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Determinants of prevention of mother-to-child transmission (PMTCT) service utilization among adolescent girls and young women aged 15–24 years in Migori County, Kenya

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Abstract

Despite efforts to eradicate mother-to-child transmission (MTCT), adolescent girls and young women (AGYW) in sub-Saharan Africa (SSA) continue to be disproportionately impacted by Human Immunodefiency Virus (HIV). In this mixed-methods study, 323 AGYW between the ages of 15 and 24 who attended prenatal and postnatal clinics were assessed for barriers and enablers to prevention of mother-to-child transmission (PMTCT) service utilization at Migori County Referral Hospital, Kenya. Overall, 66.9% achieved optimal PMTCT utilization. Women aged 20-24 had a higher likelihood of optimal utilization than adolescents aged 15-19 years (AOR≈1.9). Pre-Exposure Prophylaxis (PrEP) use was associated with greater utilization (AOR≈3.0), whereas unknown HIV status and negative health system experiences significantly reduced uptake. Qualitative findings identified multilevel barriers including stigma, financial constraints, confidentiality concerns, long waiting times, and poor provider attitudes. Key enablers included partner support, PrEP use, prior knowledge of HIV status, respectful care, and integrated service delivery. Interventions such as PrEP integration, adolescent-responsive care, and stigma-free, client-centered services are critical to improving PMTCT uptake. *(Afr J Reprod Health 2026; 30 [18]: 100-111).*

Keywords: AGYW; HIV; PMTCT service utilization; Health system barriers; Stigma

Résumé

Malgré les efforts visant à éliminer la transmission mère-enfant (TME), les adolescentes et les jeunes femmes (AJF) d'Afrique subsaharienne (ASS) continuent d'être touchées de manière disproportionnée par le virus de l'immunodéficience humaine (VIH). Dans cette étude à méthodes mixtes, 323 AJF âgées de 15 à 24 ans, ayant fréquenté les services de soins prénatals et postnatals, ont été évaluées afin d'identifier les obstacles et les facteurs facilitant l'utilisation des services de prévention de la transmission mère-enfant (PTME) à l'Hôpital de référence du comté de Migori, au Kenya. Au total, 66,9 % des participantes ont atteint un niveau optimal d'utilisation des services de PTME. Les femmes âgées de 20 à 24 ans étaient plus susceptibles d'avoir une utilisation optimale des services que les adolescentes âgées de 15 à 19 ans (AOR ≈ 1,9). L'utilisation de la prophylaxie pré-exposition (PrEP) était associée à une utilisation accrue des services (AOR ≈ 3,0), tandis qu'un statut sérologique VIH inconnu et des expériences négatives au sein du système de santé réduisaient significativement le recours aux services. Les résultats qualitatifs ont mis en évidence des obstacles à plusieurs niveaux, notamment la stigmatisation, les contraintes financières, les préoccupations relatives à la confidentialité, les longs délais d'attente et les attitudes négatives des prestataires de soins. Les principaux facteurs facilitants comprenaient le soutien du partenaire, l'utilisation de la PrEP, la connaissance préalable du statut sérologique VIH, la qualité respectueuse des soins et l'intégration des services. Des interventions telles que l'intégration de la PrEP, des soins adaptés aux besoins des adolescentes et des jeunes femmes, ainsi que des services exempts de stigmatisation et centrés sur la personne, sont essentielles pour améliorer le recours aux services de PTME. *(Afr J Reprod Health 2026; 30 [18]: 100-111).*

Mots-clés: AJF; VIH; utilisation des services de PTME; obstacles liés au système de santé; stigmatisation

Introduction

Mother-to-child transmission (MTCT) of HIV remains a major source of global pediatric HIV infections. Despite significant progress following the 2011 Global Plan towards the Elimination of New infections among children and keeping their mothers alive, an estimated 250,000 children

acquired HIV in 2022 while global antiretroviral therapy (ART) coverage among pregnant women living with HIV remains below universal targets.[1, 2] Sub-Saharan Africa (SSA) accounts for nearly 90% of pediatric HIV infections, with five out of every six new infections in children occurring in this region.[2] Although elimination targets aim for transmission rates below 5% in breastfeeding populations, several countries in Eastern and Southern Africa continue to report rates above this threshold.[3]

The expansion of donor-supported HIV programmes, including the President's Emergency Plan for AIDS Relief (PEPFAR), together with national scale-up strategies, has improved awareness of PMTCT and early engagement with antenatal care (ANC). AGYW aged 15–24 years bear a disproportionate burden of HIV infection. In 2022, over 4,000 AGYW aged 15–24 years became infected with HIV weekly worldwide, with over 78% of these infections occurring in SSA where AGYW are up to three times more likely to acquire HIV compared to their male peers. [1]Biological susceptibility, gender inequity, poverty, stigma, early sexual initiation, unwanted pregnancy, and a lack of youth-friendly sexual and reproductive health services all contribute to increased vulnerability.[4,5] Pregnancy and breastfeeding increase the risk of HIV acquisition, which increases the possibility of vertical transmission.[6] As a result, more than 1.2 million newborns are exposed to HIV each year globally, mostly from MTCT. [1]

Prevention of MTCT of HIV is among the critical ANC services for HIV-infected AGYW alongside comprehensive sexual and reproductive health, detailed antenatal profiles, immunization and chemoprophylaxis for preventable vertical transmitted infections, and pregnancy-related health education and counseling. [6]

Kenya has expanded PMTCT services; with over 95% of pregnant women living with HIV receiving ART through ANC platforms. Despite these gains, MTCT of HIV remains above the global elimination target of ≤5%, with the national rate estimated at approximately 7–11% in recent years.[7] Evidence further shows that adolescents are less likely to complete recommended ANC visits; for example, only about 35% of adolescent mothers attend four or more ANC visits compared with about 46% of adult mothers, limiting opportunities for repeat HIV testing and timely initiation of prevention interventions.[8]

Migori County has one of the highest HIV burdens in Kenya, with HIV prevalence of about 13–14% among adults aged 15–49 years, more than three times the national average of approximately 4.3%. The county also records elevated adolescent fertility rates and contributes substantially to new HIV infections among young people. Retention of mothers and infants along the PMTCT cascade remains suboptimal.[9] Early sexual debut, poverty, stigma, and limited adolescent-responsive services compound risks among AGYW in this setting. However, age-disaggregated data on PMTCT utilization and multilevel determinants among adolescents in Migori remain limited.Understanding barriers and enablers influencing PMTCT utilization among AGYW is essential to inform adolescent-responsive interventions and accelerate progress toward elimination of pediatrics HIV in high-burden settings.

Conceptual framework

Andersen's Behavioral Model of Health Services Utilization served as the study's guide. [10] The dependent variable was PMTCT service utilization, which was measured using a composite index that included ANC attendance, HIV testing, ART uptake, infant prophylaxis, and facility delivery. The independent variables were: Individual-level factors: age, education, marital status, socioeconomic status, knowledge of PMTCT, stigma perception, and self-efficacy; Health system factors: waiting time, provider attitude, and quality of care.

Methods

Study design

A facility-based cross-sectional study employing quantitative and qualitative approaches was conducted to assess barriers and enablers of HIV PMTCT service utilization among AGYW. The mixed-methods design allowed for triangulation of findings and enhanced interpretation of contextual determinants influencing service utilization. [11]

Study setting

The study was conducted in Migori County, western Kenya. The county had a population of about

917,170, with 34% living in urban areas with a capital in Migori town. It was selected due to its high teen pregnancy rate (23%) and high HIV prevalence (13.3%), making it one of the counties with a significant burden of adolescent pregnancy and HIV, among AGYW, increasing the risk of MTCT of HIV despite the availability of PMTCT services.[8],[12] Data were collected at Migori County Referral Hospital, a Kenya Essential Package for Health (KEPH) Level 5 public referral facility with approximately 300-bed capacity and a large MNCH clinic offering comprehensive PMTCT services and serving both urban and rural populations within the county and its neighbors.

Study population

The study included pregnant and postpartum AGYW aged 15–24 years who had received ANC, postnatal care (PNC), or PMTCT services at the study site. Eligible participants were pregnant or within 12 months postpartum, irrespective of HIV status, and provided informed consent. Those who did not meet these criteria were excluded.

Sample size and sampling

Quantitative component

The sample size was calculated using Yamane's formula for finite populations [13] at 95% confidence level and 5% margin of error:

$$n = \frac{N}{1 + N(e^2)}$$

Where:
n is the sample size
N is the total population i.e. the total number of eligible AGYW from facility records = 1,094.
e is the level of precision= 0.05
The calculated sample size (n) was 293. After adding 10% to account for non-response, a final sample size of 323 participants was used.
Systematic random sampling was used. The sampling interval (k) was calculated as N/n ≈ 3. A random starting point between 1 and 3 was selected, and every third eligible participant was recruited until the required sample was attained.

Qualitative component

Purposive sampling was employed to select participants for focus group discussions (FGDs) and key informant interviews (KIIs). Four FGDs with 8-10 participants were held among AGYM of various HIV statuses and socio-demographic backgrounds. In addition, four KIIs were done with healthcare providers who were actively involved in PMTCT services delivery. Sampling continued until topic saturation was reached. [14]

Data collection

Quantitative data were collected using a semi-structured questionnaire comprising closed-ended questions to assess individual, health system, and social support factors influencing PMTCT service utilization among AGYW. It also captured participants' socio-demographic characteristics, including age, education, marital status, and employment. In addition, relevant clinical information, such as ANC attendance, HIV status, and PMTCT service utilization history, was extracted from medical records to complement the questionnaire data.

Qualitative data were collected using semi-structured interview guides with open-ended and probing questions to explore participants' experiences, perceptions, and views on the barriers and facilitators of PMTCT service utilization. This flexible interview approach allowed exploration of emerging themes. With participants' consent, all interviews were audio-recorded and transcribed verbatim to facilitate in-depth qualitative analysis.

Quality assurance

Study instruments were expert-reviewed, pre-tested in a neighboring health facility, and refined to ensure validity and contextual relevance. Reliability of Likert-scale items was confirmed using Cronbach's alpha (≥0.7). Research assistants received standardized training to ensure consistent and ethical data collection. [15]

Data management and analysis

Quantitative data analysis

Quantitative survey data were entered into KoboCollect v2024.2.4, an Android-based mobile application linked to KoboToolbox and exported to Stata version 15 for analysis. Descriptive statistics have summarized participant characteristics and PMTCT utilization patterns.

Bivariate analyses were conducted using Chi-square and Fisher's exact tests to assess associations between independent variables and PMTCT utilization. Variables with $p < 0.20$ at bivariate level were included in multivariable logistic regression to identify independent predictors. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were reported. Statistical significance was set at $p < 0.05$. [16]

Qualitative data analysis

Audio recordings from qualitative interviews were transcribed verbatim and translated into English where necessary. Data were coded and analyzed thematically using NVivo software (QSR International Pty Ltd., Lumivero, Denver, USA), version 14.0. An inductive-deductive approach was used to identify recurring patterns and themes aligned with study objectives. [15] Findings from qualitative and quantitative strands were integrated during interpretation.

Ethical considerations

Ethical approval was obtained from the Institutional Ethics Review Committee of Jomo Kenyatta University of Agriculture and Technology (IRB: JKU/ISERC/02316/1120), with additional authorization from NACOSTI and the Migori County health authorities. Written informed consent was obtained from participants, and confidentiality was maintained through de-identification, secure data storage, and adherence to the Helsinki Declaration and ICH-GCP ethical guidelines. [17]

Results

Socio-demographic characteristics

A total of 323 AGYW aged 15–24 years were enrolled. The mean age was 21.1 ± 2.3 years, with the majority (76.8%) aged 20–24 years and 23.2% aged 15–19 years. Most participants were married (61%), while 69.0% had one or no children. Nearly half (46.4%) had completed secondary education, and 11.8% had attained tertiary education. Unemployment was prevalent, affecting 65.3% of participants, and 46.8% resided in rural areas. On healthcare financing, almost half (48.0%) depended on financial support from their partners, whereas only 5.3% reported having health insurance coverage (Table 1).

Table 1: Socio-demographic characteristics

Age	**Frequency**	**Percentage**
15 – 19 Years	75	23.2
20 – 24 Years	248	76.8
Marital Status		
Single	126	39
Married	197	61
Education Level		
Incomplete Primary	17	5.3
Completed Primary	45	13.9
Incomplete Secondary	65	20.2
Completed Secondary	150	46.4
Tertiary/College/University	46	11.8
Employment Status		
Employed	10	3.1
Self-Employed (Business)	67	20.7
Student	35	10.8
Unemployed	211	65.3
Number of Children		
One or no child	223	69
More than one child	100	31
Residence		
Rural	151	46.8
Semi-Urban	77	23.8
Urban	95	29.4
Mode of payment for health services		
Cash/out-of-pocket	44	13.6
Health Insurance (NHIF)	17	5.3
Support from a partner/spouse	155	48
Support by friends/well-wishers	3	0.9

PMTCT service utilization patterns

Almost all participants (98.8%) attended at least one ANC visit; however, only 67.8% completed the recommended minimum of four visits. Although 87.6% were aware of PMTCT services, 22.6% reported not receiving PMTCT counseling during ANC. HIV testing during pregnancy was high (93.5%), with 98.2% of those tested receiving the service within ANC settings. Overall, 18.6% of participants were HIV-positive, 74.0% were HIV-negative, and 7.4% had an undetermined HIV status. Among HIV-negative participants and those with an undetermined HIV status who were eligible for repeat HIV testing, 74.9% underwent at least one repeat test, but only 14.9% completed the

recommended repeat testing schedule according to the Kenya PMTCT guidelines. Repeat testing identified three mothers who had previously had an undetermined HIV status as HIV-positive.

Among the 57 HIV-positive mothers, ART uptake was universal (100%), while 96.5% of HIV-exposed infants received ART prophylaxis. Facility-based delivery was reported by 98.4% of participants.

Despite the high uptake of several individual PMTCT interventions, completion of the full PMTCT cascade remained suboptimal. Overall, 66.9% of participants achieved optimal PMTCT service utilization. Optimal utilization was significantly higher among HIV-positive mothers than HIV-negative mothers (64.9% vs. 16.1%; $p < 0.001$) (Table 2).

Individual-level factors and utilization of PMTCT services

Overall, 66.9% reported using PMTCT services, while 33.1% did not. Mean age differed significantly between users (21.3 ± 2.2 years) and non-users (20.7 ± 2.5 years) (p=0.0436).

In multivariable logistic regression, AGYW aged 20-24 were more likely to use PMTCT services than those aged 15-19 years (AOR=1.9; 95% CI: 1.0–3.7; p=0.04). PrEP use during pregnancy or postpartum was independently associated with increased PMTCT utilization (AOR=3.0; 95% CI: 1.2–7.0; p=0.014).

Knowledge of PMTCT was associated with higher uptake in unadjusted analysis (OR=2.2; 95% CI: 1.2–4.4; p=0.017), though it did not remain statistically significant after adjustment. Marital status showed significance in bivariate analysis (p=0.045) but not in multivariable models. Residence, education level, employment status, number of children, and family planning use were not significantly associated with PMTCT utilization (Table 3).

Health system factors

Most respondents reported that PMTCT services were accessible (91.0%), convenient (82.7%), satisfactory (95.0%), and delivered by supportive providers (98.5%).Commonly cited barriers included enacted stigma and discrimination (63.5%) and long waiting times (25.1%). Although individual health system variables were not significantly associated with PMTCT utilization, a composite measure of negative health system experiences was independently associated with reduced utilization (AOR=1.8; 95% CI: 1.0–3.2; p=0.033).

Social support network factors

Most participants (95.7%) reported having a support network. However, social support variables were not significantly associated with PMTCT utilization in both bivariate and multivariable analyses (adjusted OR=1.42; 95% CI: 0.91–2.24; p=0.126).Financial assistance or transport was the most common form of support (76.4%). Reported social barriers included limited financial resources (46.1%), lack of role models (35.0%), and lack of PMTCT knowledge within social networks (30.3%).

Qualitative findings

Three overarching themes emerged: individual-level, health system, social network barriers and enablers.At the individual level, key barriers to PMTCT service utilization included financial constraints, such as transport costs and inability to afford medicines or laboratory tests; inadequate knowledge of PMTCT services; and fear of social judgment. Participants further reported that frequent changes in sexual partners contributed to non-disclosure, concealment of HIV status, and hiding of medication. Additionally, food insecurity was identified as a barrier to adherence to antiretroviral therapy.

"I feel drowsy and hungry once I take the medications, and so if I don't have food, I prefer not to take them" - 19-year-old mother.

"You are asked to pay for tests at the hospital, then you are told to go buy drugs at the chemist, and I don't have it. This is after I have walked for a long distance because I lack transport money, and also have to go back home." – 23-year-old mother.

Key enablers included family support, disclosure to partner, partner involvement, peer-led support groups, and financial empowerment, all of which enhanced access to services, treatment adherence, and retention in PMTCT care among AGYW.Health system barriers included poor service integration, user fees for laboratory tests and medications,

Table 2: PMTCT service utilization patterns

PMTC utilization pattern	Frequency	Percentage
Receipt of ANC services during most recent pregnancy (at least one visit)		
No	4	1.2
Yes	319	98.8
Number of ANC Visits		
<4	100	31
≥4	219	67.8
Never visited ANC	4	1.2
Knowledge of PMTCT services		
No	40	12.4
Yes	283	87.6
Receipt of counseling on PMTCT during ANC		
No	73	22.6
Yes	250	77.4
HIV counseling and testing during pregnancy/ANC visits.		
Known positive	4	1.2
No	18	5.6
Yes	301	93.2
Reported HIV status		
HIV Negative	248	76.8
Known positive	51	15.8
Newly tested positive (at ANC/PNC)	6	1.9
*Unknown HIV status	18	5.6
HIV retesting conducted	24	7.4
No		
Yes	242	74.9
HIV retest results		
HIV negative	242	74.9
Known positive	57	17.7
Retest not done	24	7.4
Final HIV results post retest		
HIV negative	239	74.0
HIV positive	60	18.6
*Unknown HIV status	24	7.4
Receipt of counseling on risk reduction measures		
No	108	40.6
Yes	158	59.4
Receipt of education on HIV prevention options		
No	134	50.4
Yes	132	49.6
Receipt or use of PrEP during pregnancy, at delivery or after delivery		
No	220	82.7
Yes	46	17.3
Place of last childbirth		
Health facility	318	98.5
Home	5	1.5
Use of family planning method		
No	148	45.8
Yes	173	53.6
Pregnant (N/A)	2	0.6
PMTCT utilization (Optimal)		

No	107	33.1
Yes	216	66.9
By visit		
No	104	32.2
Yes	219	67.8
By at least 2 retests		
No	275	85.1
Yes	48	14.9
By safe delivery		
No	5	1.6
Yes	318	98.4
By ARV intake for HIV-infected patients		
No	0	0
Yes	57	100
By infant prophylaxis for HIV Infected patients		
No	0	0
Yes	55	96.5
PMTCT utilization by HIV status	**No**	**Yes**
Negative	18 (16.8)	39 (18.1)
Positive	71 (66.4)	177 (79.2)
*Unknown HIV status	18 (16.8)	6 (2.8)

Table 3: Logistic regression of individual-level factors and utilization of PMTCT services

Individual-level factor	**Univariable**		**Multivariable**	
Variable	**OR (CI)**	**P-value**	**AOR (CI)**	**P-value**
Age cohort				
15-19	REF	0.011	REF	
20-24	2.0 (1.2-3.4)		1.9(1.0,3.7)	0.04
Residence				
Rural	REF	0.6313		
Semi-urban	0.8 (0.4,1.5)			
Urban	0.8 (05,1.4)			
Marital status		0.046		0.34
Married	REF		REF	
Single	0.6 (0.4,1.0)		0.8 (0.4,1.3)	
Number of children		0.773		
<1	REF			
1+	1.1 (0.7,1.8)			
Education level		0.7015		
Primary education	REF			
Secondary education	1.3 (0.7,2.3)			
Tertiary/college/university	1.1 (0.5,2.5)			
Employment status		0.073		
Employed	REF			
Unemployed	0.6 (0.3,1.0)			
Knowledge on PMTCT		0.017		0.106
No	REF		REF	
Yes	2.2 (1.2,4.4)		1.8 (0.8,3.9)	
PrEP use during pregnancy or after delivery?		0.014		0.014
No	REF		REF	
Yes	2.8 (1.2,6.2)		3.0 (1.2,7.0)	
On any family planning method?		0.090		
No	REF			
Yes	1.5 (0.9,2.4)			
Mean individual-level factors	1.6 (1.0 - 2.3)	0.044	1.5(0.9 - 2.3)	0.101

negative attitudes and harassment by healthcare workers, long waiting times, concerns regarding confidentiality, privacy breaches, and stigmatization by healthcare providers, and frequent shortages of essential commodities and antiretroviral drugs affected their moral to come to the clinic. These challenges limited access to and continuity of PMTCT services among adolescent girls and young women.

"After health talks, we are told, "those who are on medication, go to that corner" in front of everyone! Also at the lab, when we go to be taken VL samples, they hold our yellow clinic cards up and yell our names, you feel awkward in front of people, so many of us when we are sent for sample, we don't go, we return with cotton in our hands and lie that the samples had been taken" – 20-year-old PMTCT client.

Most nurses address you according to your age and body size, most of them harass you, they speak to you rudely, like a child, they feel you did it yet you are a child, and so they scold you and say things like "you are 21 and have a child!?" yet you feel you should be treated with respect like other adult and if you speak they feel you are being stubborn and then harass you, "like me they never attended to me until I went for CS!" – a 21 year old PMTCT client.

Enablers included youth-friendly services, reduced waiting time, integration of services, and waiver of fees.Social network barriers included lack of family support due to rejection, inadequate partner support characterized by manipulation and economic abuse, and HIV-related stigma and discrimination from both self and peers. These factors negatively affected access to and continued utilization of PMTCT services among adolescent girls and young women.

"Once they realize they are HIV positive, they separate themselves from their peer, and once their peers realize that they are positive, they withdraw their friendship" – KII with Clinician HIV Specialist (SCASCO PMTCT).

"For young girls who contracted HIV during their adolescence, their parents disown them, which send hem to early marriage. The parents feel that they are pregnant and positive so they will be a burden to them and friends once they are aware that they are HIV positive"– Adolescent girl 18 years old, and also reported by the Clinician HIV specialist PMTCT too.

Enablers included acceptance, involvement, and support from family and partners, participation in community psychosocial support (PSS) groups, financial empowerment, and couple-based PSS groups. Participants reported that supportive HIV-negative partners played a critical role in encouraging adherence and continued engagement in PMTCT services.

"The ones who have supportive family or buddies, we find that they attend and adhere well to their medication as opposed to those with shaky family foundation or partner support"– KII (Clinician specialist PMTCT).

Discussion

Socio-demographic characteristics

Most participants were aged 20–24 years, married, unemployed, and had attained secondary education. These characteristics mirror patterns reported among AGYW in rural Kenya and other SSA settings, where early marriage, limited economic independence, and constrained educational attainment influence reproductive health decision-making and service uptake.[18,19]

Although socio-demographic variables were not independently associated with optimal PMTCT utilization, similar findings have been reported in Kenya and Malawi where health system, psychosocial, and partner-related factors were stronger predictors of PMTCT uptake than socio-demographic characteristics.[20, 21]. However, this contrasts with studies from Ethiopia, Nigeria, and South Africa, where higher education, employment, and marital status significantly improved. PMTCT utilization through enhanced health literacy, financial autonomy, and partner support. [22] These findings therefore suggest that structural vulnerabilities including poverty, financial dependence, gender inequality, and limited autonomy are more influential determinants of maternal HIV service engagement than socio-demographic characteristics alone.

PMTCT service utilization patterns

The study demonstrated high awareness (87.6%) and initial uptake (97.5%) of PMTCT services. This finding aligns with evidence from Kenya and other SSA where sustained investments through PEPFAR, the Global Fund and national scale-up activities have substantially improved HIV awareness and ANC attendance among pregnant women.[23,24] Kenya HIV Estimates Report and NASCOP have documented near-universal HIV testing at first ANC visit, reflecting the success of provider-initiated HIV testing and integrated maternal HIV services.Despite strong initial uptake, optimal PMTCT utilization remained low (66.9%), with only 14.9% of participants receiving guideline-recommended repeat HIV testing and 67.8% completing at least four ANC visits. These findings are comparable to studies from Nigeria and Uganda, which reported that although first ANC attendance and HIV testing were high, repeat HIV testing and continuity of care remained suboptimal because of health-system constraints, missed clinic appointments, and inadequate follow-up. Uniformly, a systematic review found that retention across the PMTCT cascade remains a major challenge in SSA despite improvements in programme enrolment.[25]

The finding that all HIV-positive mothers were receiving ART and that 96.5% of HIV-exposed infants received ART prophylaxis is consistent with recent Kenyan national reports demonstrating ART coverage exceeding 95% among pregnant women diagnosed with HIV following implementation of the lifelong Option B+ strategy.[26, 27] Comparable levels of maternal ART coverage have also been reported in Rwanda and Botswana, where strengthened PMTCT programmes have contributed substantially to reductions in MTCT. [26]

However, the low uptake of complementary HIV prevention interventions, particularly PrEP among HIV-negative women (17.3%), contrasts with recent implementation studies in Kenya that reported higher PrEP initiation among pregnant and postpartum women following integration into routine MCH clinics. [28] This disparity may reflect differences in provider training, commodity availability, and risk perception among pregnant women. Likewise, although facility delivery was almost universal (98.5%), postnatal family planning uptake remained modest (53.6%), consistent with studies from Ethiopia and Tanzania that identified missed opportunities for integrating postpartum contraception with HIV and maternal health services. Conversely, countries with well-integrated maternal, HIV, and reproductive health programmes have reported substantially higher postpartum contraceptive uptake, suggesting that service integration remains critical for improving continuity of care.[29]

Individual-level factors predicting utilization of PMTCT Services

Most participants reported trusting healthcare providers and having positive perceptions of PMTCT services, consistent with studies showing that respectful provider-client relationships improve engagement and retention in PMTCT care.[30]
However, financial barriers, particularly transport costs and indirect expenses, remained important obstacles, corroborating findings from Uganda, Tanzania, and Ethiopia that economic constraints continue to limit sustained PMTCT utilization despite free HIV services.[31]

Participants aged 20–24 years were more likely to optimally utilize PMTCT services than those aged 15–19 years, supporting evidence that older AGYW generally have greater autonomy and health-seeking capacity. [32, 33] Likewise, PrEP use was independently associated with optimal PMTCT utilization, consistent with Kenyan studies demonstrating that integrating PrEP into antenatal care improves continuity of maternal HIV services. [30] Conversely, studies from other SSA settings have reported persistently low PrEP uptake because of stigma, limited awareness, and concerns about medication safety during pregnancy.[29,34]

Unknown HIV status was negatively associated with PMTCT utilization, emphasizing the importance of early and repeat HIV testing for timely entry into the PMTCT cascade, as reported in Kenya and other SSA settings. [24, 29] Although other socio-demographic characteristics were not independently associated with PMTCT utilization, similar findings have been reported where health-system and psychosocial factors outweighed education, employment, and marital status in predicting service engagement. [21] However, this contrasts with studies from Malawi and Nigeria, where poor provider attitudes and breaches of confidentiality discouraged PMTCT retention. [35]

Health system factors predicting utilization of PMTCT Services

Participants generally reported satisfaction with healthcare providers, citing respectful, youth-friendly, and confidential services, consistent with studies from Kenya and other SSA countries demonstrating that positive provider–client relationships enhance PMTCT uptake and retention. [32] However, long waiting times, occasional stock-outs, and inadequate follow-up were also reported, corroborating findings from Kenya and Tanzania where health system inefficiencies reduced continuity of PMTCT care.[23] In contrast, studies from Rwanda and Botswana have shown that strengthened health systems, reliable commodity supply chains, and differentiated service delivery improve PMTCT retention.[26,29] The strong association between unfavorable health system experiences and reduced PMTCT utilization underscores the need for continuous quality improvement and adolescent-responsive service delivery.[31]

Social support network factors predicting utilization of PMTCT services

Although most AGYW reported having social support, this was not independently associated with optimal PMTCT utilization, consistent with studies from Kenya and Malawi showing that the quality and consistency of support are more important than its mere availability. [30] While partner and family support facilitated service engagement, structured peer and community-based support mechanisms were limited, contrasting with evidence from Kenya and South Africa where mentor mothers, peer support groups, and community health worker programmes improved PMTCT adherence and retention. [36] Similarly, limited male partner involvement observed in this study agrees with findings across SSA identifying inadequate male participation as a barrier to PMTCT uptake, whereas couple HIV testing and male-inclusive antenatal interventions have been shown to improve maternal ART adherence and retention. [37, 38] These findings suggest that strengthening partner-inclusive and community-based psychosocial support interventions could improve PMTCT utilization among AGYW.

Study strengths, limitations and policy implications

The study's mixed-methods design and data triangulation strengthened the validity of the findings, although self-reported data, incomplete records, the cross-sectional design, and facility-based sampling may have limited accuracy, causal inference, and generalizability. The findings underscore the need to strengthen continuity of PMTCT care through improved repeat HIV testing, PrEP integration, adolescent-friendly services, enhanced retention, stronger partner and community support, and reduced health system barriers.

Conclusion

Utilization of PMTCT services remained suboptimal across the PMTCT cascade, particularly in repeat HIV testing, ANC attendance, PrEP provision, and continuity of care. Targeted, comprehensive, integrated, adolescent-responsive, family and partner inclusive, stigma-free interventions that address the barriers and leverage the enablers identified in this study are needed to close these gaps and improve PMTCT uptake and retention among adolescent girls and young women aged 15–24 years accessing PMTCT services.

Contributions of authors

NY conceptualized the study, coordinated implementation, conducted data collection and analysis, interpreted findings, and drafted the manuscript. DM and CM contributed to the study design, data analysis, and manuscript revision. All authors approved the final manuscript and accepted responsibility for its accuracy and integrity.

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Conflict of interests

The authors declare no competing interests.

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Data availability

The data supporting this study are available from the corresponding author upon reasonable request, subject to ethical and confidentiality considerations.

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