

Research Article

“I don’t want to go for an HIV test out of fear that i might be positive”: Barriers and facilitators to the uptake of HIV testing services among adolescents and young adults in Machinga district, Malawi

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ABSTRACT

Background: While studies generally indicate low utilization of HIV Testing Services (HTS) by young people in Sub-Saharan Africa, other reports also indicate a worrying HIV burden among the same group, as evidenced by recent trends in new infections. The low uptake of HTS among young people means that for many, new infections remain undiagnosed, hindering public health efforts for disease control. We aimed to explore the factors that hinder as well as those that encourage HIV testing among adolescents and young adults in an individual, interpersonal, community and health system levels in a Malawi district.

Methods: 24 In Depth Interviews (IDIs) and 4 Key Informant Interviews (KIIs) were used to collect data, and purposive sampling was used to identify the respondents. IDIs targeted adolescents and young adults aged 15-24 years, whereas KIIs targeted HTS and Youth Friendly Health Service (YFHS) providers. Coding and analysis were done using a modified social-ecological framework.

Results: Fear of a positive result, poor communication in relationships and families, cultural norms as well as lack of youth friendly HIV testing services were key barriers to HIV testing. Perceived susceptibility to infection, presence of partner support, availability of community level youth clubs or support groups, and the provision of HTS through outreach clinics were key facilitators for HIV testing.

Conclusion: There is a pressing need for widespread mobile HIV testing at the community level to encourage uptake among young people who fail to visit health facilities for various reasons. Access to HIV self-testing through the distribution of kits at government health facilities is a promising strategy for young people who distrust service providers when it comes to maintaining the confidentiality of their results.

Keywords: HIV, AIDS, HIV testing, Adolescents, Young adults, Barriers, Facilitators

Abbreviations: AIDS: Acquired Immuno Deficiency Syndrome; ART: Anti Retroviral Therapy/Treatment; HIV: Human Immunodeficiency Virus; HAS: Health Surveillance Assistant; HTS: HIV Testing Services; IDI: In Depth Interviews; KII : Key Informant Interviews; MDHS: Malawi Demographic and Health Survey; MPHIA: Malawi Population based HIV Impact Assessment; TA: Traditional Authority; UNAIDS: Joint United Nations Programme on HIV/AIDS; WHO: World Health Organization; YFHS: Youth Friendly Health Services

INTRODUCTION

According to some estimates, about one third of all new HIV infections globally occur among youths aged 15 to 24 years [1]. The World Health Organization (WHO) also estimates that over 30% of all new infections occur among young people aged 15 to

25 years [2]. However, it has been established that HIV treatment and care interventions aimed at young people have largely fared poorly when compared to those targeting adults because, according to some studies, young people usually get tested late when their immunity is already low [3].

As a result, AIDS has been highlighted as one of the leading causes of death among adolescents globally [4]. Provision of HIV Testing Services (HTS) is an important preventive strategy

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and constitutes the entry point into the care and treatment cascade 5,6, since individuals need to know their HIV status so that if found positive, they can begin Antiretroviral Therapy (ART). Despite the highlighted HIV burden among young people, studies indicate low utilization of HTS amongst those aged 15-24. For instance, the WHO reported some years ago that only 10% of young men and 15% of young women aged 15-24 in sub-Saharan Africa were aware of their HIV status 3. In addition to that, combined results from population based HIV surveys conducted in 2016 to measure HIV incidence in Malawi, Zambia, and Zimbabwe showed that 46% of people ages 15–24 were aware of their HIV status 1. Similarly, a baseline survey of 32 rural communities in Kenya and Uganda found that knowledge of HIV status among young people living with HIV was only at 50%, compared to 67% among adults aged 25 and older [5-7].

For Malawi specifically, the 2015-2016 Malawi Population based HIV Impact Assessment (MPHIA) reported that of all the surveyed HIV positive respondents aged 15-24, only about half of them (49.8%) were aware of their status 5. Similarly, the 2015-16 Malawi Demographic and Health Survey (MDHS) reported that 50.6% of women and 31% of men aged 15-19 had tested for HIV and received results of their test within the year leading up to the survey 8. Among the 20 to 24 age group, the proportions were 54.8% and 53.7% amongst women and men respectively. Yet, a good proportion of these young people had reported engaging in sexual intercourse within the same 12 months period preceding the survey [8].

This low utilization of HIV testing services by young people deals a significant blow to the 2014 joint United Nations programme on HIV/AIDS (UNAIDS) 90-90-90 strategy, whose

targets were that by December 2020, 90% of people living with HIV should know their status, of whom 90% should be on treatment, and 90% of whom should be virally suppressed 7. We aimed to explore factors that might affect the utilization of HIV testing services amongst young people aged 15 to 24 years in Machinga district of Malawi. We used a social ecological model as the analytical framework, in order to identify potential future directions for improving the uptake of HTS amongst this critical demographic.

MATERIALS AND METHODS

Study design and conceptual framework

This was an exploratory study that used qualitative data collection methods. A modified social ecological model was used as the analytical framework for the collected data. The model was adapted from the one advanced by McLeroy and others in 1988, which analyzed problems at five levels: the individual, interpersonal, organizational/institutional, community and policy levels. For purposes of the study however, this was modified by merging the policy and institutional levels into one; the health service system level (Figure 1). This modification is based on the assumption that the policy as well as institutional issues that may affect HTS provision as well as the uptake of the service itself can be analyzed together rather than separately. This is largely because it is the same institutions or organizations responsible for service provision that are also charged with policy implementation and enforcement in as far as HTS provision is concerned [9,10].

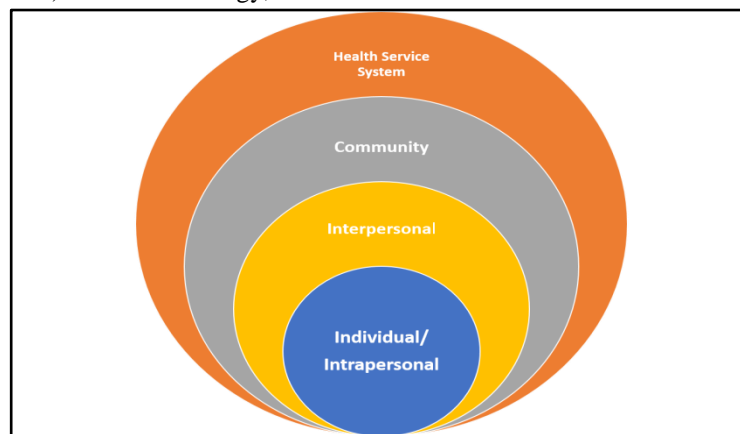


Figure 1. A social-ecological model modified for the study.

Sampling and sample size

Purposive sampling was used to address all required parameters. Using this approach, the study targeted 32 in depth interviews (16 males: 16 females) who were further stratified into those who have ever been tested and those who have never been tested. Six (6) key informant interviews among service providers (3 HTS, 3 YFHS) were also targeted. This added up to a total of 38 in depth interviews targeted by the study (Table 1) [11].

However, and as generally agreed among qualitative researchers, it was also anticipated that reaching data saturation before the 38 interviews would also lead to the termination of data collection. Saturation was determined through observing instances of redundancies or the repetition of both the responses and the themes generated across multiple interviews [12-15].

Table 1. Targeted sample size for the study.

In depth interviews				
	Urban		Rural	
	Male	Female	Male	Female
Ever tested for HIV	4	4	4	4
Never tested for HIV	4	4	4	4
Key informant interviews				
	HTS		YFHS	
Government	2		2	
Non-governmental	1		1	

Data collection

Data were collected between March and June 2019. The study was carried out in Machinga district in the catchment areas of two health facilities: One urban (Machinga district hospital in traditional authority Sitola) and one rural (Ntaja health centre in traditional authority Kawinga). The targeted number of interviews was equally divided between the 2 catchment areas. IDI data collection data were collected through in depth interviews using interview guides developed specifically for the adolescents and young adults. This was done to capture factors at the individual, peer/family, as well as the community levels. KII data collection in depth Key Informant Interview (KII) guides were used to collect data from the service providers to better understand the barriers and facilitators to HIV testing at the community and health service system levels of the social ecological model. All the interviews were conducted by the principal researcher and two research assistants; one male and one female, balanced to address any anticipated gender related challenges. All responses were audio recorded to ease the transcription process. Participants were recruited using a face to face approach by Health Surveillance Assistants (HSAs) at community level as well as through YFHS sections housed within the clinics at facility level.

Data management and analysis

The participants recorded responses were transcribed in

Microsoft Word, after which the content was analyzed for coding and theme generation. The collected data were translated from Chichewa into English first, so as to enable the study team (1 principal researcher and 2 research assistants) to do the coding in English. During coding, labels were assigned to words and phrases that represented recurring themes in participant's responses. These recurring themes were extracted from transcribed texts by analyzing the word and sentence structure. All of the coding and thematic analysis was done using ATLAS.ti. Using a deductive approach, a modified socio-ecological model was used as the starting framework for coding while also generating some open codes as new relationships emerged within the data. In summary, the data analysis process for this study adopted the approach put forward by Farber in 2006 which involves identifying codes, sorting of data into categories, and then final analysis using computer programs. This process was replicated on all the 4 levels of the adopted framework.

RESULTS

24 out of the targeted 32 in depth interviews for adolescents and young adults were conducted (14 urban, 10 rural) whereas 4 out of the targeted 6 key informant interviews for service providers were conducted (2 urban, 2 rural), resulting in a total of 28 interviews conducted. Of the 24 IDI respondents, 15 reported prior HIV testing while 9 had no testing history (Table 2).

Table 2. Study participant's recruitment cascade.

Participant category		Approached	Declined	Consented	Enrolled
IDI participants	Test ⁺	16	1	15	15
	Test ⁻	16	7	9	9
KII participants	Gvt	4	3	1	1
	NG/P	3	0	3	3
Key: Test ⁺ : Participants with prior testing history; Test ⁻ : Participants with no prior testing history; Gvt: Government affiliated service providers; NG/P: Service providers from non-governmental or private institutions					

The thematic analysis that was applied to the transcripts produced key concepts that were evident in the data. These

Themes are viewed as interpreting the views and attitudes of all participants in general. These categories have been labelled as

“individual level factors,” “interpersonal level factors,” “community level factors,” and “health system level factors.”

Individual level factors

Fear of a positive result as a barrier: Most of the adolescent respondents who indicated they had never tested for HIV prior to the study stated that they were afraid of receiving a positive diagnosis, hence the decision not to get tested at all. According to these young people, the potential stress that comes with a positive diagnosis was a major factor in their choosing to not go for an HIV test.

‘I don’t want to go for an HIV test out of fear that I might be positive, and the trauma that would result from such a result for me would be too much to bear’ female IDI respondent (15-19 years).

According to some HIV testing service providers, this fear of a positive diagnosis often led to a lack of acceptance of the results when they are actually delivered to the client, something reported as a major challenge when it came to testing young people for HIV.

‘Most young people find it difficult to accept the results especially when found positive. They are oftentimes even very reluctant to start treatment in the event that they are diagnosed as HIV positive’ HTS provider, rural.

Perceived susceptibility to HIV infection as a facilitator: The majority (20 out of 24) of adolescents and young adults who participated in the in depth interviews in both urban and rural settings indicated that they felt that they were at risk of getting infected by HIV when asked. Furthermore, most of those who indicated this susceptibility to HIV infection indicated the same as a motivating factor for them making the decision to get tested for HIV; mostly because they believed that testing was the only way to be sure of their HIV status.

‘It is very stressful knowing that you can be infected by HIV but not being sure of your actual status. However, when tested for HIV, you don’t have stress and live a happy life; if you are HIV positive, you can take care of your life well, and if you are HIV negative, you can decide to be using protection every time you have sex’ male IDI respondent (20-24 years).

This perceived susceptibility to HIV infection also led to a fear of the consequences of late ART initiation among most respondents.

‘If you don’t get tested for HIV, you will not know that you have the virus, and assuming that you do, you may end up getting sick fast and die, leaving your wife and kids in destitution’ male IDI respondent (15-19 years).

Interpersonal level factors

Poor communication in relationships and families as a barrier: Almost all of the respondents to the study alluded to communication challenges among couples as a major barrier to accessing HIV services together in their communities. This

mostly included individuals not trusting their partners when it comes to how the latter would handle or if even they would accept the diagnosis outcome, as well as there not being anything to be gained from scaring away one’s partner with an HIV positive result, hence the decision to simply not get tested for HIV.

‘Lack of openness in relationships and marriages makes it difficult for most couples to discuss HIV related issues in this community, which in my view also indicates the absence of love’ female IDI respondent (15-19 years).

Presence of partner support as a facilitator: It was also evident from a cross section of the adolescents and young adults who participated in this study that the influence of one’s sexual partner can be a crucial motivating factor to the uptake of HIV testing services among the targeted population.

This was especially true among married female respondents, who suggested that their male partners would have to be convinced by them in order for them to undergo an HIV test.

‘In initiating an HIV testing decision with my partner, I can simply tell him that I would like to know my HIV status and that he also should come along, so that we both are aware of our status as a couple’ female IDI respondent (15-19 years).

On the flipside, some female respondents indicated that it gets very hard for them to get the required support from their male partners whenever they suggested going for an HIV test, as the latter usually interpreted such suggestions as a sign of their partners’ lack of trust in them. This was more pronounced in the rural catchment area of T/A Kawinga.

‘...The women are afraid to initiate HIV testing discussions...men say that women don’t trust them when the women initiate the issue of going for testing, so they (women) don’t talk about the subject since they don’t want to disappoint their loved ones’ female IDI respondent (15-19 years).

Community level factors

Cultural norms as a barrier: Most of the respondents who alluded to lack of openness between parents and their children in as far as discussions related to HIV and AIDS issues, including testing, are concerned also overwhelmingly blamed the cultural norms inherent in their communities as being behind this lack of dialogue in families. This was true for both rural and urban catchment areas, where respondents indicated that most cultural beliefs and practices prevent parents from directly speaking to their children about sexuality issues including HIV and AIDS. ‘In this community, our culture is what makes it very hard for parents and their children to openly talk about HIV related issues. For instance, a lot of parents refer their children to their aunts for any discussions related to sex or HIV and AIDS, because the culture here prevents them from directly engaging their children on such issues’ Female IDI respondent (15-19 years).

Availability of youth clubs and other community forums as a facilitator: Service providers generally agreed that not just the

formation, but also the strengthening and constant support to structures such as youth clubs and other such groups is a clear motivator for HIV testing among adolescents and young adults in the communities. For example, one government HTS and YFHS provider complained of a youth club that has gone dormant in an area close to Molipa health post (T/A Sitola) that he felt would go a long way in mobilizing young people to go for testing within the area if it received adequate support.

‘There is a youth club closer to the clinic which, in my thinking, would help with mobilizing young people to get tested, but only if it got support from other stakeholders, like NGOs for example, with capacity building for community members and community mobilization skills to help mobilize youths from the surrounding areas to practice required preventive behaviors, such as getting tested for HIV’ HTS/YFHS provider, urban.

Service providers from non-governmental organizations also mentioned the use of more innovative community platforms that serve a dual purpose of recreation as well as encouraging adolescents and young adults to practice healthy behaviours.

‘In our project, we involve the use of soccer groups, whereby groups of young people aged between 10 and 17 regularly meet for a range of activities, like playing soccer, and have someone who has sessions with them in which they are educated on HIV-related issues, and then provided with referrals for various health services including HIV testing’ HTS provider, Urban.

Health system level factors

Lack of youth friendly HIV testing services as a barrier: Almost all service providers interviewed in the study indicated that the lack of a deliberate youth friendly service delivery program at the facility negatively impacts the testing numbers of young people in HTS. It was noted by the providers that a youth friendly health service program, equipped with trained personnel and facilities, is what would address the concerns of young people better when they come for testing than just a normal testing program that doesn’t consider age demographics.

‘Young people usually have challenges and issues that are specific to them, but because our testing is not specifically for the youth, we deal with them in a generic way like we would for all other clients, and that I feel is a challenge for me as an HTS provider, because it means that we don’t give our young clients as much time as they may require, which in turn discourages them from coming for testing in the long run’ HTS provider, urban.

A cross section of the young people who were interviewed also mentioned the worry of being shouted at by providers, or health workers revealing their results to other people, as well as some providers being too young and immature for their comfort.

‘Most people here fear that there is going to be a lack of confidentiality with the HIV test results because chances are that they will be tested by counselors who know them, and such people cannot be trusted’ male IDI respondent (20-24 years).

Provision of HTS through outreach and mobile clinics as a facilitator: Another recurring theme at the health system level was the provision of HIV testing and counselling services through outreach clinics and mobile activities as an approach that

also helps to motivate young people to utilize the service. According to some providers, this facilitates access to services since most young people cannot afford to source the funds to use for transport to and from the established clinics, which are usually far apart in the district. Almost all of the providers interviewed indicated a lack of enthusiasm by young people in as far as visiting clinics for an HIV test is concerned. Providers from both government and non-governmental agencies were more supportive of the outreach approach in reaching out to young people with testing services, but one provider from a government facility was more cautious of the financial burden placed on their limited resources in implementing outreach clinics.

‘...from my experience, our mobile testing approach using outreach clinics is what registers more clients of the 15 to 24 age group than the other HIV testing approaches that we have in our programme here’ HTS provider, rural.

DISCUSSION

This study has identified barriers and enabling factors influencing young people’s testing behaviour.

The barriers to HIV testing: Fear of a positive result came out clearly as a barrier to HIV testing among most young people who responded to this study, mostly those without testing history. According to other studies, the stigma associated with being found HIV positive plays a very significant part in some people becoming wary of an HIV positive diagnosis, hence the decision not to get tested at all. This fear of a positive result is also inherent in issues of disclosure, as most young people fear disclosing their HIV diagnosis to others along the same worries of fear and rejection, stigma and discrimination, and fear of criminalization, among others. It can be argued that all of this plays a part in young people simply opting not to be aware of their status, while the reality is that there is a relatively high risk of HIV infection among adolescents and young adults in Malawi as studies have shown 16, indicating a greater need for interventions aimed at expanding access to testing services for this demographic group.

Poor communication also came out as a barrier at the interpersonal level; a data point that is consistent with the findings of a quantitative study among urban based young people in Nairobi (Kenya) by Kabiru and others in which only small percentages of respondents indicated that they got an HIV test at the encouragement of either a parent. This negative trend was also evident in the low proportion of those who reported getting encouragement from their peers in the same study; a peer influence barrier to HIV testing which has also been established by this study at the same interpersonal level.

On cultural norms acting as a community level barrier to HIV testing among adolescents and young adults, our findings agree with a number of other studies highlighting societal or cultural and religious views as well as conservative parental opinions surrounding HIV and sex that demotivated young people from getting tested. Apart from hindering HIV testing, poor communication among couples and within families due to local norms that deter parents from communicating with their children about sexuality has also been found to contribute to fear of HIV

status disclosure among adolescents when they do test positive [16-20].

At the health system level, lack of youth friendly HIV testing services in particular, as well as youth friendly health services in general, is the overarching barrier to HIV testing among young people. This barrier involves inadequate staff, lack of space and confidentiality among others and our findings are consistent with those of researchers in other settings [21]. This barrier needs to be considered in the light of resource constraints facing the Malawian health care system. The YFHS programmer in the country started in 2007, and among the key quality aspects required of it are respecting confidentiality, giving choices, and raising awareness of rights [22], all of which seem to be inadequate in the targeted catchment areas, according to the data. In addition, at national level challenges with the YFHS programmer have been evident in Malawi as by 2014 less than one third of health facilities had trained providers on the YFHS standards, and studies continued to reveal that adolescents are neither well received nor comfortable in most government owned clinics when they go to access various sexual and reproductive health services, as is the standard of care [23].

The facilitators for HIV testing: At the individual level, perceived susceptibility to HIV infection was cited as one of the however, a 2017 doctoral thesis study conducted in Southern Malawi found that young people generally have low ART adherence; largely due to factors such as poor medication self-efficacy, lack of social support and stigma, among others.

Among the facilitators identified by this study at the interpersonal level is the presence of partner support. Several studies have identified links between the presence of social reinforcements in a person's life and that individual's decisions regarding testing. For instance, in a study of factors that affected HIV testing among the youth in Kenya, researchers found that low social support was most strongly correlated with having no prior HIV testing and vice versa, meaning that the presence of social support in general was a significant predictor of the intention to get tested among the young people who responded. Whether young people trust or view others as helpful that is whether they view their available social supports as helpful is a very important factor in help seeking behavior.

Availability of community structures, such as youth clubs where young people engage with each other on issues to do with HIV and AIDS, emerged as a key facilitator to HIV testing among our participants. Research in Mzuzu city (Northern Malawi) showed that the odds of testing in boys living in a community with a functioning HIV/AIDS post test club, among other facilities, were higher compared to boys from communities without such amenities. However, this model of providing HIV testing facilitators requires resources in order to be fully functional, which may explain why such structures were scarce in the sampled catchment areas of our study.

At the health system level, provision of HTC services through outreach clinics has been established as a key driver of HTS uptake among young people. Because the service providers interviewed in this study largely agreed on the issue of distance as a hindering factor to HIV testing among young people, we conclude that outreach clinics would indeed facilitate service

key motivators for HIV testing among young people. This motivator was also closely linked to the perceived benefits of knowing one's HIV status to the individual, indicating a good level of basic knowledge about HIV among the respondents, since it is only with adequate knowledge about HIV can young people admit susceptibility to HIV infection and decide to get tested. This seems to agree with the national picture on HIV related knowledge, as established by the 2015/16 MDHS, which found that over 40% of Malawians aged 15-24 had a comprehensive knowledge about HIV and over 80% in the same age group also acknowledged that a healthy looking person can have HIV. Hence, this level of knowledge may also explain the respondents' recognition of such a susceptibility to HIV and indicating that knowing one's status has benefits to an individual. Perceived consequences of late ART initiation are also a motivator for HIV testing behaviour among some adolescents and young adults, more especially as it relates to how those consequences such as getting ill impact one's dependents. As argued, this is simply consistent with the 90-90-90 strategy which aims at making sure that at least 90% of HIV positive individuals know their status and immediately get initiated on ART because late ART initiation is one of the most prominent hindrances to controlling the HIV/AIDS epidemic for both individuals and entire populations. Despite this apparent appreciation of the benefits of early ART initiation uptake by addressing this distance and transport barrier, as has been identified by other studies.

Study implications: Our findings may influence health providers to re evaluate the impact of integrating HIV testing services with other health services in the same setting for all age groups. We observe that such integration negatively affects the utilization of HTS by young people. The findings will also motivate health facilities to prioritize mobile HIV testing activities or outreach clinics incorporating HTS. This is because these have been suggested by both the service providers and the interviewed young people as being helpful in reaching out to young populations with testing because they reduce the costs borne by the clients. This agrees with the findings of a 2018 study carried out in the districts of Blantyre, Machinga, Mwanza and Neno, which established that despite HIV testing services being free in Malawi, users still bear costs through lost income driven by long travel and waiting times at testing facilities. This observation led the researchers to recommend the decentralization of testing services beyond static facilities so as to increase uptake.

Study limitations and gaps

This study's qualitative approach meant that the strength of the association between the identified factors and HIV testing among the targeted population was not assessed. The study also did not include other key informants, such as parents of the adolescents and other community leaders such as chiefs and religious leaders, in its design. Since some studies have shown that what some of these leaders know and believe about the HIV/AIDS epidemic could make them key players in HIV/AIDS prevention efforts, the study may have missed some more views and data on the barriers and facilitators at the interpersonal and community levels.

Areas of further research: Future researchers may consider quantitatively assessing the strength of association between some

of the related factors identified and HIV testing behaviour among young people; such as the extent to which fear of a positive result acts as a barrier to HIV testing among adolescents and young adults versus the extent to which perceived susceptibility to HIV infection acts as a facilitator for the same behaviour, for instance. The other area for further research would be an assessment of the effects of factors such as education, one's general knowledge about HIV/AIDS and testing as well as one's location of residence as potential influencers of HIV testing choices among young people, because these have also been known to influence the behaviour according to findings by other studies.

CONCLUSION

Our findings suggest that the stigma associated with being HIV positive and the misconceptions about the AIDS epidemic in most parts of Malawi are still existent, as evidenced by the fear of a positive result. We highlight the need for the adoption of a holistic approach by organizations that implement HIV related community mobilization interventions in the district that should aim at addressing both stigma and discrimination around HIV and AIDS; as well as the roll out of mobile testing and HIV self-testing services by government health facilities, among the many youth friendly approaches to HIV testing, to address the needs of those young people who fear getting tested because they anticipate a breach of confidentiality by some providers.

Ethics approval and consent to participate

The College of Medicine Research and Ethics Committee (COMREC) gave ethical approval for this study (under certificate number P 12/18/2554). In addition, the study anonymized the identities of respondents, who were simply identified using unique serial numbers only. Since ministry of health facilities and personnel (HSAs) were used in identifying respondents to the study, written consent was also obtained from the District Health Office (DHO). Furthermore, written informed consent was obtained from the respondents who were aged 18 and above, whereas written informed assent and parental consent was also obtained for the 7 respondents to this study who were aged below 18. This informed consent covered both participation in interviews as well as the digital recording of the interviews.

Competing interests

The authors declare that they have no competing interests.

Authors contributions

JJS planned the study, developed study methods, interview guides and conducted the IDIs and KIIs, analyzed the data and drafted the manuscript. WS supervised the planning, development of the methods, data analysis and contributed to and supervised the manuscript writing. All authors have read and approved the manuscript.

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REFERENCES

1. Wong VJ, Murray KR, Phelps BR, Vermund SH, McCarraher DR (2017). Adolescents, young people, and the 90-90-90 goals: A call to improve HIV testing and linkage to treatment. *AIDS*. 31:191-194.
2. World Health Organization (2013). *HIV and Adolescents: Guidance for HIV Testing and Counselling and Care for Adolescents Living with HIV*. Geneva: WHO.
3. Kurth AE, Lally MA, Choko AT, Inwani IW, Fortenberry JD (2015). HIV testing and linkage to services for youth. *J Int AIDS Soc*. 18:19433.
4. Family and Youth Services Bureau (2015). *Increasing Our Impact by Using a Social-Ecological*. Department of Health and Human Services.
5. Marshall B, Cardon P, Poddar A, Fontenot R (2013). Does Sample Size Matter in Qualitative Research?: A review of qualitative interviews in IS research. *J Comput Inf Syst*. 54:11-22.
6. Saunders B, Sim J, Kingstone T (2018). Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant*. 52:1893-1907.
7. Farber NK (2006). *Conducting Qualitative Research: A Practical Guide for School Counselors*. *Prof Sch Couns*. 9:367-375.
8. Sanga Z, Kapanda G, Msuya S, Mwangi R (2015). Factors influencing the uptake of Voluntary HIV Counseling and Testing among secondary school students in Arusha City, Tanzania: A cross sectional study. *BMC Public Health*. 15:1-9.
9. Grainger C (2017). Understanding disclosure behaviours in HIV-positive young people. *J Infect Prev*. 18:35-39.
10. Small E, Weller B (2012). Profiles of Malawian adolescents at risk for HIV infections: Implications for targeted prevention, policy, and practices. *AIDS Care*. 25: 289-295.
11. Kabiru CW, Beguy D, Crichton J, Zulu EM (2011). HIV/AIDS among youth in urban informal (slum) settlements in Kenya: What are the correlates of and motivations for HIV testing? *BMC Public Health*. 11:6 85.
12. Mkandawire P (2017). Assessing factors associated with HIV testing among adolescents in Malawi. *Glob Public Health*. 12:927-940.
13. Mburu G, Hodgson I, Kalibala S (2014). Adolescent HIV disclosure in Zambia: Barriers, facilitators and outcomes. *J Int AIDS Soc*. 17:18866.
14. Ngangue P, Gagnon MP, Bedard E (2017). Challenges in the delivery of public HIV Testing and Counselling (HTC) in Douala, Cameroon: Providers perspectives and implications on quality of HTC services. *BMC Int Health Hum Rights*. 17:1-9.
15. UNAIDS (2020). *Implementation in countries of Global standards for quality of health care services for adolescents*. Maternal, newborn, child and adolescent

- health. World Health Organization.
16. Ministry of Health. Youth Friendly Training Manual: participants' handbook. Department of Health.
 17. Celum C, Barnabas R (2019). Reaching the 90-90-90 target: lessons from HIV self-testing. *Lancet HIV*. 6:68-69.
 18. Nall A, Chenneville T, Rodriguez LM, O'Brien JL (2019). Factors Affecting HIV Testing Among Youth in Kenya. *Int J Environ Res Public Health*. 16:1-14.
 19. Barker G (2007). Adolescents, social support and help seeking behaviour: an international literature review and programme consultation with recommendations for action. World Health Organization. 1-64.
 20. Sande L, Indravudh P, Corbett EL (2018). Costs of accessing HIV testing services among rural Malawi communities. *AIDS Care Psychol Socio-Medical Asp AIDS/HIV*. 30:27-36.
 21. Rakotoniana JS, Rakotomanga J de DM, Barennes H (2014). Can Churches Play a Role in Combating the HIV/AIDS Epidemic? A Study of the Attitudes of Christian Religious Leaders in Madagascar. *PLoS One*. 9:1-9.
 22. Djan D (2018). Factors Affecting the Attitude of Young People towards HIV Testing Uptake in Rural Ghana. *J HIV Retro Virus*. 04:10-15.
 23. Yahaya LA, Jimoh AAG, Balogun OR (2010). Factors hindering acceptance of HIV/AIDS Voluntary Counseling and Testing (VCT) among youth in Kwara State, Nigeria. *Afr J Reprod Health*. 14:159-164.