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Research Article

The potential effect of pre-exposure prophylaxis (PrEP) roll-out on sexual-risk behaviour among adolescents and young people in East and southern Africa

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Pre-exposure prophylaxis (PrEP) is an HIV-prevention strategy recommended for those at high-risk of infection, including adolescents and young people (AYP). We explored how PrEP roll-out could influence sexual risk behaviour among AYP in East and southern Africa. Twenty-four group discussions and 60 in-depth interviews were conducted with AYP between 13 and 24 years old, recruited from community settings in Uganda, Zimbabwe and South Africa, from September 2018 to January 2019. Participants perceived that PrEP availability could change sexual behaviour among AYP, influencing: (1) condom use (increased preference for condomless sex, reduced need and decrease in use of condoms, relief from condom use discomfort, consistent condom use to curb sexually transmitted infections and pregnancies); (2) sexual activities (increase in sexual partners and sexual encounters, early sexual debut, sexual experimentation and peace of mind during risky sex, sexual violence and perversion); (3) HIV risk perception (neglect of other HIV prevention strategies, unknown sexual partner HIV status, adoption of PrEP). PrEP initiation may be associated with increased interest in sexual activities and risky sexual behaviour among AYP. PrEP should be included as part of a combination package of HIV prevention strategies for AYP with methods to prevent other sexually transmitted infections and unwanted pregnancies.

Keywords: behaviour change, HIV prevention, pre-exposure prophylaxis, qualitative research methods, sexual behaviour, sub-Saharan Africa

Introduction

In 2019, 460 000 young people between 15 to 24 years old were newly diagnosed with HIV globally. This accounts for over 30% of all new HIV infections, with the greatest burden in sub-Saharan Africa (UNICEF, 2020; World Health Organization, 2021). One plausible explanation is that adolescents and young people (AYP) are likely to begin sexual relations and engage in unsafe sexual behaviours (i.e., condomless sex with multiple sexual partners) that

increase the risk of acquiring sexually transmitted infections (STIs) including HIV (Doyle et al., 2012; Awotidebe et al., 2014; Machado et al., 2017). Innovative and tailored prevention strategies are needed to support this age group.

The World Health Organization (WHO) recommends the use of tenofovir-based pre-exposure prophylaxis (PrEP) for HIV prevention among people at substantial risk of HIV (WHO, 2015; Cowan et al., 2016). PrEP is effective when adhered to, however, one concern is the potential of increased sexual-risk behaviour and reduced use of other

HIV-prevention strategies if PrEP is used, due to a perceived decrease in HIV susceptibility (Underhill, 2013; Auerbach & Hoppe, 2015; Calabrese & Underhill, 2015; Rojas Castro et al., 2019). Most studies evaluating behaviour change following PrEP initiation have been conducted among adult populations (Grant et al., 2014; Calabrese & Underhill, 2015; Shrestha et al., 2017; Oldenburg et al., 2018; Gafos et al., 2019). There is a lack of evidence on the impact of PrEP on sexual behaviour change among male and female AYP in real-world settings (Grov et al., 2021).

The aim of this article is to address this evidence gap and to inform programme design and implementation for evolving national PrEP roll-out in African countries by exploring whether future PrEP initiation among PrEP-naïve AYP in community settings in Uganda, Zimbabwe and South Africa may lead to changes in sexual behaviour.

Methods

Study setting and participants

In this article, we draw on results obtained from a formative mixed-methods study among a community-based sample of male and female AYP between 13 and 24 years old in the Combined HIV Adolescent PrEP and Prevention Study (CHAPS). This study evaluated the acceptability and feasibility of providing daily and on-demand PrEP to adolescent boys and girls in three countries — Uganda, Zimbabwe and South Africa (Nash et al., 2020; Muhumuza et al., 2021). Through the CHAPS study, we sought to characterise those who would benefit from HIV prevention services, including PrEP, and their willingness to take daily versus on-demand PrEP and the barriers and motivators towards the uptake of daily and on-demand PrEP. At the time of the study in 2018/2019, participants were PrEP-naïve as PrEP had not been rolled out to the general population in Uganda, was not readily available for AYP in Zimbabwe, and was available only to selected high-risk groups in South Africa.

Study procedures

Twenty-four group discussions (GDs) (eight per country), each consisting of six to eight participants, stratified by gender (male and female) and age (13–17 and 18–24 years old) to mitigate age and gender dynamics were conducted between September and November 2018. These were followed by 60 in-depth interviews (IDIs) (20 per country) conducted between November 2018 and February 2019. Study participants took part in either the GDs or the IDIs and were purposively sampled by age and gender. Participants were recruited from the fishing communities in Entebbe, Uganda and community groups, schools, churches, bars, taxi ranks and other public meeting places in Chitungwiza, Zimbabwe, and in Soweto and Cape Town, South Africa, with the help of community mobilisers who had established connections in the communities.

The GDs and IDIs lasted between 60 to 120 minutes. Experienced social science researchers undertook the GDs and IDIs in an environment that was safe for both the participants and researcher (either in the community or at the research site). The interview guide for the IDIs and GDs explored topics around HIV-risk perception, PrEP in general, acceptability of PrEP, social and community concerns, and

attributable PrEP characteristics. PrEP was explained to participants by the researchers during information sharing and implementation of this research and a semi-structured guide was used to gather information on anticipated sexual behaviour changes as a result of introducing PrEP in their community.

Data analysis

GDs and IDIs were audio-recorded, transcribed verbatim and those conducted in a local language were translated into English. The transcripts were cross-checked by the researchers at each site against the audio recordings to ensure accuracy. Transcripts were coded manually. Data were analysed thematically, drawing on anticipated as well as emergent themes (Braun & Clarke, 2006; Belotto, 2018). The analysis was an iterative process of discussion and revision between the research teams. The researchers in each country generated a list of recurrent codes by independently reviewing four transcripts several times and making notes of key ideas and codes.

After completing the initial round of coding, the researchers from the three countries discussed the new codes and these were compared to ensure consistency. Discrepancies in the coding were re-examined, and an initial coding framework and codebook used by all countries was developed upon consensus of the final codes. The remaining transcripts were then coded using the codebook. Data were organised by collating emergent themes to identify recurring patterns and categories in the context of the behaviour-change research question. We present the overall findings from the GDs and IDIs organised by the final themes identified across the three countries. Of note, we found that sexual behaviour patterns were similar across the three countries and we also found that there were no notable differences between males and females, so we did not undertake a gendered analysis.

Ethical considerations

This study was approved by the Uganda Virus Research Institute Research and Ethics Committee and the Uganda National Council for Science and Technology, the Joint Research Ethics Committee for the University of Zimbabwe College of Health Sciences and the Parirenyatwa Group of Hospitals, the Medical Research Council of Zimbabwe and the Research Council of Zimbabwe, the University of Cape Town Human Research Ethics Committee, and the London School of Hygiene and Tropical Medicine Research Ethics Committee. Written informed consent and assent were obtained from the participants and their parents or guardians before participation in the study.

Results

We group our findings into three thematic areas that PrEP use had an impact on: (1) condom use; (2) sexual activity; and (3) HIV risk perception.

Perceived impact of PrEP use on condom use

Increased preference for condomless sex

Participants mentioned PrEP initiation would provide an “opportunity for reduced use of condoms” and offer “safer” condomless sex. The decline in condom use with the

introduction of PrEP was also linked to perceptions that AYP believed that condoms reduced sexual pleasure, sensation and intimacy, as well as misconceptions that condoms cause cervical cancer.

In my opinion, I will place the condom aside because I have my “gun” [PrEP] and I have to enjoy it [sex]. The condom was the one limiting me from enjoying [sex]. Now I have to remove it [condom] and swallow my PrEP (GD, female, 19–24 years old, Uganda).

Some participants felt that condom use would decline because PrEP was viewed as a better prevention method to address their fear of HIV acquisition.

I will stop using a condom. Since I know PrEP will protect me from HIV. I will have more boyfriends and more sex, yet I won't worry about HIV (GD, female, 19–24 years old, South Africa).

Relief from condom use

Participants mentioned PrEP would offer relief from the discomfort of using condoms and that many of their partners did not like using condoms as they created a sense of mistrust.

A condom disturbs, is uncomfortable and kills your “performance” during sex a lot like in the heat of the moment you start looking for it [the condom], yet here you have swallowed your PrEP and are relaxed. I will have my moments where I will not bother putting on a condom (GD, male, 13–17 years old, Uganda).

Sexual pleasure was seen as a benefit to PrEP use as the participants mentioned that PrEP would increase their confidence and alleviate anxiety about contracting HIV during condomless sex.

Condoms are not liked much by the youth where I stay. They say sex without a condom is much fun; they like “skin to skin” [condomless sex]. They will feel better off taking pills and having sex without a condom (IDI, male, 16 years old, South Africa).

The participants believed they would adhere to and consistently take PrEP to feel safer not to contract HIV when having condomless sex. PrEP was viewed as a way to offset some of the challenges of condom use, such as negotiating to use condoms in sexual encounters where power relations were often unequal.

Consistent condom use alongside PrEP

Some participants recognised that PrEP, unlike condoms, would not prevent pregnancies and STIs. This pointed to the fact that condoms were used to prevent other related risks such as STIs and unwanted pregnancy.

The use of condoms will not change too much for some of us with PrEP being introduced because we have to control pregnancy and other diseases like candida, syphilis and gonorrhoea which PrEP cannot do (GD, female, 19–24 years old, Uganda).

It was also the case that some AYP would continue to use condoms and supplement them with PrEP because they could trust condoms. One woman (18 years old) in Zimbabwe commented that “I am confident of condoms to prevent many sexually transmitted infections and pregnancy I am not ready for”. The findings that we present show the need to provide a wide range of other youth-friendly services such as provision

of condoms and family planning contraceptives at facilities where PrEP is distributed. If condom use is continued with PrEP, it will help to prevent HIV as well as STIs and unwanted pregnancy at the same time.

Sexual activity and PrEP

Increase in multiple sexual partners

Participants mentioned that PrEP use might lead to an increase in multiple sexual partners and concurrent relationships. They considered PrEP to be protective against HIV, with the potential to reduce their fears during their sexual encounters.

It [PrEP] will convince many young people to sleep with other guys whenever they feel like because they know they are protected. Personally, the number of sexual partners I have I think they would increase (IDI, female, 19 years old, South Africa).

To some AYP, PrEP initiation would allow for less anxiety in opportunities to take risks inherent in this young population group that potentially exposes them to HIV.

Haaha, you will make me very “dangerous” because there is nothing I will fear. That means I will have many sexual partners because I will be protected. I will go with one strong heart [laughs] (IDI, male, 22 years old, Uganda).

Participants were less concerned about the heightened risks usually associated with multiple concurrent sexual relationships.

Early sexual debut and more peace of mind during risky sex

Some participants mentioned that PrEP could encourage young people to engage in sexual behaviour and perhaps promote early sexual debut for adolescents, based on the protection PrEP would provide. One 15-year-old woman in Uganda commented that PrEP would allow her to “have sex like my older friends”.

Similarly, participants mentioned that PrEP use would create the space for curiosity, thrill- and sensation-seeking thereby providing a window of opportunity for more pleasure as well as protection and empowerment regarding sexual partners and transactional sex.

At my age, it [PrEP] will be great because then I can have live sex [condomless sex] and get the thrill at any time. I will explore the sexual experiences I have not had before and also I can hang out on the streets [engage in transactional sex] and decide whoever to have sex with just for fun (GD, female, 18–24 years old, South Africa).

Some participants who initially feared having sexual intercourse because of the fear of acquiring HIV, viewed PrEP as an opportunity for sexual liberation and disinhibition, such that they would now easily engage in sexual activities with confidence.

Some of us young people may choose to do anything we now feel like and sexual behaviours we have never done since the medicine which prevents HIV [PrEP] is going to be available so we cannot contract HIV (GD, female, 13–15 years old, Zimbabwe).

Concerns about changes in sexual behaviour

Participants narrated that PrEP initiation would increase confidence and offer licence and encourage some AYP to engage in acts of forced sex, transactional sex, cross-generational sex and coercive sex.

Say they will accept it because many girls will run to get PrEP and have sex for money, even with the older men and those who are HIV positive, saying that it's obvious that they will not get HIV after taking this pill [PrEP] (GD, female, 16–18 years old, Zimbabwe).

Some participants believed that AYP would take advantage of PrEP's usefulness to fulfil their sexual demands thereby increasing cases of intimate partner violence, rape and defilement in the community. However, participants noted that PrEP would protect them from HIV in such instances.

Because of PrEP, some guys may become sexually violent and may start raping or forcing you to have sex with them well knowing that he has taken PrEP, so I would also take it too, you never know when bad luck can strike like rape...you find that you are raped by a person you don't even know or even have no clue of their HIV status (GD, female, 19–24 years old, South Africa).

Lowered risky sexual practices

Some participants, however, believed that PrEP might promote safety and discipline because they could not trust that PrEP would work. This might encourage them to reduce sexual partners, sexual intercourse and sexual-risk behaviours.

On this Earth, you only live once, so I will not go around misbehaving, having many sexual partners all because of PrEP. You see, we have had all these protection methods before but HIV is still here (IDI, female, 13 years old, South Africa).

Yet, some said that they would reduce the frequency of engaging in sexual intercourse until they were certain of PrEP's effectiveness. A 14-year-old male from Uganda observed that AYP "have to be careful before you trust it 100 per cent".

HIV risk perception

Use of other HIV prevention strategies previously used

Participants noted that PrEP availability would reduce their fear of HIV, resulting in a reduction in the use of previously used HIV preventive measures.

When PrEP is introduced, I worry that many adolescents will give too much attention to PrEP, trust it a lot, and forget about sexual abstinence and condoms. They will resort to PrEP because they no longer have fear for HIV (GD, female, 19–24 years old, Uganda).

However, the reassurance that the use of PrEP offers could allow AYP to be encouraged that PrEP would protect against HIV infection, and since they were no longer at risk of acquiring HIV, they would worry less about a partner's HIV sero-status.

As a girl, if a boy pursues me, I will accept him even if he doesn't wear a condom or I don't know his HIV status because I know if I have taken PrEP, I

am safe with regard to HIV contraction. Even then, there is no need to do the HIV tests, who even has that time. I will have the courage to go and properly have sex with him because I will swallow PrEP (IDI, female, 17 years old, Uganda).

Adoption of a more preventative lifestyle

PrEP was viewed as a source of empowerment, creating a sense of positive control over one's sexual lifestyle and health, especially in times when they feel at heightened risk of HIV. Some participants expressed that PrEP will provide an opportunity for young people to adopt more responsible sexual behaviour responses and preventative lifestyles, viewing PrEP as an additional protector. They believed that the longer one takes PrEP, the more they are assured of protection against HIV, even when exposed to risky behaviours.

I think since PrEP is a preventive medicine for HIV, then I will keep taking PrEP to protect myself, especially during those times when I am engaging in regular sexual activity and am at a big risk (IDI, female, 18 years old, Uganda).

Some participants were enthusiastic that PrEP was going to be helpful towards preventing HIV transmission and enable them to have healthy lives with no fear of the "deadly virus". They perceived that PrEP would offer a strong assurance of protection from HIV, even during times of heightened HIV risk when they engaged in condomless sex.

Discussion

We explored the perceptions of the impact of PrEP initiation on potential sexual-risk behaviour changes among AYP in Uganda, Zimbabwe and South Africa. Overall, our findings highlight that for some AYP, initiation of PrEP may encourage them to engage in risky behaviours, such as condomless sex and early sexual debut. However, some AYP acknowledged the need to safeguard themselves from those dangers that are unresolved by PrEP, namely STIs and unwanted pregnancies. Others reported that PrEP would provide an opportunity for young people to adopt a more responsible sexual behaviour response and preventative lifestyle, viewing PrEP as an additional prevention option as exhibited in other populations at risk of HIV infection (Kawuma et al., 2021).

Our findings were consistent across the three countries by age and gender. Participants were interested in using PrEP when it is made available and cited anticipated positive and negative effects of future PrEP initiation and use on their sexual behaviours. The potential influence of PrEP on AYP's sexual behaviour changes may have a critical role in determining PrEP's acceptability and uptake among AYP.

Our findings contextualise the ways in which PrEP initiation and use may affect sexual behaviour in relation to condom use, sexual activities and HIV risk perception. These findings suggest that promoting AYP's knowledge of existing HIV preventive methods is crucial alongside promoting interest in PrEP as a novel prevention strategy to help potential AYP users make informed choices about using PrEP and other HIV prevention methods.

The study participants mentioned the potential for increased sexual-risk behaviours with the introduction of PrEP. This finding is corroborated in the work of Corneli et al. (2015), conducted in two African countries (Kenya and South Africa) that reports an intended increase in risky sexual behaviour with PrEP use among adult women. Our finding that PrEP might be a preferred option to condom use, which were deemed uncomfortable and to interfere with their sexual pleasure, is mentioned in previous studies (Crosby et al., 2005; Sanders et al., 2012; Farrington et al., 2016; Calabrese et al., 2017; Holt et al., 2018). Our findings align with a study among South African adolescent girls who found PrEP particularly appealing since it would reduce concerns about being seen obtaining condoms from health facilities and using them (Giovenco et al., 2018). A similar finding has been noted for PrEP use by men who have sex with men and men who have sex with both women and men (Collins et al., 2017; Holt et al., 2018). Such negative sexual-risk behaviour changes could undermine the benefits of PrEP and other HIV preventive methods.

Our findings support the notion that PrEP initiation should be promoted among AYP alongside other HIV prevention and contraception methods to maximise the public health benefits among AYP by, for example, making condoms and other contraceptives available alongside PrEP at a one-stop, adolescent youth-friendly service centre. This will ensure that the possible sexual behaviour changes do not impact the willingness of key stakeholders such as policymakers, service providers and health workers to distribute and prescribe PrEP among a group that are at high risk of acquiring HIV (Calabrese & Underhill, 2015; Cowan et al., 2016; Machado et al., 2017). We suggest integrating PrEP provision into the existing adolescent youth-friendly sexual, reproductive health and contraceptive services in the community beyond health facilities for PrEP to be accessible and adopted into the lives of the AYP without undermining other risk reduction mechanisms (World Health Organization, 2020). Additionally, health workers and service providers should be aware of the possible sexual behaviour changes and to provide appropriate counselling and sensitisation as they provide PrEP to AYP.

We advocate for continued efforts to increase knowledge and awareness among AYP on sexual-risk behaviour and PrEP uptake, in conjunction with the utilisation of other HIV prevention modalities, that is, consistent condom behaviour to maximise the individual and public health benefits of PrEP. This calls for tailored interventions and policies to be implemented and enacted for PrEP roll-out and distribution to AYP while paying close attention to possible negative sexual behaviour changes and identifying opportunities to improve sexual health and behaviour. As PrEP allows for protection against HIV during condomless sex, attention needs to be focused to integrate PrEP roll-out with other sexual health services such as contraception and STI prevention and treatment to improve overall health. The integration of PrEP into service provision should not be at the expense of talking about the benefits of using condoms, particularly given the beliefs and rumours about the impact of condoms on pleasure in sexual intercourse and beliefs they are detrimental to health. This highlights the importance of including information on established methods of protection

in health education and not assuming that the benefits of methods, such as condoms, are known.

Increased sexual risk-taking may undermine HIV prevention efforts that PrEP offers, despite being an established biomedical HIV prevention approach (Cowan et al., 2016). Therefore, shaping healthy sexual behaviour changes by providing PrEP alongside other prevention strategies in the existing adolescent sexual and reproductive health initiatives and providing information and support will minimise any potential health risks resulting from PrEP initiation (Collins et al., 2017).

A strength of our study is the inclusion of data from three different African countries (South Africa, Uganda and Zimbabwe), offering perspectives on potential sexual behaviour changes among PrEP-naïve AYP in those settings. A limitation of our study is that the findings are based on anticipated sexual behaviour changes from PrEP-naïve AYP rather than actual behaviour changes. Predicted behaviour change may differ from actual behaviour change as AYP's perception of sexual-risk behaviour may change following PrEP initiation and uptake (Calabrese et al., 2017). Similarly, these variations in behaviour change could be linked to the individual (i.e., lack of HIV information, self-efficacy to negotiate safe sex) and social (i.e., peer groups) influences that fuel the sexual-risk behaviours of the adolescents as reported by others (Awotidebe et al., 2014; Molina et al., 2017; World Health Organization, 2017). Secondly, some AYP may have given responses to impress others, perhaps over-reporting good behaviour and under-reporting undesirable behaviour, thereby prompting social desirability bias. This was mitigated by conducting in-depth interviews preceding group discussions, all conducted by trained and experienced qualitative researchers in spaces that promoted confidentiality.

Conclusion

We explored the potential sexual-risk behaviour changes among largely PrEP-naïve AYP upon PrEP roll-out. The participants acknowledged positive and negative sexual-risk behaviour changes that are likely to occur when PrEP is introduced. We recommend that PrEP roll-out programmes to AYP address the potential effect of PrEP on sexual behaviour and sexual decision-making, not only emphasising HIV risk reduction, but also other STIs and pregnancies. Health workers and service providers might give specialist sexual and reproductive health services to AYP alongside PrEP initiation.

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Data availability statement

Given the sensitive nature of some of the data obtained in the course of the study and the difficulty of fully anonymising detailed interview and group discussion transcripts, the participants did not consent to their data being publicly available. Requests for access to the data can be made through the principal investigator, Julie Fox, King's College London: julie.fox@kcl.ac.uk.

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