A study on the characteristics and associations of long-acting injectable PrEP among adolescent girls and young women seeking contraceptive care at pharmacies in Kenya: a cross-sectional analysis

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A thesis

submitted in partial fulfillment of the

requirements for the degree of

Master of Public Health

University of Washington

2026

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Program Authorized to Offer Degree:

Epidemiology

University of Washington

Abstract

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Background

HIV pre-exposure prophylaxis (PrEP) is a highly effective biomedical HIV prevention, but barriers to access contribute to low initiation and continuation among adolescent girls and young women (AGYW) in Eastern and Southern Africa. Long-acting injectable HIV pre-exposure prophylaxis (LA-PrEP) has the potential to overcome adherence challenges associated with daily oral PrEP. Understanding willingness to switch to LA-PrEP among AGYW is crucial for informing product volume and demand generation strategies.

Methods

We conducted a cross-sectional secondary analysis of survey data from the AGYW Pharmacy PrEP Study, a cluster-randomized trial that enrolled AGYW seeking contraceptives at retail pharmacies in Kisumu County, Kenya. Our primary outcome was willingness to switch to LA-PrEP. We assessed frequency of willingness to switch, reasons for being willing or unwilling, and used univariate and multivariate Poisson regression to evaluate associations between demographic and behavioral characteristics and willingness to switch to LA-PrEP.

Results

Of 1,496 eligible AGYW, 66% were aged 20 to 24 (compared to 15 to 19), 74% completed secondary school, 18% were married, and 65% had only one primary partner. 67% reported being willing to switch to LA-PrEP, 26% reported they would not be willing to switch, and 7% said they were unsure. Most respondents initiated PrEP at enrollment (84%) and had a high HIV risk score (73%). Prevalence of willingness to switch to LA-PrEP was higher among respondents who purchased injectable contraceptives (aPR = 1.31, 95% CI: 1.1 – 1.58, p-value = 0.003), reported recent condomless sex (aPR = 1.2, 95% CI: 1.07–1.35, p-value = 0.002), and heard of oral PrEP before enrollment (aPR = 1.1, 95% CI: 1.01–1.19, p-value = 0.03).

Conclusion

Overall, willingness to switch to LA-PrEP was high. Educating AGYW about PrEP options and the risks and benefits of using LA-PrEP may increase uptake.

INTRODUCTION

Adolescent girls and young women (AGYW) in Eastern and Southern Africa (ESA) are at a disproportionately high risk of acquiring HIV.[1, 2, 3, 4] HIV pre-exposure prophylaxis (PrEP), is a highly effective biomedical HIV prevention, however uptake and adherence is low among those with HIV risk indication in ESA.[5, 6, 7] PrEP initiation and sustained use can be especially challenging for AGYW. Clinical and implementation studies of oral PrEP among AGYW have consistently showed low adherence over time through objectively measured PrEP tenofovir diphosphate (TFV-DP) levels in dried blood spots.[2, 3, 4] Barriers to oral PrEP initiation and continuation are forgetting to take pills, not wanting to travel with the pills due to a combination of inconvenience, fatigue and stigma, and daily pill burden and stigma of taking oral antiretrovirals.[2, 3, 4, 5] Currently most PrEP provision occurs at public health clinics. Barriers to clinic-based PrEP include long wait times, long travel times to the clinic, transportation costs, HIV stigma, insufficient privacy, and poor treatment from healthcare providers.[5, 6, 7]

Providing PrEP in retail pharmacies is a promising strategy to overcome barriers associated with clinic-based PrEP. Many AGYW seek care at pharmacies in lieu of clinics or traditional medical settings. Retail pharmacies are more widely accessible in the community than clinics, have more client-centered communication, and provide anonymity that lessens stigma.[8, 9] Studies have found that PrEP initiation rates at pharmacies are comparable to or better than initiations at clinic settings and reach a distinct population of clients at HIV risk not reached by clinics.[10] Pharmacies can also be leveraged to provide long-acting PrEP which can overcome adherence and pill burden challenges associated with daily oral PrEP. Several effective long-acting PrEP options are available, including vaginal dapivirine rings, cabotegravir injections (CAB), and lenacapavir injections (LEN). Of these options, lenacapavir was most recently approved by the US FDA and the European Medicines Agency for use as long-acting injectable PrEP in 2025.[11, 12] The vaginal dapivirine ring has a duration of 1 month, the CAB injection has a duration of 2 months, and LEN is administered once every six months.[13]

Recent qualitative studies indicate that pharmacies may be uniquely suited to facilitate long-acting injectable PrEP (LA-PrEP) implementation, pointing to characteristics such as long operating hours, proximity to where people live and work, discrete service delivery and less HIV stigma.[14] However, there are a lack of studies investigating LA-PrEP acceptability among AGYW who already seek

contraceptive care at pharmacies. Understanding willingness to initiate or switch to LA-PrEP among AGYW at HIV risk who are receiving care at pharmacies could inform delivery strategies for roll-out of new LA-PrEP in Kenya. Furthermore, assessing the characteristics of PrEP-eligible AGYW who would be interested in LA-PrEP can assist in targeting LA-PrEP products to maximize coverage.

We conducted a secondary analysis to determine the frequency, patterns, and associated characteristics of willingness to switch to LA-PrEP using data from a large trial of AGYW seeking contraceptives at pharmacies in Kisumu County, Kenya (AGYW Pharmacy PrEP Study).

The analysis had two aims:

Aim 1: To characterize willingness to switch and attitudes towards LA-PrEP among AGYW seeking contraception at private pharmacies.

Using data from enrollment and 1 month follow-up visits among participants enrolled in the AGYW Pharmacy PrEP study, we assessed self-reported willingness to switch to LA-PrEP from current PrEP method, preferred access point, willingness to pay, and self-reported reasons for participants' interest or disinterest in LA-PrEP. We estimated the self-reported willingness to switch to LA-PrEP among non-current PrEP users and those currently using another PrEP product to understand the potential of LA-PrEP to expand coverage and displace other PrEP products.

Aim 2: To evaluate demographic and behavioral factors associated with willingness to switch to LA-PrEP among AGYW.

We evaluated the association between demographic and behavioral factors such as current PrEP method and current contraceptive method on AGYW's self-reported willingness to use LA-PrEP (defined as willingness to switch from their current PrEP method or willingness to uptake while not currently taking PrEP). We used univariate and multivariate Poisson regression with robust standard errors. The multivariate model adjusted for education, modified HIV risk score (which included age, marital/cohabitation status, alcohol use, financial support, and partner concurrency), and study arm, as well as accounted for site-level clustering.

METHODS

Study setting and design

We used a cross-sectional secondary analysis of data from participant surveys. We analyzed data from the AGYW Pharmacy PrEP Study, an ongoing cluster-randomized trial comparing standard pharmacy-based PrEP services with an enhanced model that includes nurse navigator support among AGYW at 20 retail pharmacies in Kisumu County, Kenya. The trial procedures have been previously described.[17] Enrollment began in March 2023 and was completed in May 2025. AGYW purchasing contraception (including emergency contraception, oral pills, injectables, implants, and condoms) at retail pharmacies were eligible for the parent study. For the proposed secondary data analysis, we excluded participants who were HIV-positive at enrollment, but included participants who did not initiate PrEP at enrollment. Two types of PrEP were offered to participants; 1) daily oral pills and 2) monthly dapivirine vaginal ring. Our primary outcome of interest is willingness to switch to LA-PrEP, and we assessed prevalence and associated characteristics of willingness to switch.

Study population

We included 1,496 AGYW (aged 15-24) who sought contraceptives at 20 eligible pharmacies in Kisumu County, Kenya. Eligible participants were willing to receive PrEP screening per national guidelines (including HIV testing), not be currently taking PrEP, and be able and willing to provide informed consent for participation. Overall, 1,900 individuals were preliminarily eligible, we excluded 26 participants who tested positive for HIV at enrollment and 378 participants who did not answer the outcome of interest question (whether due to a missing entry or due to responding “prefer not to answer”).

Data collection

Data were collected at study enrollment, and at all follow-up visits to their pharmacy (1, 4, 7, 10 and 12 months after enrollment). All data on sociodemographic characteristics, sexual behaviors, and reproductive health knowledge, attitudes, and practices were ascertained by trained study staff. Trained study staff on administered standardized in-person questionnaires using the survey software REDCap (Research Electronic Data Capture).

Data on key demographic characteristics, contraceptive use and PrEP initiation were collected at enrollment (and in some cases retrospectively in month 10 of follow-up), and responses related to LA-

PrEP were collected in month 1 of follow-up. For the purpose of this cross-sectional analysis, we assume that these variables remain constant throughout the study period. In addition, some demographic information (such as education or partner status) for some participants was collected at the 10-month visit. Since study enrollment began in March 2023, all monetary data collected (such as income and amount willing to pay for LA-PrEP) is considered in 2023 Kenyan shillings, or 2023 US dollars.

HIV behavioral risk score was calculated using a modified version of the HIV empiric risk score developed by Balkus et al. 2016.[18] The original risk score included seven indicators: age, marital/cohabitation status, alcohol use, financial support, partner concurrency (or having multiple, overlapping sexual partners), HSV-2 serostatus, and baseline STI status. For this analysis, 2 of the 7 indicators were excluded due to data unavailability. The final five components (age, marital/cohabitation status, alcohol use, financial support, and partner concurrency) were scored using the original weighting scheme and added to generate a composite risk score, with higher scores indicating greater HIV risk. For the purposes of this analysis, scores were dichotomized as low (<5) or high (≥5) risk of acquiring HIV within the next year. Scores could not be calculated for 77 participants due to missing partner cohabitation data.

Data analysis

Aim 1: Descriptive analysis

Willingness to switch to LA-PrEP and attitudes were assessed using 4 questions. Participants were told about ongoing research to develop an injectable version of PrEP that would be administered once every 8 weeks, would be 90% effective at reducing HIV risk, and had some pain and the injection site and possible minor side effects. Then, participants were asked “if injectable PrEP was approved as safe for women to use, would you prefer to keep using your current method of PrEP or switch to the injection?” Following questions ask participants where they would prefer to access this LA-PrEP from (between a healthcare clinic, family planning clinic, retail pharmacy or other location) and how much they would be willing to pay for one dose with a duration of 8 weeks. Finally, participants who *would* switch to LA-PrEP are asked to describe characteristics about LA-PrEP that make them interested in switching, whereas participants who *would not* switch are asked to describe characteristics about LA-PrEP that

make them uninterested or unsure about switching. These final questions about interest/disinterest in switching were asked in an open-ended format, with any responses categorized based on data collection staff's best judgement.

Other characteristics, including contraceptive method at enrollment, PrEP use and method at enrollment, HIV risk status, and demographic variables, were categorized (if not already in categories). We then described the key characteristics of the population overall and analyzed the frequency of willingness to switch to LA-PrEP for each of these characteristics in Table 1.

Aim 2: Associations with self-reported willingness to switch to LA-PrEP

We conducted univariate and multivariate Poisson regression models with robust standard error estimates to evaluate factors associated with willingness to switch to LA-PrEP. Characteristics that were statistically significant in univariate regression (p-value <0.05) were included in the multivariate model, along with the type of PrEP accepted at enrollment. Education, study arm and modified HIV risk score which were included based on *a priori* decisions. Education has been found to be associated with higher knowledge of PrEP, which is key for PrEP uptake and general acceptability of PrEP.[19] The modified HIV risk score accounts for factors that would increase respondents' familiarity with PrEP (age, cohabitation status, and partner concurrency), so this score also needs to be adjusted for. In addition, for the purposes of this study we are assuming the data is cross-sectional and that there is no temporality between enrollment and when willingness to switch to LA-PrEP was assessed one month later. However, there is a chance that the study arm could have affected responses one month later; talking to the nurse navigator in the enrollment visit could have affected study participants' answer about willingness to switch to LA-PrEP, compared to if it had been asked at enrollment instead. Since this assumption about cross-sectionality is flawed, we will account for any potential impact due to the study arm by adjusting for it in the multivariate analysis. Analyses were conducted using R software in RStudio.[20, 21] The results of the analyses of the univariate and multivariate models are displayed in Table 3.

Ethical approval

The study protocol was approved by the Kenya Medical Research Institute Scientific and Ethics Review Unit and the University of Washington Human Subjects Division and was registered at

ClinicalTrials.gov (NCT05467306). All participants provided written informed consent. Under Kenyan ethical guidelines, adolescents aged 15–17 years are considered mature minors and may provide independent consent when deemed competent.

RESULTS

Demographics and sexual behavior

Across all 20 pharmacies, 1,496 eligible AGYW were asked about their willingness to switch from their current PrEP method to injectable LA-PrEP. Characteristics described in the sections below can be found in Table 1. Overall, study participants were mostly aged 20-24 (66%), with a median age of 21 years old. Less than half of the participants were currently enrolled in school (40%), but most (74%) reported completing secondary school. Respondents were roughly evenly split between rural (33%), peri-urban (40%), and urban (27%) residential areas. The median travel time to the pharmacy was 15 minutes, with an interquartile range of 10 to 30 minutes. The vast majority of respondents were not formally employed (81%), but 67% of those who *were* formally employed made less than 10,000 Kenyan shillings per month ($71.82 USD). Income information was not collected for respondents who were not formally employed. Most participants were unmarried (82%); 65% reported having one primary partner and 17% reported one primary partner and casual partners. Only 3% of respondents were single, and 14% of respondents had only casual partners. Overall, 43% of respondents reported having children.

The majority of respondents (85%) reported having sex without a condom in the prior 6 months. Less than 10% of respondents said “yes” when asked about having sex in exchange for money or favors (8%), having sex while intoxicated (7%), or being forced to have sex (5%) in the prior 6 months. However, 163 (11%) respondents reported experiencing intimate partner violence in the prior 6 months.

Out of all contraceptive types purchased by participants at study enrollment, 669 (45%) purchased emergency contraceptives, 340 (23%) purchased injectable contraceptives, 243 (16%) purchased over the counter pill (OCP) contraceptives, 205 (14%) purchased condoms, and only 39 (2%) purchased implants. It is worth noting that three participating pharmacies did not offer implant services, so participants recruited at those sites were not asked about purchasing implants.

PrEP Uptake and HIV Risk

Out of all respondents who were eligible to initiate PrEP at study enrollment, 1,256 (84%) initiated PrEP. Most of these respondents (1,010, 68%) selected daily oral PrEP pills, and a smaller group (246, 16%) selected monthly dapivirine vaginal ring PrEP. Respondents were also asked about their behaviors and experiences that could be related to risk of HIV or STI acquisition. The majority of respondents (1,318, 88%) reported having been tested for HIV at some point before enrollment, but only 83 respondents (6%) reported being diagnosed or treated for an STI in the prior 6 months. Only 2 respondents (0.1%) reported intravenous drug use in the prior 6 months, and only 29 (2%) respondents reported using post-exposure prophylaxis (PEP) more than twice in the prior 6 months. Most respondents (1,210, 81%) had heard of oral PrEP before enrollment, but only 128 (9%) had heard of the dapivirine vaginal ring before enrollment. Finally, almost three quarters of respondents (1,037, 73%) with HIV risk score information available had a high HIV risk score.

Willingness to switch to LA-PrEP

Willingness to switch to LA-PrEP was high; 1,002 (67%) reported being willing to switch to LA-PrEP, 395 (26%) reported they would not be willing to switch, and 99 (7%) said they were unsure about switching. This includes the respondents who did not initiate any kind of PrEP at enrollment; of the 201 participants who did not initiate PrEP at enrollment, 150 (75%) said they would be willing to switch from no PrEP to LA-PrEP, if it was available. Table 2 shows the participants' responses to questions investigating their reasoning for being willing or unwilling to switch LA-PrEP by their willingness to switch.

Most respondents who reported being willing to switch (791, 79%) preferred accessing LA-PrEP at a retail pharmacy, followed by a healthcare clinic (14%), family planning clinic (6%), and other locations (1%). On average, respondents who reported being willing to switch would be willing to pay 150 Kenyan shillings, or $1.08 USD, per 8-week dose of LA-PrEP. Most of these respondents were interested in switching to LA-PrEP because of the longer duration of once every 8 weeks (848, 85%), and many more were interested because they would not have to remember to take a pill every day (122, 12%). The remaining 30 respondents (3%) reported that they were interested in switching due to LA-PrEP being easy to keep private, being administered by a medical professional, or for another reason.

Respondents who were not willing to switch or were unsure about switching (n = 494) were asked about what characteristics make them uninterested or unsure about switching to LA-PrEP. Most respondents who were not willing to switch or were unsure were concerned about injection pain (314, 65%), and many more were concerned about potential side effects (91, 19%). A smaller proportion (25, 5%) said they were uninterested *because* of the LA-PrEP being administered once every 8 weeks, though data was not collected on whether this 8-week interval was perceived as too short, too long, or discouraged respondents' interest for some other reason. The remaining 48 respondents (10%) said they were uninterested or unsure due to lack of safety data, worry about impacts on a healthy pregnancy, or another reason. Open-ended responses were collected to document the other reasons respondents were uninterested in switching to LA-PrEP, but qualitative analysis of those responses was not within the scope of this paper.

Associations with willingness to switch

For the regression analysis, we excluded 99 participants who responded "Unsure" to the LA-PrEP willingness to switch question, excluded 5 participants who responded "prefer not to answer" for key variables, and excluded 6 participants who responded "Unsure" regarding HIV testing history (due to the low cell count). The total number included in the multivariate regression was 1,386. The results of the univariate and multivariate regression analysis are reported in Table 3. Overall, there was a high willingness to switch to LA-PrEP across groups.

The adjusted prevalence of willingness to switch to LA-PrEP was higher among respondents who were 20 years of age and older (aPR = 1.18, 95% CI: 1.06–1.3, p-value = 0.001), formally employed (aPR: 1.14, 95% CI: 1.05 - 1.25, p-value = 0.002), and had children (aPR = 1.17, 95% CI: 1.06–1.29, p-value = 0.002). The adjusted prevalence of willingness to switch to LA-PrEP was slightly lower among respondents living in urban areas compared to rural areas (PR: 0.8, 95% CI: 0.66–0.98, p-value = 0.031).

Willingness to switch to LA-PrEP was 1.31 times higher among respondents who purchased injectable contraceptives at enrollment (95% CI: 1.1 – 1.58, p-value = 0.003), who reported recent condomless sex (aPR = 1.2, 95% CI: 1.07–1.35, p-value = 0.002), and who heard of oral PrEP before enrollment (aPR = 1.1, 95% CI: 1.01–1.19, p-value = 0.03). Willingness to switch to LA-PrEP was higher

among respondents with only casual partners (compared to respondents with only one primary partner) but was no longer statistically significant in the adjusted model (0.054) (aPR = 1.1, 95% CI: 1–1.21, p-value = 0.054).

There was no statistically significant association between willingness to switch to LA-PrEP and initiating oral PrEP at enrollment (aPR = 0.95, 95% CI: 0.82–1.1, p-value = 0.518) or between willingness to switch to LA-PrEP and initiating dapivirine vaginal ring PrEP at enrollment (aPR = 1.06, 95% CI: 0.94–1.19, p-value = 0.353).

Characteristics of respondents who were unsure about switching to LA-PrEP

We compared the characteristics of respondents who were unsure about switching to LA-PrEP to the rest of the study population (Table 4). Across all characteristics, the 99 respondents who were unsure were similar to the respondents who were sure about their willingness to switch regarding age, education, relationship status, employment, having children, sexual risk behaviors, contraceptive use, and HIV risk indicators. A slightly larger proportion of unsure respondents reported living in a rural area (66, 67%) compared to the overall sample (495, 33%). In addition, among all 99 participants who were unsure about switching, 39 (39%) did not initiate PrEP at enrollment, 46 (46%) initiated oral PrEP, and 14 (14%) initiated dapivirine vaginal ring PrEP. This is different from the respondents who were sure about their willingness to switch; a higher proportion of respondents who were unsure about their willingness to switch did not initiate PrEP compared to other respondents.

We conducted a supplementary association analysis comparing respondents who were unsure about willingness to switch to respondents who were sure (either affirmatively or negatively) about their willingness to switch. Results from the supplementary regression analysis are shown in Table 4. We conducted the analysis with the same methods described for the primary association analysis above, adjusting for the same three variables (education, HIV risk score and study arm). This supplementary analysis found that the adjusted prevalence of being unsure about willingness to switch to LA-PrEP was lower among those who initiated PrEP at enrollment (aPR: 0.39, 85% CI: 0.21–0.72, p-value = 0.003) and those who had ever tested for HIV before enrollment (aPR: 0.57, 95%CI: 0.38–0.86, p-value = 0.008). However, since the total number of respondents who were unsure about their willingness to switch to LA-

PrEP is 99 (which is 7% of the study population), the sample size is too small for a robust and statistically sound investigation into the associations of being unsure about willingness to switch to LA-PrEP.

DISCUSSION

We assessed the self-reported willingness to initiate or switch to LA-PrEP among AGYW who seek contraceptive care at pharmacies through a large-scale survey of AGYW across 20 pharmacies in Kisumu County, Kenya. Overall, willingness to uptake LA-PrEP was high; two thirds of the survey respondents said that if LA-PrEP was available to them, they would switch to using LA-PrEP instead of their current method. This proportion of willingness to switch generally stayed consistent across demographics and key characteristics, with a few exceptions. The most popular reason respondents reported being interested in LA-PrEP was the long duration of the effect. This high willingness to switch suggests that roll out of LA-PrEP may expand PrEP coverage in this population (as 75% of AGYW who did not initiate PrEP at enrollment said they would be willing to switch from no PrEP to LA-PrEP, if it was available). And, because the proportion of respondents who were willing to switch was high among PrEP users at enrollment too, rollout of LA-PrEP may also displace other PrEP products as users shift to a preferred PrEP method.

At the time of the study, participants were asked if they would be interested in switching if the injection was effective in protecting against HIV for 8 weeks. However, LEN (which is now being rolled out globally) as injectable PrEP has been shown to be effective for up to 6 months. Given that prior literature has shown AGYW tend to be more interested in PrEP with longer duration of effect compared to shorter duration, it is possible that the proportion of respondents who would be willing to switch to LA-PrEP would be even higher if they had been asked about LA-PrEP with a longer duration.[22, 23, 34] Prevalence of willingness to switch was slightly higher among older participants, participants with formal employment, and participants with children. Also, prevalence of willingness to switch was lower among participants living in urban areas, compared to rural areas.

Interestingly, being willing to switch to LA-PrEP did not differ significantly depending on PrEP initiation at enrollment or depending on what type of PrEP respondents initiated at enrollment. In addition, the strongest association between contraceptive type and willingness to switch to LA-PrEP was among

respondents using injectable contraceptives, where 82% of injectable contraceptive users would switch from their current method of PrEP to LA-PrEP if available. Since 65% of respondents who were not willing to switch or were unsure about switching to LA-PrEP reported being hesitant because of fear of injection pain, it follows that fear of injection pain is not a barrier to care for respondents who are current or regular users of injectable medicine (like injectable contraceptives). However, willingness to switch to LA-PrEP was high among all other contraceptive groups too, ranging from 62% among respondents who purchased condoms (the reference group) up to 77% among respondents who purchased implants. Therefore, willingness to switch to LA-PrEP is high among all users of contraceptives but is especially higher among users of longer acting contraceptives.

Findings also help describe the general characteristics of PrEP-eligible AGYW who are seeking contraceptive care at pharmacies, and who may be able to receive information or access to PrEP this way as well. Respondents were mostly near the same age (20 to 21 years old), educated (with over three quarters finishing secondary school), and unmarried but in casual or primary relationships. Many of these women already have children, but very few of these women have formal employment, and those who do are generally earning less than 10,000 shillings per month. The average travel time to the study pharmacies was 15 minutes. Many respondents also reported having sex without a condom within the past 6 months, which aligns with them seeking contraceptive methods at the pharmacy.

This general description can help provide context to these respondents' preferences for contraception, PrEP, and access to healthcare. This also aligns with previous literature indicating that pharmacies may be a great point of healthcare access for these girls and women; they are educated about their options for contraception and healthcare, and are sexually active, but they may not have the time or resources to seek care at a clinic that is farther away. However, the median amount that respondents who were willing to switch reported being willing to pay for an 8 week dose of LA-PrEP was 150 shillings, or $1.08 USD, which is lower than expected for LA-PrEP based on prior willingness-to-pay studies of different populations of AGYW seeking PrEP in Kenya.[25, 26] This may indicate that affordability of PrEP is of particular concern for PrEP-eligible AGYW who are seeking contraceptive care at pharmacies.

We find that prior knowledge about HIV and PrEP options among AGYW were associated with a higher likelihood of being willing to switch to LA-PrEP, suggesting that education about PrEP may be associated with acceptability. In addition, though the numbers were small, a higher proportion of respondents who were unsure about willingness to switch to LA-PrEP did not initiate any PrEP at study enrollment. This may indicate that any PrEP hesitancy is more about PrEP in general compared to LA-PrEP specifically. Among those who were not willing to switch or were unsure about switching to LA-PrEP, the most reported reasons for being uninterested or unsure were fear about injection pain or side effects. Educating AGYW about the positive and negative side effects associated with LA-PrEP as it is rolled out to users in the coming years could increase willingness to use LA-PrEP among those who are hesitant. Focusing on education about possible pain and side effects of LA-PrEP, including updated statistics on risk of side effects and methods to monitor or ameliorate possible side effects, could be especially helpful in improving uptake.

One of the strengths of this study is the size and scope of the survey sample; with over 1400 respondents from 20 different pharmacies across Kisumu County, Kenya. This indicates this study assesses characteristics and preferences from a broad group of AGYW who seek contraceptive options at pharmacies in this region of Kenya. However, due to the cross-sectional design of this study, we cannot infer a causal relationship between demographic factors and willingness to switch to LA-PrEP. Additionally, we assume that willingness to switch to LA-PrEP, measured at 1 month of follow-up, remains constant over the study period, along with other characteristics collected at enrollment, which may be inaccurate. Furthermore, because of the limitations of this study (only surveying PrEP-eligible AGYW who seek contraceptives at pharmacies), the high proportion of willingness to switch to LA-PrEP among AGYW in Kenya from this study may not be generalizable to all AGYW in Kisumu County, Kenya, or AGYW across Eastern and Southern Africa. A prior qualitative assessment of PrEP-eligible AGYW in Kenya indicated that many AGYW would prefer to access PrEP at a health clinic over accessing it at a pharmacy.[22] However, the specificity of this study population is also a unique feature and strength of this study, as AGYW who seek contraceptive or PrEP care in pharmacies are understudied compared to similar AGYW who seek care in clinic settings. In addition, self-reported variables are subject to social desirability bias, and stated willingness to uptake LA-PrEP may not translate to real-world uptake. While

many respondents reported the 8-week duration as a reason encouraging them to switch to LA-PrEP, we do not have any follow-up information as to *why* this 8-week duration was positive, and we do not know a longer duration product would be associated with a higher likelihood of being willing to switch. Furthermore, when respondents were told about the hypothetical LA-PrEP product before being asked about willingness to switch, they were also told that "the most common side effects were pain, redness and swelling at the site of the injection, but very few participants dropped out of the studies due to these reactions." Study staff telling respondents about these specific possible drawbacks directly before asking them about willingness to switch, and the reasons for being willing or unwilling to switch, may have influenced the responses collected.

IMPLICATIONS

Overall, we found high willingness to switch to LA-PrEP among AGYW who seek care at pharmacies, which is an understudied population. These data show that pharmacies could be an acceptable point of access for CAB or LEN for AGYW, who often face multi-level barriers to accessing traditional public health facilities. Further research is needed to understand the preferences and willingness to uptake or switch to LA-PrEP for all AGYW with PrEP indication in Kenya. In addition, future researchers could use longitudinal methodology to investigate how willingness to switch to LA-PrEP may have changed over time in this study population. Finally, evidence from this study highlights the importance of education (especially about potential drawbacks) in increasing willingness to initiate all PrEP, including LA-PrEP, among AGYW in Kenya.

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APPENDICES

Table 1: Characteristics of HIV-negative AGYW seeking contraception at retail pharmacies (n = 1496)

Characteristics (N = 1496)	n (%) or Median (IQR)[1]
Study Arm	
Standard of Care Arm	724 (48%)
Nurse Navigator Arm	772 (52%)
Sociodemographic characteristics	
Age (years)	21 (19, 23)
Age groups	
15-19	516 (34%)
20-24	980 (66%)
Currently Enrolled In School	601 (40%)
Years Of Education Completed (binary)	
<12 years	360 (26%)
≥12 years	1,051 (74%)
Residential Area	
Rural	495 (33%)
Urban	404 (27%)
Peri-urban	595 (40%)
Travel time to pharmacy (minutes)	15 (10, 30)
Formally Employed	288 (19%)
Monthly salary in Ksh (if formally employed)	
less than 10k	192 (67%)
10k or more	96 (33%)
Unknown	1,208
Partnership characteristics	
Currently Married	255 (18%)
Relationship Category	
Single	51 (3.4%)
One primary partner only	978 (65%)
Casual partner(s) only	209 (14%)
One primary partner & Casual partner(s)	258 (17%)
Sexual and reproductive health characteristics and experiences	
Any prior pregnancy	717 (48%)
Currently has living children	649 (43%)
Had Unprotected Sex in Past 6 months	1,270 (85%)
Had Sex For Money/Favors in Past 6 months	123 (8.2%)
Had Sex While Intoxicated in Past 6 months	105 (7.0%)
Been Forced To Have Sex in Past 6 months	73 (4.9%)
Experienced IPV in Past 6 months[2]	163 (11%)
Currently using contraceptives	1,258 (84%)
Contraceptive type purchased at enrollment[3, 4]	

Condoms	205 (14%)
Emergency	669 (45%)
Implant[5]	39 (2.6%)
Injectable	340 (23%)
OCP	243 (16%)
PrEP use and characteristics connected with PrEP indication	
PrEP Type At Enrollment	
No PrEP	240 (16%)
Oral pills PrEP	1,010 (68%)
Vaginal ring PrEP	246 (16%)
Ever tested for HIV before enrollment	1,318 (88%)
Been Diagnosed or Treated For An STI in Past 6 months	83 (5.5%)
Engaged in intravenous drug use in past 6 months	2 (0.1%)
Used PEP more than twice in past 6 months	29 (1.9%)
Heard of oral PrEP before enrollment	1,210 (81%)
Heard of dapivirine ring before enrollment	128 (8.6%)
High HIV Risk (from modified empiric risk score)[6, 7]	1,037 (73%)

1 IQR = Interquartile range

2 Intimate Partner Violence (IPV) is defined as a Hurt, Insulted, Threatened, Screamed (HITS) score ≥ 10. Sherin et al. 1998 Fam Med. See reference 27

3 Purchase of a contraceptive product at enrollment was part of study eligibility

4 Participants could report multiple options, i.e., categories are not mutually exclusive

5 Three participating pharmacies did not offer implant services, so participants recruited at those sites were not asked about purchasing implants.

6 Balkus et al. 2016 JAIDS. See reference 18

7 Calculated using a modified empiric HIV risk score described in Balkus et al. (2016). Components included age, marital/cohabitation status, alcohol use, financial support, and partner concurrency. HSV-2 seropositivity and baseline STI status were excluded. Scores ≥5 were classified as high risk. Scores could not be calculated for 77 participants because partner cohabitation data were missing.

Table 2: Willingness to switch and preferences for LA-PrEP among HIV-negative AGYW seeking contraception at retail pharmacies (n = 1496)

Question	Keep current method (oral, DPV-VR or no method)	Switch to injectable PrEP	Unsure
	N = 395[1]	N = 1,002[1]	N = 99[1]
Questions asked of respondents who would switch to injectable PrEP (n = 1002)			
Where would you most prefer to access this long-acting injectable PrEP form?			
Healthcare clinic	--	145 (14%)	--
Family planning clinic	--	55 (5.5%)	--
Retail pharmacy	--	791 (79%)	--
Other	--	11 (1.1%)	--
How much would you be willing to pay (in Kenyan shillings) for 1 shot of long-acting injectable PrEP (that provides 8 weeks, or 2 months, of protective coverage)?	--	150 (100, 200)[2]	--
What characteristics about the injection make you interested in switching?			
Administered by medical professional	--	2 (0.2%)	--
Easy to keep private from my partner/others	--	21 (2.1%)	--
Longer duration/once every 8 weeks	--	848 (85%)	--
Not having to remember to take a pill every day	--	122 (12%)	--
Other	--	7 (0.7%)	--
Questions asked of respondents were not willing to switch to LA-PrEP or were unsure (n = 494)[3]			
What characteristics about the injection make you not interested or unsure about switching?			
Injection pain	266 (69%)	--	48 (52%)
Not enough safety data	10 (2.6%)	--	3 (3.2%)
Once every 8 weeks	15 (3.9%)	--	10 (11%)
Other	29 (7.5%)	--	4 (4.3%)
Potential side effects	64 (16%)	--	27 (29%)
Worry about impact on healthy pregnancy	4 (1.0%)	--	1 (1.1%)

[1] n (%); Median (Q1, Q3)
[2] In 2023 USD, $1.08 ($0.72, $1.44)
[3] Respondents who were not willing to switch or were unsure about switching were not asked any of the prior questions.

Table 3: Factors associated with willingness to switch to injectable PrEP among HIV-negative AGYW seeking contraception at retail pharmacies (n = 1386)

Characteristic	Keep current method (oral, DPV-VR or no method) N = 390	Switch to injectable PrEP N = 996	Univariate Poisson Regression PR (95% CI)	p-value[1]	Multivariate Poisson Regression APR (95% CI)	p-value[1]
Study Arm						
Standard of Care Arm	199 (28%)	512 (72%)	ref	-		
Nurse Navigator Arm	191 (28%)	484 (72%)	1 (0.81–1.22)	0.967		
Sociodemographic characteristics						
Age groups						
15-19	169 (36%)	305 (64%)	ref	-	ref	-
20-24	221 (24%)	691 (76%)	1.18 (1.07–1.29)	<0.001	1.18 (1.06–1.3)	0.001
Currently Enrolled In School	154 (28%)	395 (72%)	1 (0.91–1.11)	0.968		
Years Of Education Completed (binary)						
<12 years	98 (30%)	229 (70%)	ref	-		
≥12 years	268 (27%)	709 (73%)	1.04 (0.95–1.13)	0.414		
Residential Area						
Rural	104 (24%)	321 (76%)	ref	-		
Urban	143 (37%)	245 (63%)	0.84 (0.68–1.02)	0.079	0.81 (0.66–0.98)	0.031
Peri-urban	143 (25%)	428 (75%)	0.99 (0.86–1.15)	0.919	0.99 (0.88–1.12)	0.908
Formally Employed	55 (20%)	215 (80%)	1.14 (1.04–1.25)	0.005	1.14 (1.05–1.25)	0.002
Partnership characteristics						
Currently Married	56 (24%)	179 (76%)	1.07 (0.97–1.17)	0.157		
Relationship Status (Primary vs. Casual)						

Primary w/wo Casual partner(s)	330 (29%)	814 (71%)	ref	-	ref	-
Casual only	43 (22%)	150 (78%)	1.09 (1.01–1.19)	0.038	1.1 (1–1.21)	0.054
Sexual and reproductive health characteristics and experiences						
Currently has children	135 (22%)	471 (78%)	1.15 (1.06–1.26)	0.002	1.17 (1.06–1.29)	0.002
Had Unprotected Sex in Past 6 months	311 (26%)	868 (74%)	1.19 (1.05–1.35)	0.007	1.2 (1.07–1.35)	0.002
Had Sex For Money/Favors in Past 6 months	31 (28%)	80 (72%)	1 (0.87–1.16)	0.966		
Had Sex While Intoxicated in Past 6 months	24 (24%)	75 (76%)	1.06 (0.92–1.21)	0.413		
Been Forced To Have Sex in Past 6 months	23 (34%)	45 (66%)	0.92 (0.73–1.16)	0.464		
Experienced IPV in Past 6 months[2]	43 (28%)	109 (72%)	1 (0.87–1.14)	0.972		
Contraceptive type purchased at enrollment[3,4]						
Condoms	73 (38%)	117 (62%)	ref	-	ref	-
Emergency	183 (29%)	439 (71%)	1.15 (1.01–1.31)	0.04	1.12 (0.96–1.3)	0.145
Implant[5]	9 (23%)	30 (77%)	1.25 (0.95–1.64)	0.107	1.25 (0.93–1.68)	0.136
Injectable	56 (18%)	256 (82%)	1.33 (1.13–1.57)	0.001	1.31 (1.1–1.58)	0.003
OCP	69 (31%)	154 (69%)	1.12 (0.91–1.39)	0.291	1.09 (0.85–1.39)	0.495
PrEP use and characteristics connected with PrEP indication						
PrEP Type At Enrollment						
No PrEP	51 (25%)	150 (75%)	ref	-	ref	-
Oral pills PrEP	287 (30%)	668 (70%)	0.94 (0.81–1.09)	0.391	0.95 (0.82–1.1)	0.518

Vaginal ring PrEP	52 (23%)	178 (77%)	1.04 (0.93–1.16)	0.516	1.06 (0.94–1.19)	0.353
Ever tested for HIV before enrollment	344 (28%)	891 (72%)	1.04 (0.92–1.17)	0.56		
Diagnosed or Treated For An STI in Past 6 months	17 (22%)	61 (78%)	1.09 (0.96–1.24)	0.172		
Heard of oral PrEP before enrollment	297 (26%)	824 (74%)	1.13 (1.04–1.24)	0.006	1.1 (1.01–1.19)	0.03
Heard of dapivirine ring before enrollment	33 (27%)	88 (73%)	1.01 (0.89–1.15)	0.839		
High HIV Risk (from modified empiric risk score)[6, 7]	258 (27%)	704 (73%)	1.06 (0.96–1.17)	0.265		

[1]We consider p-value < 0.05 to be indicative of a statistically significant association.
[2] Intimate Partner Violence (IPV) is defined as a Hurt, Insulted, Threatened, Screamed (HITS) score ≥ 10. Sherin et al. 1998 Fam Med. See reference 27
[3] Purchase of a contraceptive product at enrollment was part of study eligibility
[4] Participants could report multiple options, i.e., categories are not mutually exclusive
[5] Three participating pharmacies did not offer implant services, so participants recruited at those sites were not asked about purchasing implants.
[6] Balkus et al. 2016 JAIDS. See reference 18
[7] Calculated using a modified empiric HIV risk score described in Balkus et al. (2016). Components included age, marital/cohabitation status, alcohol use, financial support, and partner concurrency. HSV-2 seropositivity and baseline STI status were excluded. Scores ≥5 were classified as high risk. Scores could not be calculated for 77 participants because partner cohabitation data were missing

Table 4: Factors associated with being Unsure about willingness to switch to LA-PrEP among HIV-negative AGYW seeking contraception at retail pharmacies (n = 1386)

Characteristic	Sure about willingness to switch	Unsure about willingness to switch	Univariate Poisson Regression		Multivariate Poisson Regression	
	N = 1,397	N = 99	PR (95% CI)	p-value[1]	APR (95% CI)	p-value[1]
Study Arm						
Standard of Care Arm	713 (98%)	11 (1.5%)	ref	-		
Nurse Navigator Arm	684 (89%)	88 (11%)	7.5 (2.18–25.86)	0.001		
Sociodemographic characteristics						
Age groups						
15-19	479 (93%)	37 (7.2%)	ref	-		
20-24	918 (94%)	62 (6.3%)	0.88 (0.64–1.21)	0.435		
Currently Enrolled In School	555 (92%)	46 (7.7%)	1.29 (0.87–1.92)	0.201		
Years Of Education Completed (binary)						
<12 years	328 (91%)	32 (8.9%)	ref	-		
≥12 years	987 (94%)	64 (6.1%)	0.69 (0.38–1.25)	0.218		
Residential Area						
Rural	429 (87%)	66 (13%)	ref	-	ref	-
Urban	391 (97%)	13 (3.2%)	0.24 (0.1–0.59)	0.002	0.46 (0.19–1.12)	0.086
Peri-urban	575 (97%)	20 (3.4%)	0.25 (0.12–0.54)	<0.001	0.45 (0.23–0.86)	0.015
Formally Employed	271 (94%)	17 (5.9%)	0.87 (0.48–1.58)	0.646		
Partnership characteristics						
Currently Married	236 (93%)	19 (7.5%)	1.12 (0.68–1.86)	0.653		
Relationship Status (primary v. casual)						
Primary w/wo Casual partner(s)	1,153 (93%)	83 (6.7%)	ref	-		
Casual only	194 (93%)	15 (7.2%)	1.07 (0.71–1.62)	0.753		
Sexual and reproductive health						

characteristics and experiences						
Currently has living children	609 (94%)	40 (6.2%)	0.88 (0.63–1.25)	0.488		
Had Unprotected Sex in Past 6 months	1,187 (93%)	83 (6.5%)	0.92 (0.57–1.49)	0.745		
Had Sex For Money/Favors in Past 6 months	113 (92%)	10 (8.1%)	1.25 (0.72–2.18)	0.421		
Had Sex While Intoxicated in Past 6 months	100 (95%)	5 (4.8%)	0.7 (0.18–2.81)	0.62		
Been Forced To Have Sex in Past 6 months	69 (95%)	4 (5.5%)	0.82 (0.29–2.3)	0.707		
Experienced IPV in Past 6 months[2]	155 (95%)	8 (4.9%)	0.72 (0.25–2.06)	0.539		
Contraceptive type purchased at enrollment[3, 4]						
Condoms	192 (94%)	13 (6.3%)	ref	-		
Emergency	627 (94%)	42 (6.3%)	0.99 (0.48–2.05)	0.978		
Implant[5]	39 (100%)	0 (0%)	0 (0–0)	<0.001		
Injectable	314 (92%)	26 (7.6%)	1.21 (0.59–2.47)	0.608		
OCP	225 (93%)	18 (7.4%)	1.17 (0.53–2.56)	0.698		
PrEP use and characteristics connected with PrEP indication						
PrEP Type At Enrollment						
No PrEP	201 (84%)	39 (16%)	ref	-	ref	-
Oral pills PrEP	964 (95%)	46 (4.6%)	0.28 (0.13–0.59)	0.001	0.38 (0.19–0.76)	0.006
Vaginal ring PrEP	232 (94%)	14 (5.7%)	0.35 (0.2–0.62)	<0.001	0.45 (0.26–0.77)	0.004
Ever tested for HIV before enrollment	1,238 (94%)	80 (6.1%)	0.6 (0.37–0.98)	0.043	0.57 (0.38–0.86)	0.008
Been Diagnosed or Treated For An STI in Past 6 months	79 (95%)	4 (4.8%)	0.72 (0.22–2.39)	0.588		
Used PEP more than twice in past 6 months	29 (100%)	0 (0%)				

Heard of oral PrEP before enrollment	1,128 (93%)	82 (6.8%)	1.14 (0.51–2.56)	0.751
Heard of dapivirine ring before enrollment	121 (95%)	7 (5.5%)	0.81 (0.48–1.37)	0.44
High HIV Risk (from modified empiric risk score)[6, 7]	970 (94%)	67 (6.5%)	0.82 (0.6–1.13)	0.226

[1]We consider p-value < 0.05 to be indicative of a statistically significant association.
[2] Intimate Partner Violence (IPV) is defined as a Hurt, Insulted, Threatened, Screamed (HITS) score ≥ 10. Sherin et al. 1998 Fam Med. See reference 27
[3] Purchase of a contraceptive product at enrollment was part of study eligibility
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[6] Balkus et al. 2016 JAIDS. See reference 18
[7] Calculated using a modified empiric HIV risk score described in Balkus et al. (2016). Components included age, marital/cohabitation status, alcohol use, financial support, and partner concurrency. HSV-2 seropositivity and baseline STI status were excluded. Scores ≥5 were classified as high risk. Scores could not be calculated for 77 participants because partner cohabitation data were missing