

Brief Communication: Oral pre-exposure prophylaxis history and willingness to use injectable HIV prevention among clients at two Ugandan clinics

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Abstract

We compared hypothetical willingness to use injectable pre-exposure prophylaxis among 116 HIV prevention-service clients at two Ugandan clinics. Willingness was 81.8% among current oral users, 42.4% among former users and 50.0% among never users. Compared with current users, age- and sex-adjusted prevalence ratios were 0.52 (95% confidence interval 0.34–0.78) and 0.60 (0.39–0.92), respectively. Neutral responses were common among former and never users. These findings support assessing information needs across oral-use histories and testing whether counselling and a real product offer translate stated willingness into initiation and continued use.

Background

Injectable pre-exposure prophylaxis (PrEP) offers another HIV prevention option for people who find daily tablets difficult to sustain. Acceptability research identifies interest in long-acting cabotegravir, alongside concerns about injections and delivery arrangements [1]. Oral PrEP discontinuation reflects changing perceived HIV risk, pill-taking difficulties and access to follow-up [2]. People who decline daily oral PrEP also express interest in alternative products [3]. Previous tablet use therefore describes experience with prevention services, rather than a uniform preference for injections. Assessments restricted to current users risk overlooking people who stopped or never started oral PrEP.

A Ugandan clinic survey has examined willingness among key-population clients with different oral PrEP histories [4]. Regional studies describe injectable preferences among public-sector clinic clients in Eswatini, oral PrEP users in Durban, sexual minority men in Nigeria and female barmaids in Tanzania [5–8]. These populations and decisions differ, limiting direct comparisons of willingness estimates. We compared current, former and never oral PrEP users within two Ugandan prevention services, accounting for age and sex. Describing neutral responses alongside the binary outcome adds information about uncertainty otherwise lost when willingness is reported as a single proportion.

Methods

This primary cross-sectional study formed part of a mixed-methods project conducted from 4 May to 31 July 2026 at Mildmay Hospital Uganda and Kajjansi Health Centre IV in central Uganda. Mildmay is a hospital providing specialised HIV services. Kajjansi is a public-sector health centre providing general and HIV services. The prevention-service cohort included urban and peri-urban residents with formal and informal employment, students and people outside paid employment. Household income and other socioeconomic characteristics appear in Table 1.

Table 1
Characteristics of prevention-service clients by willingness to use injectable PrEP

Characteristic	Willing (n = 73)	Not willing (n = 43)	p value
Age, years, median (IQR)	28 (22–34)	24 (20–31)	0.144
Female sex at birth, n (%)	31 (42.5)	18 (41.9)	1.000
Marital status, n (%)			0.155
Single	26 (35.6)	23 (53.5)	
Married	24 (32.9)	8 (18.6)	
Cohabiting	19 (26.0)	8 (18.6)	
Separated or divorced	4 (5.5)	4 (9.3)	
Education, n (%)			0.109
None	2 (2.7)	3 (7.0)	
Primary	10 (13.7)	11 (25.6)	
Secondary	22 (30.1)	10 (23.3)	
Vocational	11 (15.1)	10 (23.3)	
University	28 (38.4)	9 (20.9)	
Employment, n (%)			0.478
Unemployed	4 (5.5)	2 (4.7)	
Informal	26 (35.6)	17 (39.5)	
Formal	24 (32.9)	8 (18.6)	
Student	16 (21.9)	13 (30.2)	
Homemaker	3 (4.1)	3 (7.0)	
Monthly household income, UGX, median (IQR)	500000 (250000–700000)	300000 (200000–475000)	0.031
Residence, n (%)			0.010

Values are n (%) within willingness columns or median (25th–75th percentile). All 116 HIV-negative clients had complete data for these variables. Willing denotes scores 4–5 on the five-point hypothetical willingness item. Not willing denotes scores 1–3, including neutrality. Only female sex is displayed, with male sex as the complementary category. No participants reported widowed marital status. UGX denotes Uganda shillings and IQR denotes interquartile range. P values compare the complete distribution of each characteristic across willingness groups. Age and income use two-sided Mann–Whitney tests, sex uses Fisher’s exact test, and other categorical variables use Monte Carlo Fisher–Freeman–Halton tests (100,000 replicates, seed 2026). Categorical p values are global, not category-specific. Tests are exploratory without adjustment for multiple comparisons.

Characteristic	Willing (n = 73)	Not willing (n = 43)	p value
Kampala urban	38 (52.1)	15 (34.9)	
Peri-urban	35 (47.9)	24 (55.8)	
Other	0 (0.0)	4 (9.3)	
<i>Values are n (%) within willingness columns or median (25th–75th percentile). All 116 HIV-negative clients had complete data for these variables. Willing denotes scores 4–5 on the five-point hypothetical willingness item. Not willing denotes scores 1–3, including neutrality. Only female sex is displayed, with male sex as the complementary category. No participants reported widowed marital status. UGX denotes Uganda shillings and IQR denotes interquartile range. P values compare the complete distribution of each characteristic across willingness groups. Age and income use two-sided Mann–Whitney tests, sex uses Fisher’s exact test, and other categorical variables use Monte Carlo Fisher–Freeman–Halton tests (100,000 replicates, seed 2026). Categorical p values are global, not category-specific. Tests are exploratory without adjustment for multiple comparisons.</i>			

The parent study recruited people living with HIV and HIV-negative prevention-service clients aged at least 15 years who spoke English or Luganda and agreed to participate. People too unwell to complete an interview were excluded. This report includes only the 116 HIV-negative prevention-service clients retained in the parent study’s primary analysis. Of 120 eligible prevention-service records, the parent analysis retained 116 through fixed-seed random selection, excluding one current, one former and two never oral PrEP users. We linked their electronic identifiers to the survey export and performed no new subsampling. The history groups comprised 55 current, 33 former and 28 never users. The parent sample-size calculation addressed treatment versus prevention service populations, rather than differences between these three groups. Clinic attendance denominators and probability weights were unavailable, so estimates describe recruited clients.

Trained research assistants administered a questionnaire pretested outside the study facilities, interviewed participants privately in English or Luganda and recorded responses through Open Data Kit on password-protected devices. The explanation distinguished injectable HIV prevention from treatment and introduced scheduled visits and possible adverse effects. Participants evaluated a hypothetical option without a product offer or clinical eligibility assessment. Willingness scores ranged from 1 (very unwilling) to 5 (very willing). Scores of 4 or 5 defined willingness. Scores of 1–3 formed the complementary not-willing category, including neutral responses. Oral PrEP history came from the recorded current-status item. Age in decades and sex at birth were the adjustment variables. We verified response labels against the data dictionary and checked history, willingness, age and sex across the linked files.

We compared characteristics by willingness status using two-sided Mann–Whitney tests for age and income, Fisher’s exact test for sex, and Monte Carlo Fisher–Freeman–Halton tests for multi-category variables (100,000 replicates, seed 2026). These exploratory tests were not adjusted for multiple comparisons. The global history comparison used Pearson’s chi-square test. Modified Poisson regression with a log link estimated crude and age- and sex-adjusted prevalence ratios with uncorrected robust sandwich standard errors and 95% confidence intervals. Age entered as a continuous term, and

current oral use formed the reference category. All 116 clients had complete data for the model and Table 1 characteristics. We retained the original adjustment set and described neutral responses separately. We checked design-matrix rank, fitted means and Cook’s distances for estimability, fitted-value bounds and influential observations. These checks assess model behaviour and do not address unmeasured confounding. A language model assisted drafting and language editing. The authors checked the analysis, sources and final text.

Results

Of 116 clients, 73 (62.9%) reported willingness. Table 1 presents characteristics by willingness status. Household income and residence differed between groups in exploratory comparisons. Age, sex, marital status, education and employment showed no evidence of differences at the 0.05 threshold. These comparisons describe the cohort and do not establish independent predictors.

Willingness differed across oral PrEP history groups (global $p < 0.001$). Current users reported greater willingness than former or never users, and adjustment for age and sex changed the relative estimates little (Table 2). Neutral responses occurred in 7/55 (12.7%) current users, 17/33 (51.5%) former users and 13/28 (46.4%) never users. Neutrality, rather than explicit unwillingness, accounted for most responses below the willingness threshold among former and never users.

Table 2
Oral PrEP history and hypothetical willingness to use injectable PrEP

Oral PrEP history	Willing/total (%)	Crude PR (95% CI)	p value	Adjusted PR (95% CI)	p value
Current	45/55 (81.8)	1 (reference)	NA	1 (reference)	NA
Former	14/33 (42.4)	0.52 (0.34–0.79)	0.002	0.52 (0.34–0.78)	0.002
Never	14/28 (50.0)	0.61 (0.41–0.90)	0.014	0.60 (0.39–0.92)	0.019

The analysis includes 116 HIV-negative prevention-service clients at Mildmay Hospital Uganda and Kajjansi Health Centre IV. Willingness denotes scores 4–5 on the five-point hypothetical item. Current oral PrEP users form the reference group. The global comparison across the three history groups uses Pearson’s chi-square test ($p = 0.00028$). PR denotes prevalence ratio and CI denotes confidence interval. Crude and adjusted estimates use modified Poisson regression with a log link and uncorrected robust sandwich standard errors. The adjusted model includes age per decade and sex at birth. Regression p values are two-sided Wald tests comparing each history group with current use. NA denotes not applicable because reference categories have no contrast p value. These associations concern stated willingness, not observed injectable PrEP uptake.

Discussion

Current oral PrEP users reported greater hypothetical willingness than former or never users, with little change after adjustment for age and sex. The Ugandan study by Lukubuya and colleagues also examined injectable willingness among key-population clinic clients with different oral-use histories [4]. Its recruitment context and questionnaire differ from ours, so overall percentages should not be treated

as directly comparable. Research comparing current, former and nonusers in two United States cities supports examining history groups separately when designing prevention interventions [9]. Our findings concern differences within prevention services and do not establish an effect of taking tablets on later preference.

Former users warrant attention because an injectable formulation addresses only some reasons for stopping tablets. A less frequent dosing schedule offers a different option for pill-taking difficulties, while changing prevention need or difficulty attending clinics requires another response [2]. Studies of current oral users in Durban and Italy concern willingness to switch, which differs from willingness to initiate prevention among never users [6, 10]. Research in the southern United States also distinguishes willingness to use injections from preference for injections over oral PrEP [11]. Combining these outcomes or assuming former users resemble current users would obscure different decisions. This survey did not establish participants' individual reasons for their oral-use history. Current users already participate in biomedical prevention, so their greater interest might reflect prevention need, familiarity with services or favourable attitudes toward preventive medicines. Follow-up interviews should examine these explanations alongside experiences of stopping tablets and decisions about starting prevention.

The frequent neutral responses among former and never users suggest a need to explore unresolved decisions. Neutrality does not establish poor awareness, refusal or eventual acceptance. Studies in Taiwan and the United States show the relevance of the options presented and variation in preferences for injectable attributes [12, 13]. Qualitative research among young sexual minority men also examines the practical considerations involved in product choice [14]. Services should ask which information clients need, explain dosing schedules, adverse effects, eligibility and follow-up, and reassess preferences after counselling. Evaluation should record whether uncertainty changes and whether stated interest leads to initiation and continued use.

Practical access deserves attention alongside product information. The cohort included people with varied livelihoods, household incomes and urban or peri-urban residence. The exploratory income and residence differences do not identify mechanisms, but they support investigating the demands of repeated clinic attendance. Discussion of long-acting prevention implementation highlights service delivery constraints alongside the benefits of fewer doses [15]. Future evaluations should include appointment access, costs and reasons for discontinuing prior prevention, without inferring these explanations from the present bivariate results.

The study measured hypothetical willingness without a product offer, rather than initiation or retention. Fuller information and real access might change preferences in either direction. Recruitment at two clinics limits generalisation, particularly because never users already attended prevention services and were younger than the other groups. A continuous age adjustment does not resolve limited representation across ages. The parent sample-size calculation did not target oral-history comparisons, and small groups reduced precision. Random exclusion of four eligible records preserved the parent cohort but did not improve representativeness. Adjustment only for age and sex leaves residual

confounding by prevention need, socioeconomic circumstances and service experience. Multiple exploratory tests limit interpretation of bivariate p values. Interview responses also remain susceptible to social desirability. Cross-sectional associations do not establish temporal or causal relationships.

Conclusions

Current oral PrEP users reported greater hypothetical willingness to use injectable prevention than former or never users. Services should assess present prevention and information needs across all three groups. Prospective implementation studies should measure initiation and continued use after counselling and a real product offer.

Abbreviations

HIV, human immunodeficiency virus. PrEP, pre-exposure prophylaxis. IQR, interquartile range. UGX, Uganda shillings. CI, confidence interval. PR, prevalence ratio.

Declarations

Ethics approval and consent to participate

The Mildmay Uganda Research Ethics Committee approved the parent study (MUREC-2026-1828). Adults provided written informed consent. Participants aged 15–17 years provided written assent and a parent or legal guardian provided written consent. Interviews took place in private; the analytic export was de-identified.

Consent for publication

Not applicable. This article reports aggregate results and contains no identifiable individual information.

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

WUM conceived the study, secured funding, led protocol development and supervised study implementation. SCO led data management, statistical analysis and preparation of the first manuscript draft. DMU, BRK, MF, IS and FA contributed to study implementation, interpretation of findings and manuscript revision. CDS provided methodological input and contributed to interpretation and critical revision. CN, AM, SNK and DM contributed to interpretation of the findings and critical review of the manuscript. All authors reviewed and approved the final manuscript and agree to take responsibility for the accuracy and integrity of the work. SCO: Stephen Charles Olet. WUM: Wandera Uthmaan Muluga. DMU: Drake Musoki. BRK: Bernard Raymond Kihumuro. MF: Muluga Farid. IS: Ivan Ssebandeke. FA: Fiona Among. CN: Connie Nait. AM: Alex Mulyowa. CDS: Chad D. Stecher. SNK: Suzanne N. Kiwanuka. DM: David Musoke.

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Data Availability

The de-identified dataset and analysis code are available from the corresponding author on reasonable request, subject to applicable ethical and data-governance requirements. Public release of participant-level records has not been authorised.

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Figures

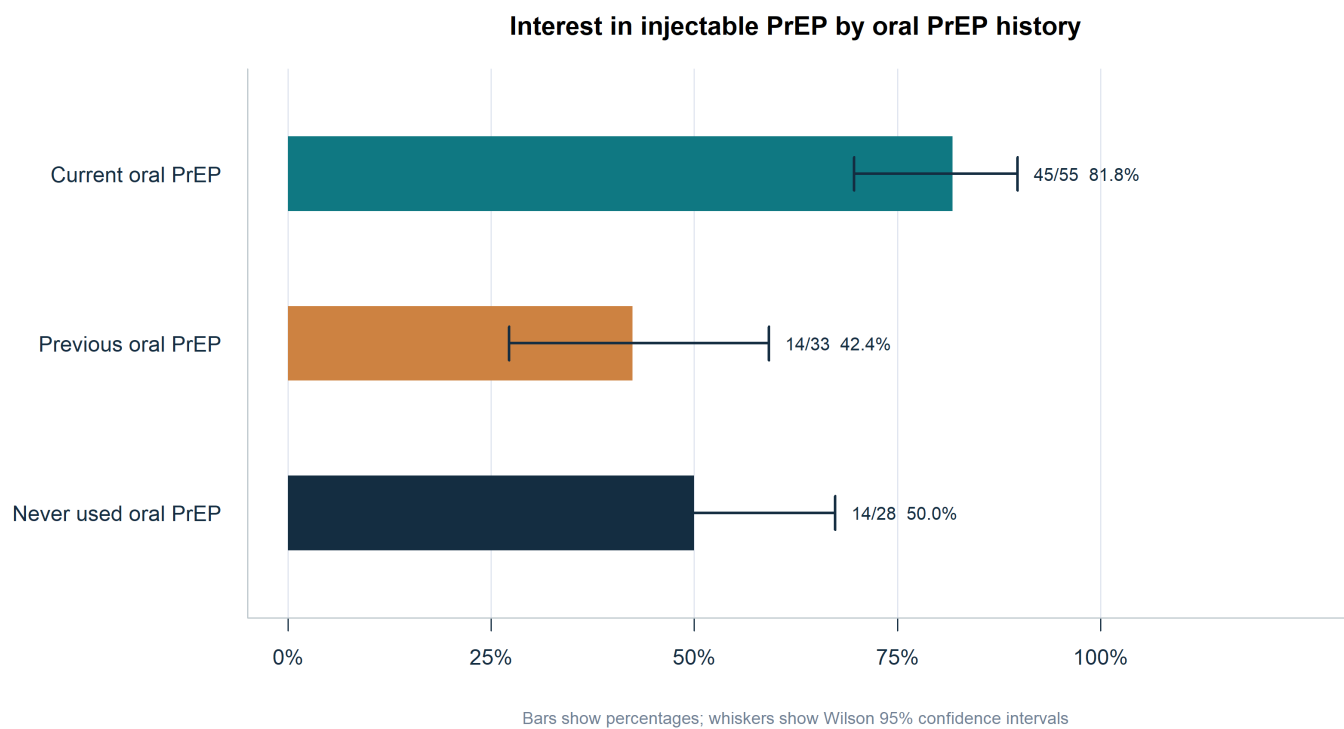


Figure 1

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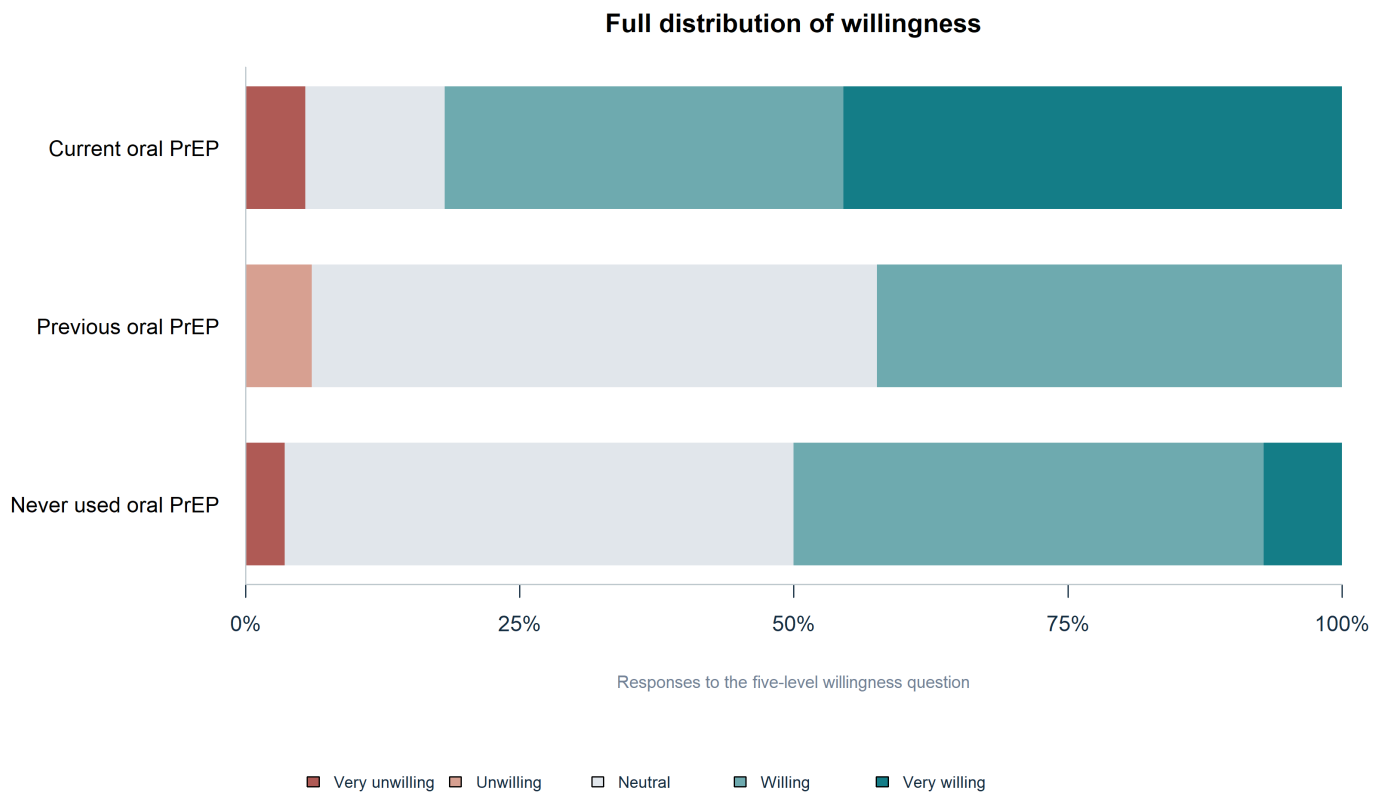


Figure 2

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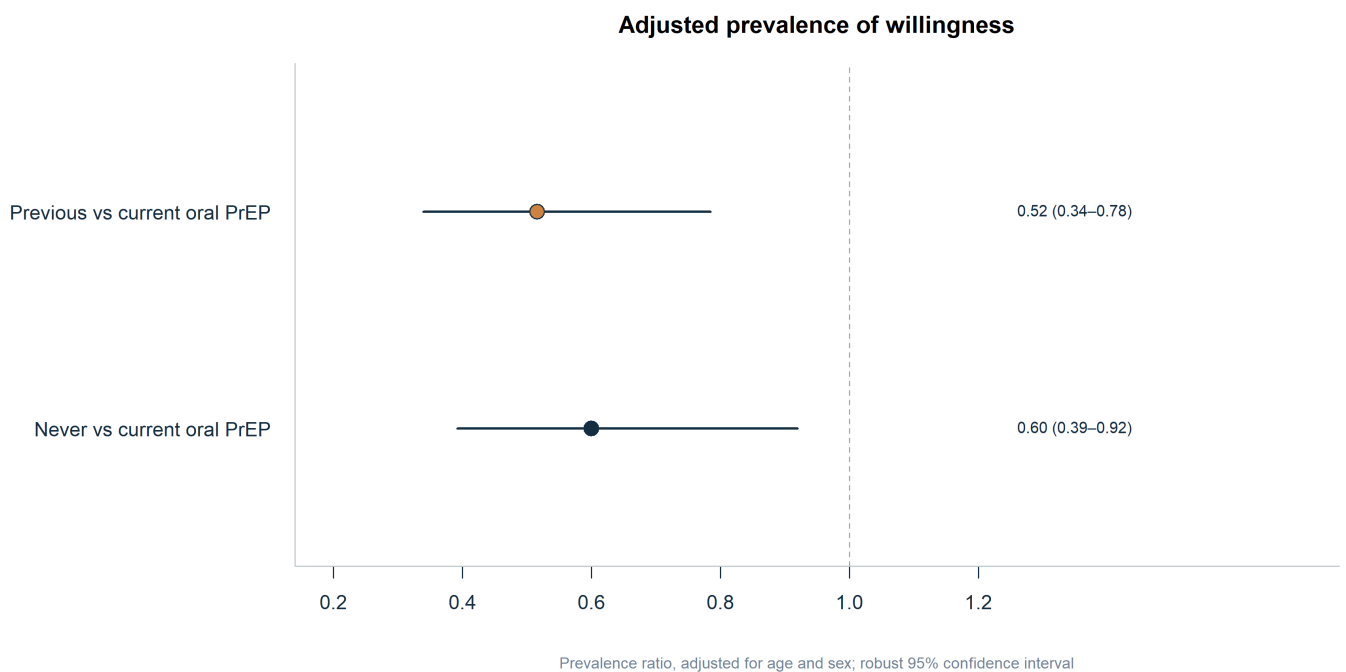


Figure 3

Supplementary Files

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- [Table0ageincomesummaries.csv](#)
- [Table0characteristicsbyhistorycodes.csv](#)
- [Table1primarywillingnesswith95CI.csv](#)
- [Table2fivelevelwillingnesscounts.csv](#)
- [Table3adjustedPRHC0.csv](#)
- [Table3crudePRHC0.csv](#)
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