

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Patient consent for publication Consent obtained from parent(s)/guardian(s).

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