




BMJ Open 'Making the most of our situation': a qualitative study reporting health providers' perspectives on the challenges of implementing the prevention of mother-to-child transmission of HIV services in Lagos, Nigeria

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ABSTRACT

Objectives To investigate the challenges of, and opportunities for, effective delivery of prevention of mother-to-child transmission (PMTCT) services from the perspectives of primary healthcare providers in Lagos, Nigeria.

Design This qualitative study consisted of nine focus groups with 59 health providers, analysed thematically.

Setting Thirty-eight primary health facilities in central and western districts of Lagos, Nigeria.

Participants Participants included nurses, nursing assistants, community health workers, laboratory workers, pharmacists, pharmacy technicians, monitoring and evaluation staff and medical records personnel.

Results Health providers' challenges included frustration with the healthcare system where unmet training needs, lack of basic amenities for effective and safe treatment practices, low wages and inefficient workflow were discussed. Providers discussed patient-level challenges, which included the practice of giving fake contact information for fear of HIV-related stigmatisation, and refusal to accept HIV-positive results and to enrol in care. Providers' suggestions for addressing PMTCT service delivery challenges included the provision of adequate supplies and training of healthcare workers. To mitigate stigmatisation, participants suggested home-based care, working with traditional birth attendants and religious institutions and designating a HIV health educator for each neighbourhood.

Conclusions Findings illustrate the complex nature of PMTCT service delivery and illuminate issues at the patient and health system levels. These results may be used to inform strategies for addressing identified barriers and to improve the provision of PMTCT services, thus ensuring better outcomes for women and families.

INTRODUCTION

Nearly 2 million adult Nigerians live with HIV/AIDS, accounting for a significant

Strengths and limitations of this study

- This study adds to the few studies that report prevention of mother-to-child transmission (PMTCT) service delivery experience in sub-Saharan Africa.
- Findings described challenges and opportunities for intervention at the health system, community and individual levels.
- Participant pool represents multiple cadres of the health workforce from facilities across a large city.
- PMTCT challenges may be location and time specific.
- Findings are based on provider perspectives.

portion of all people living with HIV/AIDS in sub-Saharan Africa (SSA).¹ According to the 2019 results of the Nigeria HIV/AIDS Indicator and Impact Survey, the prevalence of HIV in the country is 1.5% among adults aged 15–64 years,¹ with women of reproductive age at an increased risk.² Although the country has made significant progress in addressing HIV/AIDS, it still records the largest number of HIV infections among children each year globally, with only 18% of infants under 8 weeks tested for HIV.³ Nigeria accounted for over 23% of global paediatric HIV infections in 2016;^{4–7} in 2018, only 35% of HIV-positive children 0–14 years of age were receiving treatment.³ While many countries in SSA have made significant strides in reducing the burden of paediatric HIV infection, major challenges remain. Despite some successes, Nigeria failed to meet the 2015 Global Plan target of eliminating new HIV infections among children by 90%.⁸



While the availability of inexpensive, effective antiretroviral therapy (ART) for the prevention of mother-to-child transmission (PMTCT) has increased globally, delivery of PMTCT services is complex and uptake in Nigeria remains less than optimal. The Nigerian National Agency for the Control of AIDS estimates that only 53 677 out of 177 993 HIV-positive pregnant received ART in 2015.⁹ Low uptake of PMTCT resulted in an estimated 160 000 new HIV infections in children in 2018.¹⁰ Nigeria is 1 of 21 priority countries in SSA that accounts for 90% of pregnant women infected with HIV.¹¹ The 2016 revision of Nigeria's National Guidelines for HIV Prevention, Treatment and Care¹² contains key recommendations for PMTCT implementation, including initiation of ART for all persons testing positive for HIV. Other recommendations cover the retesting of patients prior to initiation of ART, adoption of pre-exposure prophylaxis for individuals at high risk for acquiring the infection and addition of dolutegravir, efavirenz 400 mg and darunavir/ritonavir to the pool of approved antiretroviral drugs.¹² The guidelines emphasise the identification of HIV-infected pregnant women through routine HIV screening as a critical step for initiating PMTCT interventions. Concerned about the high rate of mother-to-child transmission of HIV, the Lagos state government initiated a renewed campaign to accelerate PMTCT service delivery in the state.¹³ With support from the US President's Emergency Plan for AIDS Relief (PEPFAR), the Global Fund for HIV, tuberculosis (TB) and malaria, Nigeria offers free services for PMTCT of HIV.¹³ Yet, prevention of paediatric HIV transmission remains a major public health challenge.

Numerous studies have investigated barriers faced by individuals when accessing HIV/AIDS treatment and prevention services in Nigeria and similar settings in SSA. However, there is a paucity of studies on health system barriers, and in particular, challenges faced by health providers and their lived experiences of PMTCT service delivery.^{14–17} Thus, the purpose of this study was to investigate the challenges of, and opportunities for, effective delivery of PMTCT services from the perspectives of primary healthcare providers in Lagos, Nigeria.

METHODS

Study setting

This study was conducted in Lagos, southwest Nigeria. Based on the UN-Habitat and international development agencies' estimates, Lagos had ~24.6 million inhabitants in 2015.¹⁸ Thus, Lagos is the commercial centre of both Nigeria and the West African subregion. The large population and the fluid movement of people in and out of the state have significant implications for the spread and control of HIV/AIDS. Although the prevalence of HIV (1.2%) is slightly lower than the national average (1.5%), Lagos is one of three states that account for 44% of Nigeria's unmet need for HIV/AIDS intervention.¹³ Lagos has 3 districts (central, western and eastern), 20 Local Government Areas (LGAs), 37 Local Council

Development Areas¹⁹ and over 2000 communities.¹⁸ This study was set in primary care facilities in the central and western districts of Lagos.

Ethics and data collection

This study was embedded within a larger quantitative study, which methodology had previously been published.¹⁷ Using a geopolitical map, we purposively selected central and western districts of the state for the study. These districts were chosen because they covered the largest areas of Lagos, including areas with populations with income levels that are most representative of the state. With approvals from the Lagos State Ministry of Health, the Lagos State AIDS Control Agency and the Lagos State Primary Healthcare Board, Medical Officers of Health in the LGAs within the two study districts were contacted with study information and an invitation to participate. Of the 10 LGAs in the western district, 8 responded and agreed to participate; 2 of the 5 LGAs in the central district responded and volunteered to participate.

To ensure standard protocol was followed, the Primary Healthcare Board introduced the study team to the medical officer in charge of each study district. The medical officer, in turn, introduced the study team to the nursing officer in charge of each primary healthcare centre under their jurisdiction. Each nursing officer introduced the study team to eligible participants at their facility during a face-to-face meeting. At each meeting, the study team provided detailed information about the study and the role of participants. At the end of each meeting, the location, date and time of each focus group discussion (FGD) session were confirmed. Of 75 health workers who indicated initial interest, 59 (49 women and 10 men) participated in the FGDs. The 16 participants that did not participate were absent (on leave or off-duty) during the time of the data collection. Study participants were purposively sampled to include only health workers involved in direct patient care (nurses and nursing assistants, community health workers) or who had access to information on clients' HIV serostatus (laboratory workers, pharmacists, pharmacy technicians, and medical records personnel).

Following standard methods for FGDs,²⁰ a topic guide for the FGD sessions was drafted at the University of Arizona, informed by analysis of results of the larger quantitative study previously reported¹⁷ and a review of related literature.^{21–22} It was later finalised in Lagos following pretesting and discussions with local collaborators. The FGD guide consisted of open-ended questions and statements designed to allow the respondents to structure their perceptions in their own words. Specifically, participants were asked to freely discuss the major challenges they faced in their delivery of PMTCT services in their health facilities and to share their perspectives regarding potential strategies for improving service delivery. The FGD sessions were conducted in large meeting rooms at nine health facilities. All participants

signed an informed consent form prior to data collection. Nine FGD sessions lasting 45–60 min in duration were conducted between April and August 2017. The FGD sessions were conducted in English with some phrases in Yoruba, the local language of the study setting. All participants had post-secondary school education and were proficient in English Language, the medium of instruction in schools in Nigeria. By the ninth FGD, we believed that data saturation had been reached, given that little additional new information could emerge at that point. The semi-structured FGD sessions were facilitated by two authors with advanced training and experience in qualitative data collection and conducting health research in Nigeria (JE and VY). Predetermined questions from the FGD guide were asked, followed by probing questions as deemed necessary by the facilitators to elicit rich data.²³ The authors did not have established relationships with the participants before this study. FGD transcripts were produced verbatim from audio recordings and were de-identified prior to analysis. Transcripts were not returned to participants for comment or correction given that data were anonymised to ensure confidentiality.

Data analysis

Data were independently reviewed by four authors (JE, NA-ZK, VY and BL) and thematically analysed using the framework approach to qualitative data analysis.²⁴ As Gale *et al*²⁵ observe, the framework method is a systematic and flexible approach to analysing qualitative data and is appropriate for use by research teams, even where not all members have previous experience of conducting qualitative research. Our multicultural, team-based approach to data analysis, including the involvement of two coauthors that were present during the FGDs (JE and VY) and two that were not (NA-ZK and BL), was used to enhance the transferability of findings while maintaining cultural integrity and credibility.²⁶ The framework approach to qualitative data analysis has five steps that involve (1) familiarisation, a process during which the team members are immersed in the details of transcripts to gain a sense of each FGD before dividing them into sections and identifying recurrent themes; (2) developing a theoretical framework where we identified recurrent and important themes in the transcripts; (3) indexing during which the team became further immersed in the data to refine identified themes and subthemes; (4) data summarisation during which we reduced material into understandable, summaries of what was said by participants; and finally, (5) data synthesis and interpretation which allowed for the comparison of themes and subthemes against the original transcripts, field notes and audio recordings to ensure appropriate context.²⁴

Transcripts were manually coded and classified without the use of coding software. Team meetings were held to discuss each step during analysis to ensure a collective understanding of the data and methodological approach. Discrepancies in coding and selected quotes were resolved in three rounds of discussions until an agreement was

Table 1 Participant demographic characteristics

Gender	Number
Male	10
Female	49
Professional cadre	
Nurses	22
Counsellors and testers	15
Laboratory scientists	7
Pharmacy technicians	5
Monitoring and evaluation officer	1
Nursing assistants	3
Community health workers	4
Medical records personnel	1

reached. The agreed-upon set of respondent quotes were then arranged into larger categories and themes from which a final narrative was developed.²⁴ We did not seek participant feedback on the codes and final themes and subthemes identified.

Patient and public involvement

The study instrument was piloted locally using a purposive sample of 10 PMTCT workers in two primary health-care centres in Lagos. Participants in the pilot study were not included in the main study. Their feedback was used to modify and adapt the instrument as appropriate.

RESULTS

Participants were mostly women (83.1%), and worked as nurses (37.3%) and counsellors/and testers (25.4%). Participants' demographic characteristics are presented in [table 1](#).

FGD results indicate the challenges experienced by health providers in delivering PMTCT services fell into two broad themes: (1) frustration with the healthcare system and (2) issues that arose during provider encounters with patients.

Frustration with the health system

Lack of resources and referral challenges

Providers discussed the shortage of material resources as a major challenge and gave detailed accounts of situations that represent suboptimal working conditions. The discussed issues included the lack of electricity in newborn delivery rooms. A nurse narrated, 'We lack amenities such as gloves, face masks and delivery apparatus. We sometimes use candles or battery-operated lamps for deliveries at night'. Participants agreed that the lack of electricity was a challenge for the effective delivery of safe PMTCT services. A pharmacy technician said, 'We have a power generator, but we do not have funds to buy gasoline to power the generator. We also do not have a regular supply of electricity for the refrigerator where we keep

our drugs'. Providers reported contributing funds out of pocket to purchase battery operated lamps and gasoline.

According to participants, referrals were made when there was a shortage of medical supplies in the facility or when follow-up procedures were necessary. They discussed the necessity of referrals and the lack of alternative options. A pharmacy technician said, 'We are making the most of our situation...we have centers where there are no drugs, so, we have to refer [patients] to the Nigerian Institute of Medical Research'. A nurse added, 'The General Outpatient Department is where counseling is done at some centers, but they don't have kits to do the test, so they refer and are not sure if the clients report to the designated center. Most of our clients will fail to go to where we refer them'.

Salary and compensation

Participants also discussed feeling demoralised due to low wages or months of delay in wages, lack of professional development opportunities and limited upward mobility. They stated significant salary reductions as a challenge after the transition of HIV programming from PEPFAR to LGAs. A nurse stated, 'PEPFAR used to pay nurses ~US\$310 per month, but when the LGA took over, some nurses were not assimilated as LGA personnel, but were contractors with the salary reduced to ~US\$194, then further reduced to ~US\$65'. Participants were unhappy about the inability to negotiate salaries and delays in payments. Additionally, lower-ranking health providers spoke about the difficulty of getting promoted and the lack of professional development opportunities. A community health worker (CHW) said, 'Our bosses were sent for training which enabled them to enhance their careers, but we were left out'.

Challenges related to provider encounter with patients

Loss to follow-up

Issues that arose during provider encounters with patients included the inability to reach patients for follow-up due to incorrect contact information, described as 'lost on track'. In discussing this challenge, a nurse commented: 'We lost a patient to follow-up because she gave our health center a fake phone number and address during her registration...'. As narrated by health providers, the main reason patients provide false contact information is the fear of AIDS-related stigmatisation.

Stigmatisation, disclosure and effects on health seeking behaviours

Health providers discussed the fear of stigmatisation and its effects on patients' ability to initiate PMTCT services, adhere to treatment and remain in care. They provided examples of stigmatising behaviours by partners, extended family and community members. Pregnant women may be especially vulnerable to stigmatisation and discrimination when compared with people living with HIV at other points in the life cycle. A nurse who shared a patient's story noted, 'there was this young lady who came in to register

for her antenatal care... She explained that the man that got her pregnant later got to know her HIV status and arranged for a gang to beat her up'. Providers also shared examples of patient stigmatisation by extended family members. This was illustrated in the following narrative by a counsellor/tester:

There was this woman, who said her sister-in-law came to their house and saw condoms...since then, issues started in the lady's home, the man no longer showed her love and care. She is still in the marriage, but no peace for her.

Participants agreed that stigmatisation and its resulting consequences are the main reasons for the lack of patient disclosure. A counsellor/tester said, 'Some of the clients know their status before coming to this facility. The issue of stigma affects how clients seek HIV treatment'. Another provider added, 'They prefer to keep the results to themselves until the person [partner] is infected so it becomes a question of 'who gave who [HIV]'. To encourage disclosure and empower patients, providers reported discussing the importance of counselling, medication adherence and emphasis that one can live with HIV. A pharmacist said, 'I tell my clients that so far as there is treatment, they should relax and adhere to instruction on their drugs. I used to tell them 'It can be me and it can be you'.

Difficulty in getting patients to accept HIV-positive test result

Another challenge discussed by health providers was patient HIV misinformation and difficulty in getting patients to accept an HIV-positive test result. The most salient example of misinformation is that of women believing that if they had one partner, they are protected from contracting HIV. A CHW spoke about a woman who refused to accept her HIV-positive test result. According to the CHW, 'She believed there was no way she could have been infected with HIV given that she had been monogamous in her sexual relationship with her husband'. Health providers reported that for married women especially, the news of having an HIV-positive test result was unthinkable. Thus, common responses to an HIV-positive test result included such Yoruba phrases as 'Olorun maje! (God forbid!)' or 'Koni wa sinu ile mi! (It will not come to my home!)'. Other phrases include 'Aye mi baje! (My life has ended!)' or 'Nibo nimo magba?! (Where do I go from here?!)'.

Providers also spoke about misinformation and discordant health beliefs related to the origin and treatment of HIV. They shared stories of patients who invited spiritual leaders to the health facility for guidance and support during visits. A counsellor/tester said, 'Most clients believe in traditional ways to solve their health issues rather than coming to the hospital. They believe in nature, they have faith in the way their forefathers solved issues...'. Providers also expressed frustration with patients who prefer traditional birth attendants (TBAs) or spiritual healers as opposed to, or in combination with

Table 2 Summary of health provider reported challenges and strategies to address barriers to the delivery of PMTCT services

Theme	Challenges to PMTCT delivery	Strategies for addressing barriers
Health systems challenges	Lack of resources—medication shortage, supply shortage, lack of resources including gloves, delivery apparatus, gloves and electricity. Workforce challenge—delay in wages, lack of professional development opportunities and limited upward mobility.	Ensure the availability of necessary equipment, tools and medication. Increase in wages, expansion of professional development and training opportunities to all staff.
Patient-related challenges	'Loss to follow-up'—Inability to reach patients/incorrect contact information. Stigmatisation experienced from extended family members and related violence, abandonment and neglect. HIV misinformation and discordant health beliefs about the origin and treatment of HIV.	Improving medical records notation of those living with HIV. Continued community education, efforts to promote couples counselling/testing and home-based care and designation of HIV health educators from each neighbourhood. Implementation of a peer-to-peer model, paring health facility staff with spiritual leaders and traditional birth attendants.

PMTCT, prevention of mother-to-child transmission.

primary health facility services. This issue was described in the following story told by a nurse. She noted:

We had a lady who was due to deliver, we tried our best [to keep her in the facility], but our efforts were fruitless. Her husband took her to a TBA. Later, she came for her baby's immunization. Some [patients] go to the two places, the health facility, and TBA, and this presents a challenge for the health facility.

Health providers perspectives on strategies for improving PMTCT services

Participant suggestions for improving the delivery of PMTCT services included strategies to mitigate challenges within health facilities and in the community. **Table 2** summarises the two major themes in the coding tree (systems and patient-related challenges) along with codes related to provider-suggested solutions for addressing those barriers to PMTCT service delivery. Within facilities, health providers suggested first ensuring the availability of necessary equipment, tools and medication. They also discussed reducing referrals by making the primary healthcare facility a one-stop facility for antenatal care, HIV counselling/testing and treatment. Participants also suggested improvements to the health workforce by increasing the number of staff in primary healthcare facilities and the expansion of professional development and training opportunities to all staff. In addition to the number of staff trained, there was concern about equity with some health workers perceiving that higher-ranking professionals were gate-keeping training opportunities. A CHW said, 'We all handle cases, we should all be trained'. At the community level, participants discussed the importance of continued efforts to promote couples counselling/testing, efforts to provide home-based care to reduce stigmatisation and discrimination at the community level. Moreover, participants discussed new strategies such as designating an HIV health educator from each neighbourhood. A CHW said, 'this is because people tend to listen to who they know [rather] than a stranger'. Some providers also suggested collaboration with religious institutions and TBAs by using a peer-to-peer model, which

entails paring a health provider with a TBA and/or spiritual healer to provide tandem services to women.

DISCUSSION

We sought to understand the experiences of healthcare providers delivering PMTCT services in Lagos, Nigeria. Findings from this study demonstrate the convoluted factors impacting PMTCT service delivery, highlighting challenges at the health system and patient levels that support evidence from earlier studies.^{16 27 28} Key health system challenges included lack of basic operational resources, medication shortage, clinical supplies (eg, gloves and items for sanitation), delivery apparatus, electricity supply, delay in payment of salaries, lack of professional development opportunities and limited upward mobility. Patient level barriers included fear of stigma/discrimination and associated physical and emotional violence that hinder uptake of services and retention in care, and HIV misinformation.

Study participants expressed frustration regarding the lack of basic equipment to implement safe and effective PMTCT service delivery. Provision of basic resources to implement antiretroviral treatment is essential for several reasons. Health workers may feel more empowered, less burdened and less resentful towards people living with HIV/AIDS when they have the means to provide treatment for them. Earlier studies have shown that lack of available resources and treatment for patients with HIV in healthcare settings was associated with an increased sense of despair among health workers, resentment towards patients with HIV and feelings of vulnerability to infection.^{29–31} Frustrated health workers in Nigeria stage strikes at national and local levels several times a year, resulting in the discontinuation of service delivery, including PMTCT services.^{22 32 33} Participant-suggested solutions for workforce and other system challenges echoed those presented in the literature, primarily suggesting the provision of adequate stocks of equipment (power generators and fuel), necessary supplies (gloves, HIV testing kits) and medication.^{14 17 27} Ensuring adequately supplied health facilities is likely to improve efficiency and reduce the

level of stress experienced by health providers resulting in a more productive workforce.

Reduction of health workers' salaries as responsibility for wages shifted from PEPFAR to LGAs was identified as an important health system challenge for PMTCT implementation. PEPFAR was paid nurses ~US\$310/month. However, when the LGA took over, they failed to assimilate some nurses as LGA personnel in order to save cost. Instead, they were retained as contractors, with their salary initially reduced to ~US\$194/month, and later to ~US\$65/month. While foreign non-governmental organisations (NGOs) have played and continue to play a major role in population health improvement efforts in low-income and middle-income countries, they are often in competition with the health sector for local qualified staff.³⁴⁻³⁶ This competition often leads to internal brain drain where health workers from the public sector migrate to other entities (eg, foreign NGOs, the private sector and multilateral and bilateral donor agencies) within the same country.³⁷ Internal brain drain and health worker wage distortion by foreign NGOs remain a topic of debate in global health.³⁸ NGOs may be obligated to abide by their internal wage policy on salary equity,³⁷ however, to plan for the unintended consequences of wage distortion as programmes transition to government ownership, donor-funded programmes should include strategies for addressing wage distortions as part of their sustainability plan. Potential strategies may include but are not limited to: (1) supporting efforts to raise government salaries by a factor to arrive at a less distortionary gap, and (2) contributing financial resources proportionate to the size of the wage gap towards a stabilisation fund, earmarked to support future wages and address current gaps.³⁹

In addition to health system challenges, participants reported barriers related to patient interaction, notably provision of false contact information resulting in inability to communicate with patients, and loss to follow-up. In Nigeria, a study investigating loss to follow-up in the PMTCT care cascade indicated that a large proportion of women are lost to follow-up before delivery.⁴⁰ Other studies investigating predictors of, and factors associated with, loss to follow-up in PMTCT in Nigeria and SSA found correlations between age (young), lack of income, low education and being unmarried and losses to follow-up.^{41 42} Other factors for loss to follow-up include lack of support from spouse and family members, distance to the health facility, poverty and community level stigma.⁴³ One practice that may be important for reducing loss to follow-up before delivery, as we saw in this study, is to carefully verify contact information of patients and their next of kin. Development of birth plans with women during antenatal care visits and maintenance of good communication throughout the entire period of pregnancy may help to build rapport and facilitate retention.

Another patient-related challenge raised by participants were patients' beliefs about transmission of HIV, and the use of TBAs. Although participants in this study were not

in support of TBAs, in Nigeria, most deliveries (60%) are assisted by TBAs.^{44 45} TBAs are often preferred because they understand birthing rituals and provide culturally relevant advice about newborn care.^{44 45} For women living with HIV, TBAs not only offer culturally tailored birthing experiences but also cost less compared with health facilities.⁴⁵ Social support from a TBA may also be important for combatting stigmatisation. The fact remains that in Nigeria and several other low-income and middle-income countries, TBAs have delivered babies as part of a cultural practice that predate modern medicine. While health facility delivery is often preferred because of the reduced risks for adverse maternal outcomes, we must recognise that there are women and families who would prefer to have their babies with a TBA. Thus, providing adequate training, for example, in danger signs of obstetrical risks, steps for effective referral, hygiene and aseptic procedures and so on can help to reduce adverse maternal outcomes for women who chose to have their babies with their TBAs. In a study in the Copperbelt Province of Zambia published in the *British Medical Journal*, Gill *et al*⁴⁶ showed that training TBAs to manage common perinatal conditions significantly reduced neonatal mortality. Another study in Pakistan published in the *New England Journal of Medicine*, concluded that training TBAs and integrating them into an improved healthcare system were achievable and effective in reducing perinatal mortality.⁴⁷ In addition to training, promoting appropriate liaison with, and supervision by, health workers may help to strengthen the relation between TBAs and the public health sector, and thus facilitate communication and referral. Given that referral of at-risk women to the public health sector may mean a loss of revenue for TBAs, providing financial or other incentives to encourage such referrals may be beneficial.⁴⁸

This study supports existing literature regarding the relationship between fear of AIDS-related stigmatisation, physical/emotional violence and women's ability to initiate PMTCT services and to remain in care.⁴⁹⁻⁵¹ Stigmatisation was viewed as disruptive to PMTCT service delivery.^{52 53} As reported in this study and others, stigmatisation has a profound effect on patients' HIV status disclosure, health-seeking behaviours and medication adherence among other effects.^{16 27 42 45 52-56} In extreme cases as reported by our participants, persons living with HIV/AIDS experience violence as a direct effect of stigmatisation. Participants narrated how fear of stigmatisation and the associated violence impacts on patients' ability to initiate PMTCT services, adhere to treatment and remain in care. They narrated incidences where HIV-positive pregnant women were beaten after their partner learnt of their HIV-positive status. They described stigmatisation and discrimination as challenges that existed in the community and interpersonal interactions of women with their partners, extended family and other community members but did not describe any effects of discrimination that may occur within the health facility. A recent study suggests that training of health providers can

reduce fear of infection and therefore make them less likely to engage in discriminatory healthcare practices such as double gloving.¹⁷ As suggested by participants, community education, and the involvement of male partners especially in couples counselling may be effective. It is important to recognise that influences on AIDS-related stigmatisation and discrimination are rooted in the structure of communities and societies. Thus, effective interventions should be based on sound theoretical foundation and include attention to individual as well social and structural barriers.⁵⁷ Implementation of culturally adapted, faith-based programmes has been demonstrated to reduce stigma, increase HIV counselling, testing and enrolment in care among pregnant women and their male partners in Nigeria.^{58–60}

Strengths and limitations

This study has several strengths. First, it is one of a few that focused on the experiences of health providers as it relates to the provision of PMTCT services, thus enhancing our understanding of provider experiences. Second, findings not only describe challenges, but also, identify opportunities for intervention at the health system, community and individual levels. Third, the findings support the quantitative findings reported by Ehiri *et al* regarding provider support of persons living with HIV/AIDS (PLWHA) and low levels of stigmatising behaviours among providers.¹⁷ Lastly, this study had a large and diverse participant pool with representation from multiple cadres of the health workforce from facilities across Lagos. Study limitations include limited transferability of findings as PMTCT challenges may be location and time specific. It is also worthy to note that the findings in this study are from the perspective of health providers. Thus, patient perceptions regarding challenges related to PMTCT service delivery may be different. The limited gender diversity of our study population is representative of the proportion of males/females working in this area, and reflects the preponderance of nurses in our sample.

CONCLUSIONS

Findings from this study shed light on PMTCT service delivery challenges including those at the health system and direct patient care levels. Providers not only discussed these issues but also offered tangible context-specific solutions that can be implemented to remedy problems. For Nigeria to make progress in PMTCT, interventions to improve service delivery must consider factors at odds in the community and health system levels. Understanding the compounded effect of these phenomena on PMTCT service delivery and utilisation allows for better strategic planning and the development of sustainable interventions.

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Contributors JE conceptualised and designed the study. JE, VY and MB collected data. JE, VY, NA-ZK and BL conducted or contributed to data analysis. NA-ZK, JE and VY interpreted the data. NA-ZK prepared the original manuscript. JE, KNBP, BL and MB contributed to subsequent revisions. JE is guarantor of the study/data. All authors reviewed and approved the final manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. All data relevant to the study are included in the article. Data for this study were collected through focus group discussions with health workers who provided the prevention of mother-to-child transmission services at primary health centers in the western and eastern districts of Lagos. All relevant summary data are provided in this paper. Interested readers may request data without restriction from the lead author, and Fulbright US Scholar to the University of Lagos (2016–2017), JE (jehiri@email.arizona.edu).

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