

Awareness, Knowledge, and Utilization of Prevention of Mother-to-Child Transmission Services Among Pregnant and Postpartum Women in Abuja, Nigeria: A Mixed-Methods Study

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Abstract—Background: Prevention of mother-to-child transmission (PMTCT) services are a key public health strategy aimed at eliminating vertical transmission of HIV and improving maternal and child health outcomes. Despite significant expansion of PMTCT programmes in Nigeria, gaps remain between awareness, comprehensive knowledge, and sustained utilisation of services across the continuum of care. In particular, limited understanding of postnatal PMTCT components such as infant prophylaxis, early infant diagnosis, and lifelong antiretroviral therapy adherence continues to undermine optimal service uptake. This study assessed awareness, knowledge gaps, and determinants of PMTCT service utilisation among pregnant and postpartum women in Abuja, Nigeria.

Methods: A convergent mixed-methods study was conducted among 391 pregnant and postpartum women attending antenatal and postnatal clinics in selected healthcare facilities in Abuja. Quantitative data were collected using structured questionnaires and analysed using descriptive statistics and Chi-square tests at $p < 0.05$. In-depth interviews were conducted with purposively selected participants and analysed thematically. Findings from both components were integrated during interpretation.

Results: Awareness of PMTCT services was high (93.4%), with most respondents recognising the importance of HIV testing during pregnancy (95.1%). However, notable knowledge gaps were observed regarding early infant diagnosis (46.3%), postnatal PMTCT care (49.6%), and infant prophylaxis (52.4%).

PMTCT utilisation was significantly associated with educational level, marital status, monthly income, age, and antenatal care attendance ($p < 0.05$). Qualitative findings revealed that trust in healthcare workers facilitated service uptake, but understanding of PMTCT beyond antenatal HIV testing remained limited. Socioeconomic constraints and weak postnatal engagement further affected continuity of care.

Conclusion: Although awareness of PMTCT services is high among women in Abuja, significant knowledge gaps and socioeconomic barriers hinder full utilisation of services across the PMTCT continuum. Strengthening maternal health education and postnatal follow-up systems is essential to improve PMTCT outcomes and reduce vertical HIV transmission in Nigeria.

Index Terms—Prevention of Mother-to-Child Transmission Services, HIV/AIDS, maternal health, service utilisation, knowledge gaps, Nigeria.

I. INTRODUCTION

Mother-to-child transmission (MTCT) of HIV remains a major global public health challenge despite significant advances in HIV prevention and treatment.¹ In the absence of effective interventions, HIV can be transmitted from mother to child during pregnancy, labour, delivery, or breastfeeding.^{2,3} Prevention of mother-to-child transmission (PMTCT) programmes have been established as a core global

strategy to eliminate vertical HIV transmission through integrated interventions including HIV testing, antiretroviral therapy (ART), safe delivery practices, and infant prophylaxis.⁴ These interventions have significantly reduced paediatric HIV infections in settings with high coverage and sustained adherence. Sub-Saharan Africa continues to bear the highest burden of HIV infection globally, accounting for the majority of new paediatric HIV cases.⁵ Although PMTCT services have expanded across the region, gaps remain in service uptake, retention in care, and continuity of postnatal follow-up. Structural challenges such as poverty, weak health systems, stigma, and inadequate male partner involvement continue to hinder optimal PMTCT outcomes.⁶ Nigeria contributes substantially to the global burden of mother-to-child HIV transmission. Despite national scale-up of PMTCT programmes through integration into antenatal and postnatal care services, challenges persist in achieving sustained utilisation across the PMTCT continuum. Loss to follow-up after delivery, inconsistent ART adherence, and inadequate postnatal engagement remain key barriers to elimination of vertical transmission. Evidence from low- and middle-income countries suggests that while awareness of PMTCT services among pregnant women is generally high, this awareness does not always translate into comprehensive understanding or sustained utilisation of services. Many women are familiar with HIV testing during pregnancy but lack adequate knowledge of essential postnatal PMTCT components such as early infant diagnosis, infant prophylaxis, and lifelong maternal ART adherence.⁷ This gap between awareness and functional knowledge may undermine continuity of care and reduce the effectiveness of PMTCT programmes.

Utilisation of PMTCT services is influenced by a complex interplay of socio-demographic, economic, and healthcare system factors.⁸ Educational attainment, marital status, income level, partner support, and frequency of antenatal care attendance have been identified as key determinants of service uptake and adherence.⁹ However, the relative influence of these factors varies across settings, and the mechanisms through which they affect PMTCT utilisation remain insufficiently understood. Although Abuja has relatively better healthcare infrastructure compared to many parts of Nigeria, evidence on how awareness, knowledge gaps, and socio-demographic

determinants interact to influence PMTCT service utilisation among pregnant and postpartum women remains limited. Furthermore, few studies have used mixed-methods approaches to integrate quantitative determinants with qualitative explanations of women's lived experiences and understanding of PMTCT services.¹⁰ This study therefore assessed awareness, knowledge gaps, and determinants of PMTCT service utilisation among pregnant and postpartum women attending antenatal and postnatal clinics in Abuja, Nigeria. Specifically, it examined levels of awareness, evaluated knowledge of PMTCT components, identified socio-demographic and economic determinants of utilisation, and explored women's perceptions and experiences regarding PMTCT services using a mixed-methods approach.

II. METHODS

Study design

This study employed a convergent mixed-methods design, integrating quantitative and qualitative approaches to assess awareness, knowledge gaps, and determinants of prevention of mother-to-child transmission (PMTCT) service utilisation among pregnant and postpartum women in Abuja, Nigeria. Both components were conducted concurrently, analysed separately, and integrated during interpretation to provide a comprehensive understanding of PMTCT service utilisation.

Study setting

The study was conducted in selected public healthcare facilities in Abuja, Federal Capital Territory (FCT), Nigeria. Abuja is the administrative capital of Nigeria and has a diverse population with access to multiple primary, secondary, and tertiary healthcare facilities providing integrated maternal and child health services, including PMTCT interventions such as HIV counselling and testing, antiretroviral therapy (ART), and postnatal follow-up care.

Study population

The study population comprised pregnant women and postpartum mothers attending antenatal and postnatal clinics in selected healthcare facilities offering PMTCT services in Abuja.

Inclusion and exclusion criteria

Women who were registered for antenatal or postnatal care during the study period and who provided informed consent were eligible for participation. Pregnant women, nursing mothers, and postpartum women attending PMTCT-related services were included. Women who were critically ill, emotionally distressed, or unwilling to participate were excluded from the study.

Sample size determination

The minimum sample size for the quantitative component was determined using the Kish formula for cross-sectional studies:

$$n = \frac{Z^2 pq}{d^2}$$

$$d^2 n$$

where:

n = minimum sample size

$Z = 1.96$ (95% confidence level)

p = estimated prevalence of PMTCT utilisation from previous studies

$$q = 1 - p$$

d = margin of error (0.05)

After adjustment for non-response, a final sample size of 391 respondents was obtained.

Sampling technique

A multistage sampling technique was used. In the first stage, healthcare facilities offering PMTCT services in Abuja were selected purposively based on service availability and client volume. In the second stage, antenatal and postnatal clinic attendees were selected using systematic sampling until the required sample size was reached.

For the qualitative component, purposive sampling was used to select participants for in-depth interviews based on willingness to participate and ability to provide rich contextual information.

Pretesting and Reliability

The questionnaire was pretested among women attending antenatal clinics in a healthcare facility outside the study area. Necessary modifications were made following the pilot study to improve clarity, consistency, and validity of the instrument. Reliability testing showed acceptable internal consistency.

III. DATA COLLECTION METHODS

Quantitative data

Data were collected using a structured interviewer-administered questionnaire developed from relevant literature and aligned with study objectives. The instrument captured information on:

- Socio-demographic characteristics
- Awareness of PMTCT services
- Knowledge of PMTCT components
- Utilisation of PMTCT services

Study variables

Outcome variable

PMTCT service utilisation (Yes/No), defined as uptake of one or more PMTCT services including:

- HIV counselling and testing
- ART initiation and adherence
- Antenatal and postnatal PMTCT counselling
- Infant HIV testing and follow-up

Independent variables

- Age
- Educational level
- Marital status
- Monthly income
- Antenatal care attendance

IV. DATA ANALYSIS

Quantitative analysis

Data were entered and analysed using SPSS version 25. Descriptive statistics (frequencies and percentages) were used to summarise variables. Associations between categorical variables and PMTCT utilisation were assessed using Chi-square tests, with statistical significance set at $p < 0.05$.

Qualitative analysis

Qualitative data were transcribed verbatim and analysed using thematic analysis. Transcripts were read repeatedly to ensure familiarity, coded manually, and grouped into themes reflecting awareness, knowledge gaps, determinants, and barriers to PMTCT utilisation.

Integration of findings

Quantitative and qualitative findings were integrated during interpretation using a triangulation approach, whereby qualitative results were used to explain and contextualise quantitative associations, particularly regarding knowledge gaps and determinants of PMTCT utilisation.

Ethical considerations

Ethical approval was obtained from the Federal Capital Territory Health Research Ethics Committee with the approval number: FHREC/2025/01/13/31-01-25. Written informed consent was obtained from all participants prior to data collection.¹¹ Participation was voluntary, and confidentiality and anonymity were strictly maintained throughout the study.

V. RESULTS

4.1 Socio-demographic characteristics of respondents (N = 391)

A total of 391 pregnant and postpartum women participated in the study. The majority of respondents were aged 25–34 years (50.1%), followed by 35–44 years (24.8%), 15–24 years (19.9%), and 45 years and above (5.1%). Most participants were married (77.0%), while 10.7% were single and 12.3% were divorced or widowed. Regarding educational attainment, 39.4% had secondary education and 37.6% had tertiary education, while a smaller proportion had primary (15.6%) or no formal education (7.4%). Monthly income distribution showed that 41.2% were in the low-income category, 39.6% middle-income, and 19.2% high-income earners. Overall, 71.4% of respondents reported regular antenatal care (ANC) attendance, indicating high engagement with maternal health services in the study population

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	15–24	78	19.9
	25–34	196	50.1
	35–44	97	24.8
	≥45	20	5.1
Marital status	Single	42	10.7
	Married	301	77.0
	Divorced/Widowed	48	12.3
Education	No formal education	29	7.4
	Primary	61	15.6
	Secondary	154	39.4
	Tertiary	147	37.6
Monthly income	Low	161	41.2
	Middle	155	39.6
	High	75	19.2
ANC attendance	Regular	279	71.4
	Irregular	112	28.6

Table 2: Awareness of PMTCT Services among pregnant and postpartum women in Abuja, Nigeria.

Awareness Variable	Yes n (%)	No n (%)
Heard about PMTCT	365 (93.4)	26 (6.6)
Aware HIV can be transmitted during pregnancy	341 (87.2)	50 (12.8)
Aware HIV testing is important during ANC	372 (95.1)	19 (4.9)
Aware ART reduces MTCT risk	334 (85.4)	57 (14.6)
Aware infant can be protected after delivery	271 (69.3)	120 (30.7)

Awareness of PMTCT services among respondents was generally high. Most respondents had heard about HIV testing during pregnancy and understood that PMTCT services help reduce transmission of HIV from mother to child. However, awareness of postnatal protection of infants was comparatively lower.

Qualitative insights on awareness

Theme 1: Participants confirmed that antenatal clinics were their primary source of maternal health information:

“We get most of the information during antenatal clinic sessions.”

Theme 2: Women described PMTCT mainly in relation to pregnancy:

“They usually talk about HIV testing during pregnancy, not much after delivery.”

Table 3: Knowledge of PMTCT Services among pregnant and postpartum women in Abuja, Nigeria.

Knowledge Variable	Correct Response n (%)	Incorrect Response n (%)
Knowledge lifelong ART adherence	248 (63.4)	143 (36.6)
Knowledge of early infant diagnosis	181 (46.3)	210 (53.7)
Knowledge of safe infant feeding	229 (58.6)	162 (41.4)
Knowledge of postnatal PMTCT care	194 (49.6)	197 (50.4)
Knowledge of infant prophylaxis	205 (52.4)	186 (47.6)

Only 46.3% of respondents correctly identified the purpose and timing of early infant diagnosis. Similarly, approximately half of respondents lacked adequate understanding of postnatal PMTCT follow-up care.

Qualitative insights on knowledge

Theme 3: Participants demonstrated fragmented understanding:

“I know pregnant women should test for HIV, but I did not fully understand what happens after delivery or how babies are tested early.”

“I only know about drugs during pregnancy; I don’t really know what happens after delivery.”

Table 4: PMTCT Service Utilization among pregnant and postpartum women in Abuja, Nigeria.

Utilization Variable	Yes n (%)	No n (%)
HIV counselling and testing	378 (96.7)	13 (3.3)
ART uptake among HIV-positive respondents	84 (78.5)	23 (21.5)
Attendance at PMTCT counselling sessions	289 (73.9)	102 (26.1)
Postnatal PMTCT follow-up	218 (55.8)	173 (44.2)
Infant HIV screening attendance	201 (51.4)	190 (48.6)

The study revealed that HIV counselling and testing uptake during pregnancy was high. However, utilization of postnatal PMTCT services such as infant HIV screening and postnatal follow-up care was comparatively lower.

Qualitative insights on PMTCT Service Utilization

Theme 4: Postnatal disengagement was common:

“After delivery, I stopped going because I thought PMTCT was finished.”

Table 5: Predictors associated with PMTCT utilisation among pregnant and postpartum women in Abuja, Nigeria.

Variable	Category	COR (95% CI)	AOR (95% CI)	p-value
Age	15–24	1.00	1.00	—
	25–34	1.42 (0.81–2.35)	1.38 (0.74–2.61)	0.31
Education	Secondary	2.34 (1.21–4.52)	2.11 (1.03–4.33)	0.041*
	Tertiary	3.12 (1.61–6.05)	2.78 (1.34–5.78)	0.006*
Marital status	Married	2.05 (1.11–3.78)	1.92 (1.01–3.65)	0.047*
Income	High	2.18 (1.23–3.87)	2.01 (1.10–3.66)	0.023*
ANC attendance	Regular	3.95 (2.45–6.38)	3.72 (2.25–6.14)	<0.001*

Regular ANC attendance was the strongest predictor of PMTCT utilisation (AOR = 3.72), followed by education, income, and marital status.

Qualitative insights on predictors associated with PMTCT Utilisation

Theme 5: ANC emerged as the key exposure point:

“Every visit to antenatal clinic reminds us about what to do.”

Follow-Up Challenges

Some respondents also mentioned transportation costs, childcare demands, and inadequate partner support as barriers to continued postnatal follow-up care.

“Sometimes I want to come for my appointment, but the transport fare is difficult to get, especially after the baby was born.”

“My husband does not always understand why I need to keep coming to the hospital after delivery, so getting support for transport or childcare can be difficult.”

VI. DISCUSSION

This mixed-methods study explored awareness, knowledge, and determinants of PMTCT service utilisation among pregnant and postpartum women attending antenatal and postnatal clinics in Abuja, Nigeria. Overall, the findings suggest that while awareness of PMTCT services was high, important knowledge gaps remained regarding postnatal interventions and continuity of care. In addition, utilisation was considerably higher for antenatal PMTCT services than for postnatal services, and several socio-demographic and health-service factors were associated with utilisation. The integration of quantitative and qualitative findings provides valuable insight into how women understand and engage with PMTCT services across the maternal care continuum. A notable finding was the high level of awareness of PMTCT services among respondents. More than 90% of participants had heard about PMTCT services, 95.1% recognised the importance of HIV testing during antenatal care, and 85.4% were aware that antiretroviral therapy can reduce the risk of mother-to-child transmission. These findings suggest that PMTCT messages have achieved substantial penetration within maternal healthcare settings in Abuja. Consistent with this observation, Kassie et al.¹² reported high PMTCT awareness among women attending antenatal care services in Ethiopia, attributing this to routine health education delivered during clinic visits. Similarly, a multicountry analysis involving several African countries found that facility-based counselling during ANC visits remains the principal source of PMTCT information for pregnant women, particularly in urban settings where access to maternal healthcare services is relatively high.¹³ The high awareness observed in the present study may therefore reflect the continued expansion of provider-initiated HIV testing and counselling services within antenatal care programmes in Nigeria. Despite this encouraging level of awareness, comprehensive knowledge of PMTCT remained suboptimal. Less than half of respondents correctly identified the purpose and timing of early infant diagnosis (46.3%), while approximately half lacked

adequate knowledge of postnatal PMTCT care (49.6%). This pattern suggests that understanding of PMTCT may be concentrated around antenatal HIV testing and treatment rather than the broader continuum of maternal and infant care. Knowledge regarding early infant diagnosis, infant prophylaxis, and postnatal PMTCT care was comparatively lower than knowledge relating to HIV testing during pregnancy. This discrepancy between awareness and knowledge has been documented in several recent studies. Similar observations were reported that knowledge deficiencies were particularly pronounced for interventions occurring after childbirth, despite widespread awareness of HIV testing services.¹⁵ The qualitative findings in the present study support these observations, as many participants described PMTCT primarily in relation to HIV testing and medication use during pregnancy while demonstrating limited understanding of what occurs after delivery. The observed knowledge gaps are important because successful PMTCT programmes depend on sustained engagement throughout pregnancy, delivery, and the breastfeeding period. Early infant diagnosis and infant prophylaxis remain critical components of efforts to eliminate vertical HIV transmission. Women who do not fully understand the purpose and timing of these interventions may be less likely to complete recommended follow-up schedules. Although the present study was not designed to establish causal relationships, the findings suggest that strengthening counselling on postnatal PMTCT components may improve continuity of care and enhance maternal engagement with infant health services.

Another important finding was the difference between antenatal and postnatal PMTCT service utilisation. Uptake of HIV counselling and testing during pregnancy was nearly universal (96.7%), reflecting successful integration of HIV services within antenatal care. However, utilisation declined considerably across the postnatal continuum, with only 55.8% of women reporting attendance at postnatal PMTCT follow-up visits and 51.4% reporting infant HIV screening attendance. This decline suggests that maintaining engagement after childbirth remains a significant challenge despite strong uptake during pregnancy. Similar patterns have been reported in several African PMTCT programmes. A recent systematic review of PMTCT retention across sub-Saharan Africa found that although HIV testing

coverage among pregnant women has improved considerably over the past decade, postpartum retention remains a major challenge, with a substantial proportion of women disengaging from care during the months following delivery.¹⁶ Likewise, a cohort study conducted in South Africa reported that losses along the PMTCT cascade were more likely to occur after childbirth than during pregnancy, highlighting the vulnerability of the postpartum period.¹⁷

The qualitative findings provide useful insight into the reasons that may underlie this decline in utilisation. Several participants perceived PMTCT as a programme that primarily addresses pregnancy-related HIV prevention, while others reported logistical barriers such as transportation costs, competing family responsibilities, and limited social support. Similar themes have emerged from qualitative studies conducted in Ghana and Tanzania, where women frequently cited childcare responsibilities, transportation difficulties, and uncertainty regarding the need for continued clinic attendance after delivery as barriers to postpartum retention.^{18,19} These findings suggest that improving retention may require both enhanced health education and interventions that address practical barriers to healthcare access. Educational attainment emerged as an important determinant of PMTCT utilisation in the present study. Women with secondary and tertiary education were significantly more likely to utilise PMTCT services compared with those without formal education. This finding aligns with evidence from a recent multicounty analysis conducted across sub-Saharan Africa, which identified educational attainment as one of the strongest predictors of maternal HIV service utilisation.²⁰ Education may enhance health literacy, improve comprehension of counselling messages, and increase confidence in navigating healthcare systems. The qualitative findings support this interpretation, as participants frequently associated formal education with a greater ability to understand information provided by healthcare workers.

Marital status was also associated with PMTCT utilisation. Married women were more likely to utilise services than unmarried women, a finding that may reflect differences in social support, household stability, and partner involvement. Recent studies have highlighted the positive influence of supportive partners on maternal healthcare engagement, treatment adherence, and retention in HIV care.²¹ While the

present study did not directly assess partner involvement, the observed association suggests that social support structures may play an important role in facilitating service utilisation. Similarly, women with higher income levels demonstrated greater utilisation of PMTCT services. Although PMTCT services are commonly provided at little or no direct cost in public facilities, indirect expenses such as transportation, childcare, and lost work time may continue to influence healthcare-seeking behaviour. A recent study examining socioeconomic inequalities in access to maternal health services in low- and middle-income countries reported that financial constraints remain an important barrier to sustained healthcare utilisation despite policy efforts aimed at reducing user fees.²² This may help explain the lower utilisation observed among women with limited financial resources in the present study.

The strongest predictor of PMTCT utilisation was regular antenatal care attendance. Women who attended ANC regularly were almost four times more likely to utilise PMTCT services than those with irregular attendance (AOR = 3.72; 95% CI: 2.25–6.14). This finding reinforces the central role of ANC as the primary gateway to PMTCT services than those with irregular attendance. This finding is consistent with evidence indicating that ANC serves as the primary entry point into PMTCT programmes. In a multicounty study examining determinants of PMTCT uptake in East Africa, regular ANC attendance was strongly associated with HIV testing, treatment initiation, and continued engagement with PMTCT services.²³ Repeated interactions with healthcare providers during ANC visits may increase opportunities for counselling, reinforce key health messages, and encourage continued participation in care. The qualitative findings from the present study support this explanation, as participants repeatedly described ANC clinics as their principal source of PMTCT information and guidance. The convergence of findings from both quantitative and qualitative components strengthens confidence in the study findings. While quantitative analyses identified factors associated with awareness, knowledge, and utilisation, qualitative interviews provided contextual explanations for these patterns. Together, the findings suggest that awareness alone may be insufficient to ensure sustained engagement with PMTCT services. Rather, comprehensive knowledge, supportive social

environments, and continued interaction with healthcare services appear to be important factors influencing utilisation across the PMTCT continuum. Collectively, these findings suggest that sustaining engagement across the PMTCT continuum remains a challenge despite high awareness and uptake of antenatal services. Addressing gaps in postnatal knowledge and retention may be important for improving continuity of care and optimising PMTCT outcomes.

VII. CONCLUSION

This study found that although awareness of PMTCT services among pregnant and postpartum women in Abuja was high, important knowledge gaps persisted across critical components of the PMTCT continuum, particularly early infant diagnosis, infant prophylaxis, postnatal follow-up care, and lifelong antiretroviral therapy adherence. PMTCT service utilisation was significantly associated with educational attainment, marital status, income level, and antenatal care attendance, highlighting the influence of both socioeconomic and healthcare-related factors on engagement with PMTCT services. The findings indicate that awareness alone may not be sufficient to ensure a comprehensive understanding of PMTCT interventions or sustained engagement across the continuum of care. By integrating quantitative and qualitative evidence, this study offers a deeper understanding of the factors shaping PMTCT utilisation and contributes to the evidence base supporting efforts to eliminate mother-to-child transmission of HIV in Nigeria and other high-burden settings in sub-Saharan Africa.

VIII. STRENGTHS AND LIMITATIONS OF THE STUDY

The use of a convergent mixed-methods design strengthened this study by enabling the integration and triangulation of quantitative and qualitative findings, thereby providing a more comprehensive understanding of PMTCT service utilisation among pregnant and postpartum women. The combination of both data sources enhanced the interpretation of findings and offered contextual insights into factors influencing awareness, knowledge, and utilisation of PMTCT services.

However, the cross-sectional design precludes assessment of temporal relationships between study variables. In addition, the use of self-reported measures may have introduced recall and social desirability bias. The study was also conducted among women attending healthcare facilities, which may limit the generalisability of the findings to women who do not access formal maternal healthcare services. Despite these limitations, the mixed-methods approach provided valuable evidence on factors influencing PMTCT service utilisation in the study setting.

IX. RECOMMENDATIONS

The findings of this study highlight the need for a multi-level response to strengthen PMTCT service utilisation and address persistent knowledge gaps among pregnant and postpartum women in Abuja.

At the national policy level, the Federal Ministry of Health and relevant HIV control agencies should prioritise a shift from general PMTCT awareness campaigns toward strengthening the full continuum of care. This includes reinforcing structured guidance on early infant diagnosis, infant prophylaxis, postnatal follow-up schedules, and lifelong antiretroviral therapy adherence. National PMTCT guidelines should be strengthened to ensure that postnatal education is not treated as secondary but as an essential continuation of antenatal HIV prevention services.

At the health facility level, hospital management and antenatal clinic coordinators should institutionalise continuous PMTCT counselling across both antenatal and postnatal services. Rather than limiting education to initial HIV testing, counselling should be reinforced at every contact point, particularly during postnatal and immunisation visits. Integrating mother–baby pair follow-up systems within routine maternal and child health services would help improve continuity of care and reduce loss to follow-up after delivery.

At the healthcare provider level, doctors, nurses, and midwives should be supported to deliver clearer and more structured counselling that bridges the observed knowledge gap between awareness and understanding. Emphasis should be placed on explaining post-delivery PMTCT processes, infant testing timelines, and the importance of sustained adherence to treatment. Strengthening communication skills and using simple, locally appropriate explanations will be

essential, especially for women with lower educational attainment.

At the community level, community health workers and outreach programmes should be strengthened to support postpartum follow-up and address misconceptions that PMTCT ends after childbirth. Community-based education and household follow-up can play a critical role in improving retention in care and reinforcing continuity of PMTCT services beyond the health facility.

At the household and social support level, greater male partner involvement should be encouraged as part of routine antenatal and PMTCT programming. Strengthening partner engagement can improve emotional, financial, and logistical support for women, thereby enhancing adherence to both antenatal and postnatal PMTCT services. In addition, addressing indirect costs such as transportation and access barriers will be essential for improving service utilisation among low-income women. Improving PMTCT outcomes in this setting requires coordinated action across policy, facility, provider, and community levels, with particular emphasis on strengthening postnatal retention and deepening women's understanding of the complete PMTCT care continuum.

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Data availability: The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request, in accordance with ethical approvals and data protection guidelines.

Declarations

Consent for publication: All participants provided consent for the use of their anonymized data for research and publication. All authors have read and approved the final manuscript.

Competing interests: The authors declare that they have no competing interests.

Abbreviation	Full Meaning
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
CI	Confidence Interval
EID	Early Infant Diagnosis
FCT	Federal Capital Territory
HIV	Human Immunodeficiency Virus
IDI	In-Depth Interview
MTCT	Mother-to-Child Transmission
NACA	National Agency for the Control of AIDS
NASCP	National AIDS and STIs Control Programme
OR	Odds Ratio
PMTCT	Prevention of Mother-to-Child Transmission
SPSS	Statistical Package for the Social Sciences
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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