Knowledge and Barriers to Prevention of Mother-To-Child Transmission Services among HIV-positive Mothers in Abuja, Nigeria: A Mixed-methods Study

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ABSTRACT

Background: *Prevention of mother-to-child transmission (PMTCT) remains crucial for controlling pediatric HIV infection. While services are increasingly available, utilization faces multiple barriers. This study assessed HIV-positive mothers' knowledge of PMTCT and barriers to service utilization in Abuja, Nigeria.*
Methods: *A mixed-methods cross-sectional study was conducted among 240 HIV-positive pregnant women attending antenatal care at three hospitals in Abuja metropolis. Data were collected using structured questionnaires and focus group discussions. Stratified sampling selected facilities, while participants were randomly chosen. Analysis used SPSS version 24 for quantitative data and thematic analysis for qualitative data.*
Results: *Most participants (65.0%) demonstrated good PMTCT knowledge. Major barriers included requiring spousal permission (82.6%), stigmatization fears (77.9%), uncomfortable hospital environments (78.6%), and poor healthcare worker attitudes (88.5%). Focus group discussions revealed significant challenges with partner notification and infant feeding choices due to HIV status non-disclosure. Social and financial barriers showed significant correlation ($p<0.001$).*
Conclusion: *While PMTCT knowledge was relatively high, multiple socio-cultural, institutional, and economic barriers impede service utilization. Interventions should address healthcare worker attitudes, partner involvement, and stigma reduction while improving facility conditions.*

Keywords: HIV/AIDS, PMTCT, Service utilization, Knowledge, Barriers, Mixed-methods

INTRODUCTION

Globally, significant numbers of people are living with Human Immunodeficiency Virus (HIV). More than 90 per cent of new pediatric HIV infections are in sub-Saharan Africa.[1] Mother–to–child transmission (MTCT) is the most common means of acquiring pediatric

HIV infection since more than 90% of new HIV infection among children is through mother-to-child transmission.[1] Without any intervention measures to prevent the transmission, the risk of MTCT ranges from 20% to 40%.[2] However, mother-to-child transmission can be reduced to less than 2% in non–breastfeeding populations.[2] In breastfeeding populations, the transmission can be reduced to less than 5% with effective interventions during the periods of pregnancy, labor, delivery and breastfeeding.[2]

Prevention of mother-to-child transmission (PMTCT) is one of the fundamental approaches to controlling the HIV epidemic.[1] To control the risk of MTCT of HIV, World Health Organization has launched a program for the virtual elimination of pediatric HIV. Four-pronged approaches are incorporated as components of the virtual elimination of pediatrics' HIV. The approaches include primary prevention of HIV infection among women of childbearing age; preventing unintended pregnancies among women living with HIV; preventing HIV transmission from a woman living with HIV to her infant, and providing appropriate treatment, care and support to mothers living with HIV, their children and families.[2] To prevent mother-to-child transmission of HIV, one of the major problems is poor awareness and knowledge of the people about MTCT and PMTCT. Mother's knowledge of PMTCT particularly plays a significant role in realizing preventive measures and utilizing the service.[3] Mother's knowledge of prevention of mother-to-child transmission of HIV is essential to use available prevention options.[4] Women who have adequate knowledge on HIV prevention to protect themselves, their husbands, and their children from HIV infection and are more likely to undergo HIV testing than women who do not have adequate knowledge of HIV.[5]

Regardless of widespread extension of PMTCT services, women's knowledge on PMTCT is not satisfactory.[6, 7] Investigating the proportion and predictors for mother's knowledge on the prevention of mother-to-child transmission of HIV in resource-limited settings has many benefits. On the other hand, women, who do not realize mother-to-child transmission of HIV and its prevention, have limited uptake of PMTCT services.[8]. It is a critical requirement to enhance the mother's knowledge of PMTCT. The investigation will also help to escalate utilizations of PMTCT services, and it will ultimately be used to prevent and control the transmission of HIV.

METHODS

Study Design and Setting

A study using a cross-sectional design and mixed methodologies was carried out at three hospitals in the Abuja metropolitan area between the months of January and March of 2024. To provide further insights, the design used both quantitative surveys and conversations with focus groups.

Sample Size and Sampling

240 HIV-positive pregnant women were recruited using Kish's mathematical formula. This was followed by a systematic random sampling of individuals, which was then followed by stratified sampling of selected facilities. The focus group talks included the participation of an additional thirty women.

Data Collection

Quantitative data were obtained through the administration of structured questionnaires designed to capture comprehensive information across three key domains: socio-demographic characteristics, knowledge of the prevention of mother-to-child transmission (PMTCT) of HIV, and perceived barriers to the utilization of PMTCT services.

In addition to the quantitative approach, qualitative data were gathered through three focus group discussions (FGDs), each comprising 8 to 10 participants. These discussions provided an in-depth exploration of participants' personal experiences, perceptions, and the various barriers they encountered in accessing PMTCT services.

Data Analysis

Quantitative data were analyzed using SPSS version 24. WHO scoring system assessed knowledge levels. Chi-square tests examined relationships between variables. Qualitative data underwent thematic analysis.

RESULTS

Socio - demographic characteristics.

Table 1 Respondents According to Their Sociodemographic Characteristics n = 240

Sociodemographic Characteristics	Frequency	Percent
Age		
Not willing to reveal age	2	0.8
18- 28 years	19	7.9
29-38 years	93	38.8
39- 48 years	124	51.7
49 and above	2	0.8
Marital Status		
Married	173	72.1
Single	39	16.2
Divorced/Separated	15	6.3
Widowed	13	5.4
Educational Qualification		

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Primary	26	10.8
Secondary	62	25.8
Tertiary	152	63.4
Ethnicity		
Yoruba	41	17.0
Ibo	67	27.9
Hausa	51	21.3
Other tribes (Idoma, Tiv…)	81	33.8
Number of previous Pregnancies		
Primigravida	58	24.2
1-2 pregnancies	83	34.6
3-5 pregnancies	82	34.2
More than 5 pregnancies	17	7.0

Mean Age±SD = 36.8±0.683; Mean of Parity±SD =1.320 ±0.593

Table 1 describes the distribution of the respondents according to their socio-demographic characteristics. Majority of the women were within the ages of 16 to 45 years with a mean age of 36.8. This showed that the women were within the ages of conception. The Table shows the marital status of the respondents whereby 173 respondents (72.1%) were married. It indicates that the majority of the respondents were married. With regards to the levels of education, all the respondents had one form of education or the other. The distribution shows on the average a population of literate pregnant women. Table 1 equally reflects the ethnicity of the respondents and it shows that the women were from different ethnic groups in the country. Number of previous pregnancies of the respondents shows that all the women have had babies previously with a mean of 1.234 and standard deviation of 0.687

Level of knowledge of knowledge on PMTCT

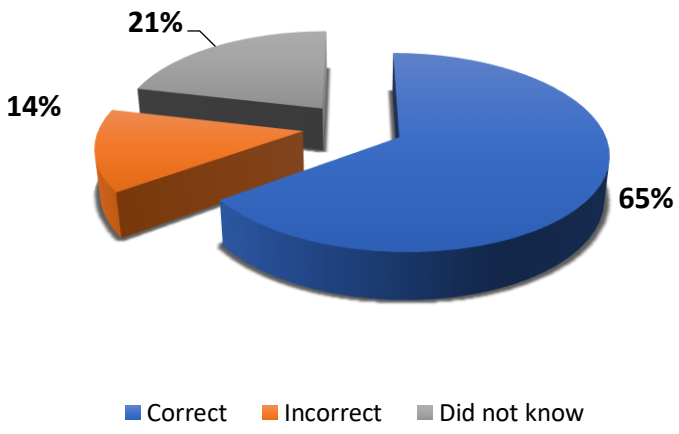

Figure 1: Level of knowledge on PMTCT (n = 240)

Figure 1 shows that 65% of the women had good knowledge on "Mother-to-Child Transmission of HIV". Qualitatively, quite a number of the mothers acknowledged that PMTCT is a way of protecting their unborn babies from contacting HIV. For instance, A 31years old primigravida said:

> *"Prevention of mother to child transmission (PMTCT) of HIV are ways we the women that have HIV and are pregnant are suppose, methods we should we should follow in order to prevent transmitting this virus to our unborn child".*

Similarly, a 35years old multiparous stated that

> *"PMTCT are the ways they can prevent a positive mother from transmitting HIV to the baby when the baby is born, things we can do so that the baby do not get HIV".*

While another 34years old multiparous mother stated that:

> *"…like am pregnant woman I have to prevent my unborn child by all means from having the infection by going for antenatal and taking my drugs as prescribed….."*

The above statements validate the quantitative data which states that the respondents have good knowledge of PMTCT.

Barriers to Utilization of PMTCT Services

Table 2: Barriers to Utilization of PMTCT services among the Respondents (n= 240

Statement	**Agree**		**Disagree**		**No response**	
	n	**%**	n	**%**	n	**%**
Social barriers						
Stigmatization	187	77.9	51	21.3	2	0.8
Permission from spouse	198	82.6	40	16.6	2	0.8
Hospital environment						
Lacking of cleanliness	188	78.3	48	20.0	4	1.7
Uncomfortable waiting area	196	81.7	44	18.3	-	-
Toilet & bathroom are inconvenient	182	75.8	58	24.2	-	-
Financial barriers						
Cost of Transportation	96	40.0	29	12.1	115	47.9
Lacking in finance support	176	73.3	61	25.4	3	1.3
Health care providers						
Communication skills	212	88.3	26	10.9	2	0.8
Shortage of staff	221	92.1	19	7.9	-	-
Attitude of health providers	204	85	34	14.2	2	0.8

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With regards to the barriers to utilization of PMTCT, Table 2 shows that 77.9% respondents agreed that social barriers (stigmatization) hinder them from accessing PMTCT, 78.3% of the respondents agreed that hospital environment (lack of cleanliness) is a hindrance to utilization of PMTCT services. From Table 2, it was also seen that 73.3% of the respondents said finance (lack of financial support) is a barrier while 85.0% of the respondents agreed that health care providers' attitudeis a major hindrances to utilization of these services. This shows that these items are the barriers to their non-utilization of PMTCT services.

Majority of the respondents stated the following during FGD on barriers to utilization of PMTCT services:

> *One of the respondent stated"…..there is always long queues with so many patients"*
> *Another respondent said"…. I spend long period of time on antenatal visits is just too much".*
> *A multigravida said"…attitude of health workers is always discouraging …."*
> *Another mother stated that "too many protocols delay the whole process of antenatal visit".*
> *Another mother said"….the environment is not conducive"*
> *Also another mother stated that "… the low no of staff to attend to the large no of patients"*

Majority of the respondents did not inform their spouses about their HIV status and this formed a major barrier to infant feeding. Some of the responses on partner notification include:

> *"nurse is not easy o in fact I have not gathered morale to tell him about it"*
> *" I did not tell him because I don't want to lose my marriage. I suffered before I marry……."*
> "*…before I was negative that I was sure…it was when I want to register for the antenatal …I had to open up to my husband but to my greatest surprise he was like that's not a problem…I became suspicious but then the family member came and confided in me that his brother was positive before marriage.."*
> Some responses from the women on infant feeding:
> *"I will use both breast milk and formula for my baby since my husband is not aware of it"*
> *"since I did not tell my husband so anything that is available I will use".*

Considering the statements of the respondents, the researcher is of the opinion that health care providers should work on their attitude and more health workers employed so that the patients do not have to queue for a long time without being attended to.

DISCUSSION

Discussion This mixed-methods study provides important insights into the complex interplay between PMTCT knowledge and service utilization barriers among HIV-positive mothers in urban Nigeria. The findings reveal that while knowledge levels are generally good, multiple social, institutional, and economic barriers significantly impede service utilization.

The relatively high level of PMTCT knowledge (65%) among participants represents an improvement from previous studies in similar settings. For instance, Mamudu's study in Abuja reported only 51.6% knowledge levels.[9] This improvement likely reflects the successful scaling up of awareness programs by both governmental and non-governmental organizations. However, the qualitative findings revealed important nuances in this knowledge. While participants could articulate PMTCT's basic purpose, many expressed uncertainty about specific aspects of implementation, particularly regarding infant feeding choices in the context of non-disclosure.
The requirement for spousal permission emerged as a critical barrier, with 82.6% of participants reporting this need. This finding aligns with recent work by Adedimeji et al. highlighting the persistent influence of gender power dynamics in healthcare decision-making. [10] The qualitative data provided deeper insight into this challenge, revealing how fear of abandonment often led to non-disclosure of HIV status to partners, creating cascading challenges for PMTCT implementation. One participant's statement that "I'm afraid of being homeless for utilizing PMTCT services so I rather keep everything a secret" powerfully illustrates this dilemma.

Stigmatization remains a significant barrier, with 77.9% of participants expressing such concerns. This persistence of stigma, despite improved knowledge levels, suggests that information alone is insufficient to overcome deeply rooted social barriers. The focus group discussions revealed how stigma particularly affects infant feeding choices, with many women feeling compelled to mix-feed to avoid suspicion from family members unaware of their HIV status. This finding supports Saka et al. assertion that PMTCT interventions must address both individual and community-level factors.[11]

The institutional barriers identified, particularly poor healthcare worker attitudes (88.5%) and uncomfortable facility environments (78.6%), represent potentially modifiable factors that could improve service utilization. The qualitative data provided rich context for these statistics, with participants describing specific challenges like overcrowding, long wait times, and discourteous treatment. These findings align with recent work by Tateke et al. on the importance of service quality in PMTCT uptake[2].

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CONCLUSION

This study demonstrates that while PMTCT knowledge among HIV-positive mothers in Abuja has improved, multiple barriers continue to impede service utilization. The mixed-methods approach revealed how social, institutional, and economic barriers interact to affect women's ability to access and fully utilize PMTCT services. Successful PMTCT programs must therefore address both knowledge gaps and structural barriers while considering the complex social contexts in which women make healthcare decisions.

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