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Community PMTCT Challenges: Operational Issues in Testing Pregnant Women Without ANC Through CBOs Versus the ANC and Testing Model in Congregation Settings

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ABSTRACT

This paper examines operational challenges in implementing two community-based Prevention of Mother-to-Child Transmission (PMTCT) of HIV approaches in Northern Nigeria: testing pregnant women without antenatal care (ANC) through community-based organizations (CBOs) and the ANC and Testing Model in congregation settings (Tabbatacciyar Kulawar Iyali). Based on implementation experiences from the Accelerating Control of HIV Epidemic in Nigeria - Cluster 2 (ACE 2) project, we analyze operational issues including access, training, data management, and comparative effectiveness. The congregation-based approach demonstrated higher yield in identifying HIV-positive pregnant women despite challenges (Gobir et al., 2025). We provide recommendations for strengthening both approaches to reach pregnant women who do not access conventional healthcare services.

Keywords: Community, PMTCT, challenges, testing Model, congregation settings.

INTRODUCTION

Background on PMTCT

Prevention of Mother-to-Child Transmission (PMTCT) of HIV is a critical public health intervention globally, especially in resource-limited settings. Globally, substantial progress has

been made in PMTCT efforts, with approximately 4 million children born to HIV-infected mothers being prevented from maternal transmission of HIV between 2000 and 2023 (UNICEF, 2024). Despite this progress, about 120,000 children under five were newly infected with HIV in 2023 globally, representing a 62% decline from 300,000 in 2010 (UNICEF, 2024). Without appropriate interventions, mother-to-child transmission rates range from 15% to 45%, but can be reduced to below 5% with effective interventions during pregnancy, labor, delivery, and breastfeeding (WHO, 2020).

In Sub-Saharan Africa, which accounts for more than two-thirds of the world's HIV infections, PMTCT remains a significant challenge despite scaled-up programs (Abiodun et al., 2022). The HIV pandemic is most severe in Southern Africa, where adult HIV prevalence exceeds 20% in countries like Eswatini, Botswana, Lesotho, and Zimbabwe (UNAIDS, 2024). However, in terms of absolute numbers, South Africa, Tanzania, Mozambique, and Nigeria have the highest numbers of HIV cases in Africa. Mother-to-child transmission rates have been reduced below 5% in several African countries, including Ethiopia, South Africa, and Tanzania, moving toward the criteria for elimination (UNAIDS, 2023).

Nigeria still bears a disproportionate burden of pediatric HIV infections, accounting for about 18% of the 120,000 new infections among children as of recent data (UNAIDS, 2023). Nigeria has the highest number of annual HIV infections among children in the world. An NIH analysis found that “14% of all new infections among children in 2020 occurred in Nigeria.”(Ikpeazu et al., 2023). MTCT is the second major source of new HIV infections in Nigeria, responsible for 22% of all new infections according to current estimates (National Agency for the Control of AIDS, 2021). In some areas, vertical transmission rates remain extremely high in Nigeria, exceeding 20% (UNAIDS, 2024).

Elimination of MTCT is achievable through comprehensive approaches, including HIV testing of pregnant women, provision of antiretroviral therapy (ART) to those who test positive, and postpartum follow-up. PMTCT is crucial; when done well, PMTCT interventions can reduce the risk of HIV transmission from mother to child from 30-45% without intervention to less than 2% with intervention. Despite the availability of effective PMTCT interventions, implementation challenges persist, especially in reaching pregnant women who do not attend conventional antenatal care (ANC) services. According to the most recent Demographic and Health Survey in Nigeria, approximately 33% of pregnant women do not receive antenatal care or receive it from unskilled providers (National Population Commission & ICF, 2019), highlighting a significant gap in standard PMTCT coverage.

Context of the ACE 2 Project

The Accelerating Control of HIV Epidemic in Nigeria – Cluster 2 (ACE 2) project addresses these challenges through innovative approaches in three northern Nigerian states: Kano, Jigawa, and Bauchi. Implemented by a consortium including Georgetown Global Health Nigeria, Pathfinder International, and others, the project seeks to decentralize PMTCT services to communities where pregnant women who don’t access health facilities can be reached. A major innovation is the adaptation of the Healthy Beginning Initiative (HBI) from Christian congregations to Muslim-majority communities, called Tabbatacciyar Kulawar Iyali ("Family-centered care" in Hausa) as reported by Gobir et al., (2025). This program uses community structures and

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religious platforms to reach pregnant women with PMTCT services, alongside CBO efforts to identify and test pregnant women without access to conventional antenatal care.

Purpose and Scope

This paper examines the operational challenges, opportunities, and comparative effectiveness of two models for community-based PMTCT implementation: (1) testing pregnant women without ANC through CBOs and (2) the ANC and Testing Model in congregation settings through the Tabbatacciyar Kulawar Iyali Initiative. Using implementation experiences from the ACE 2 project, we identify strategies for overcoming implementation challenges in similar contexts.

COMMUNITY PMTCT CHALLENGES

Overview of Challenges

Community-based PMTCT programs face multi-faceted challenges. Structural barriers include limited infrastructure, inconsistent commodity supply, and distance between communities and referral facilities. The ACE 2 project experienced stock-outs of HIV test kits, demonstrating vulnerability to supply chain disruptions (Gobir et al., 2025).

Sociocultural factors significantly influence implementation. In northern Nigeria, religious and cultural norms affect healthcare-seeking behavior, with women needing male permission for health services and preferring gender-segregated care. HIV stigma remains a persistent barrier. Economic challenges include program funding constraints and individual financial limitations, such as transportation costs to facilities. Testing pregnant women who do not access antenatal care through community-based organizations presents unique operational challenges. From the ACE 2 experience, several key issues emerged in this approach.

Identifying and reaching out to pregnant women who do not attend ANC requires creative strategies. The ACE 2 project used Voluntary Community Mobilizers (VCMs) and traditional birth attendants (TBAs) to do house-to-house sensitization and mobilization (Gobir et al., 2025). However, this is labor-intensive and may miss women in early pregnancy or those hiding their pregnancy status due to cultural norms.

Quality assurance in testing is another big challenge. Unlike facility-based settings with established quality control measures, ensuring testing quality in community settings requires additional oversight mechanisms. The ACE 2 project addressed this through training and supportive supervision, but still noted challenges in maintaining testing standards across different community settings (Gobir et al., 2025). Moreover, linkage to care for HIV positive pregnant women identified through CBO-led testing is a big challenge. The ACE 2 project used case managers to facilitate referrals and track women through the care continuum (Gobir et al., 2025). However, there are still gaps in ensuring women complete the referral process and start ART promptly. Data from the ACE 2 project shows that while CBOs can identify HIV positive pregnant women, ensuring they get proper care requires robust follow-up systems (Gobir et al., 2025).

Challenges in CBO-led PMTCT

The CBO-led approach offers benefits such as reaching women outside formal healthcare systems and leveraging existing community relationships. However, several challenges emerged in the ACE 2 project.

Identifying and reaching pregnant women who don't attend ANC requires labor-intensive strategies like house-to-house sensitization by community mobilizers and traditional birth attendants. Quality assurance in testing presents challenges without established facility-based control measures. Linkage to care for HIV-positive women identified through community testing remains difficult despite the use of case managers to facilitate referrals.

Data management proved challenging, with difficulty collating and reporting service delivery data despite including data entry clerks in testing teams (Gobir et al., 2025). Human resource limitations are substantial, as community workers have limited clinical training. The ACE 2 project invested significantly in capacity building, training 248 health workers, 186 PMTCT focal persons, and numerous community volunteers (Gobir et al., 2025).

Challenges in Congregation-based Testing

The congregation-based Tabbatacciyar Kulawar Iyali Initiative offers advantages, including religious and cultural acceptability and efficient group-based service delivery. However, it faces challenges in mobilization and attendance despite using religious leaders to announce testing events. Logistical coordination requires substantial planning and resources, including multi-disciplinary teams and appropriate venue setup for privacy.

The diversity of health needs among attendees presents challenges, as these events provide limited services beyond HIV testing and basic health education. Follow-up and continuity of care beyond one-time testing events require additional systems. Community acceptance and engagement vary across settings, requiring ongoing relationship-building with community leaders.

OPERATIONAL ISSUES IN CBO-LED PMTCT

Access and Outreach

CBOs face significant geographic barriers in northern Nigeria, where many remote communities have limited transportation infrastructure. The ACE 2 project used Expert Roving Teams for mobile HIV testing to reach underserved areas, requiring substantial logistical planning and resources (Gobir et al., 2025).

Identifying women outside facility-based care requires community mapping and engagement with local health workers who have existing relationships in communities. Socio-cultural barriers necessitate specific approaches, including engaging religious leaders to give social permission for women's participation and ensuring female staff availability for testing and counseling.

The timing and scheduling of outreach activities significantly affect attendance. The ACE 2 project found that scheduling activities when women were available improved participation, though this often required evening or weekend work. Creating demand for PMTCT services required additional community education and sensitization activities beyond service delivery.

Training and Capacity Building

Community workers require comprehensive training on HIV testing procedures, counseling techniques, and PMTCT protocols. The ACE 2 project addressed this through training on topics

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including HIV prevalence, PMTCT, counseling services, referrals, and documentation (Gobir et al., 2025).

Maintaining quality requires ongoing mentorship and supportive supervision. Documentation and reporting skills present challenges given varying literacy levels among community workers. Interpersonal communication and cultural competence training are essential for effective service delivery in diverse communities. Referral and linkage capacities are crucial for connecting HIV-positive women to comprehensive care.

Data Management

The ACE 2 project faced significant data challenges despite using standardized national tools (Gobir et al., 2025). These tools, designed for facility-based services, required adaptation for community settings. Data quality and completeness varied across sites due to limited literacy, understanding of data elements, and time constraints during outreach activities.

Timely reporting proved difficult, particularly in remote areas. The project addressed this by including data entry clerks in testing teams and establishing systems for manual data collection and validation (Gobir et al., 2025). Data integration between community and facility systems presented challenges in tracking women across different care settings. Building analytical capacity to use data for program improvement required ongoing investment.

COMPARISON BETWEEN MODELS

Overview of the Congregation-based Model

The Tabbatacciyar Kulawar Iyali Initiative adapts the successful Healthy Beginning Initiative to reach pregnant women through community and religious structures (Gobir et al., 2025). Implementation follows a structured process: community leaders identify venues, religious leaders announce events, and volunteers conduct house-to-house mobilization. At events, women receive group health education, basic health assessments, and HIV testing with counseling. HIV-positive women are linked to facility-based care.

The model's unique features include cultural integration, community leadership involvement, and provision of multiple health services beyond HIV testing. The ACE 2 project implemented this model in 30 Muslim congregation sites and six church settings, showing high yield in identifying HIV-positive pregnant women (Gobir et al., 2025).

Comparative Advantages and Disadvantages

The congregation-based model showed higher yield in identifying HIV-positive pregnant women, accounting for 57% of all positive cases through community testing, compared to 29% through nursing homes (CAT1) and 14% through TBA centers (CAT2) (Gobir et al., 2025). This approach offers social legitimacy, reduces stigma, allows efficient resource use through group events, facilitates peer support, and integrates multiple health services. However, it presents challenges including logistical complexity, privacy concerns in group settings, dependence on community leadership, scheduling limitations, and follow-up challenges after one-time events.

The CBO-led approach offers more flexibility to reach remote populations, enables personalized interactions and household engagement, provides continuity through ongoing community presence, and allows integration with other community services. Its disadvantages include

lower yield in identifying HIV-positive women, resource-intensive individual outreach, quality assurance challenges, limited-service integration, and sustainability concerns.

Lessons Learned

The ACE 2 project's experience implementing CBO-led PMTCT and the congregation-based Tabbatacciyar Kulawar Iyali Initiative has valuable lessons for future programming (Gobir et al., 2025).

First, community engagement is key to success in both models. The project found that engagement of community and religious leaders improved reception and participation in PMTCT activities (Gobir et al., 2025). Building these relationships takes time, cultural sensitivity, and respect for local structures and norms (Marcos et al., 2012).

Second, adaptation to local context matters. The successful adaptation of the HBI approach from Christian to Muslim settings shows that contextualizing interventions while keeping the core elements is important (Gobir et al., 2025).

Third, integrating PMTCT with broader maternal and child health services increases acceptability. Both models found that embedding HIV testing within a package of maternal health services reduced stigma and increased participation. This aligns with pregnant women's multiple health needs and creates entry points for comprehensive care.

Fourth, testing yield varies significantly across models and settings. The congregation-based approach had a higher yield in identifying HIV-positive pregnant women compared to other community-based approaches (Gobir et al., 2025). This suggests that targeting and implementation strategies should be informed by local HIV epidemiology and community characteristics.

Fifth, supply chain management is key to consistent service delivery. Both models experienced stockouts of test kits and other essential commodities (Gobir et al., 2025). Developing robust supply chain systems that reach community settings is crucial for sustained service delivery.
Sixth, data systems need to be adapted for community-based programs. Both models had challenges with data collection, management, and reporting (Gobir et al., 2025). Simplifying tools and processes for community settings while maintaining national reporting requirements is an ongoing challenge.

Finally, linkage to care requires dedicated systems and resources. Both models highlighted the importance of active follow-up mechanisms to get HIV-positive pregnant women into comprehensive care (Gobir et al., 2025). Case management approaches that bridge community and facility settings show promise in addressing this challenge.

Discussion

The ACE 2 project demonstrates that community-based PMTCT models can extend the reach of HIV testing to pregnant women who would otherwise be missed by traditional facility-based services (Gobir et al., 2025). Two distinct models—CBO-led outreach and the congregation-based Tabbatacciyar Kulawar Iyali Initiative—were implemented with differing levels of effectiveness and operational demands.

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One of the most significant findings was the higher yield of HIV-positive cases in the congregation-based model, despite reaching fewer women than the CBO-led approach. This suggests that congregation-based events, by drawing large groups and embedding testing within culturally endorsed gatherings, can be more strategically targeted and efficient in high-prevalence areas. The social legitimacy provided by religious leaders and the convenience of offering services in a communal, trusted environment likely reduced stigma and encouraged uptake (Ezeanolue et al., 2015; Gobir et al., 2024). Moreover, the integration of broader maternal services, such as blood pressure and glucose checks, enhanced the model's appeal by addressing women's holistic health needs.

However, the congregation model's logistical complexity cannot be overlooked. It requires substantial coordination, trained personnel, transport of materials, and space to ensure privacy. These demands may limit scalability, especially in areas with weak infrastructure or where religious leaders' buy-in is challenging to secure. Additionally, the episodic nature of congregation-based services may hinder follow-up, as one-off events do not inherently support longitudinal engagement.

Conversely, the CBO-led model exhibited broader geographic coverage and consistent community presence. Its ability to reach remote and marginalized groups is critical in areas with low ANC attendance. The use of traditional birth attendants (TBAs) and voluntary community mobilizers (VCMs), who are deeply embedded in communities, allowed the project to connect with women early in pregnancy, even those hiding their status due to cultural stigma (Gobir et al., 2025).

Yet, the CBO-led approach also faced significant limitations. Despite testing more women, it yielded fewer HIV-positive cases, which may reflect lower targeting efficiency or implementation in lower-prevalence communities. Furthermore, quality assurance in testing, data reporting, and referrals was inconsistent across CBOs, requiring intensive training and supervision (Chi et al., 2020).

Sustainability remains a concern as these models often depend on external funding and high human resource investments. A critical insight from both models is the importance of strong linkage-to-care systems. Identifying HIV-positive women is only the first step. Ensuring ART initiation and continued PMTCT engagement requires case management and robust data systems. The ACE 2 project's use of referral coordinators and tracking tools was essential but resource-intensive (Gobir et al., 2025).

Moreover, community ownership emerged as a cross-cutting enabler. Where community leaders, male partners, and TBAs were actively engaged, both models performed better in mobilization and service uptake. This highlights that community engagement is not just an accessory but a foundational component of successful PMTCT interventions.

In summary, neither model is inherently superior; each offers advantages that are context-dependent. The congregation-based model may be more effective in concentrated efforts with strong leadership support and higher HIV prevalence. The CBO-led model is better suited for continuous outreach and reaching the hardest-to-reach populations. Programs should consider

a hybrid or complementary model that draws on the strengths of both approaches to maximize coverage, efficiency, and health outcomes.

RECOMMENDATIONS

Strategies for CBO-led PMTCT

To address operational challenges in CBO-led PMTCT, we recommend strengthening community health worker capacity through comprehensive training, mentorship, and supportive supervision. Developing robust supply chain systems with forecasting, buffer stocks, and tracking systems can prevent stockouts.

Data collection tools should be simplified for community settings while maintaining reporting requirements. Differentiated service delivery models should tailor outreach to different population segments. Clear referral pathways with designated coordinators and follow-up mechanisms can improve linkage to care.

Male partner and family engagement strategies are essential where men influence healthcare decisions. Investment in demand creation and sustainable funding through integration with primary healthcare can support long-term implementation.

Strengthening the Congregation-based Model

The Tabbatacciyar Kulawar Iyali Initiative can be strengthened through enhanced mobilization strategies, including town criers or local announcers (Gobir et al., 2025). Increasing frequency and coverage of events can create more consistent access. Service integration beyond HIV testing can address broader maternal health needs.

Privacy measures during events, digital health solutions for follow-up, and community ownership through stakeholder involvement in planning can address current limitations. Standardized implementation toolkits and peer support mechanisms can facilitate scale-up and improve engagement in care.

Future Directions

Looking ahead, community-based PMTCT can be strengthened through digital health technologies, differentiated service delivery models, and integration within broader community health systems. Implementation research examining cost-effectiveness and comparative effectiveness of different approaches can inform future programming.

Policy advocacy for sustainable financing and supportive regulatory frameworks, capacity building for local organizations, and cross-sectoral collaboration to address social determinants will support long-term success. Responsive monitoring systems capturing both process and outcome indicators can guide ongoing improvement.

CONCLUSION

Community-based approaches can extend PMTCT services beyond health facilities, as demonstrated by the ACE 2 project's testing of 46,329 pregnant women and identification of 65 HIV-positive cases (Gobir et al., 2025). The congregation-based Tabbatacciyar Kulawar Iyali Initiative showed higher yield than other approaches, accounting for 57% of HIV-positive women identified through community testing (Gobir et al., 2025).

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Operational challenges require systematic approaches to strengthen community health systems. Cultural adaptation of evidence-based interventions enhances effectiveness in different settings, while community engagement and leadership provide social legitimacy and access to pregnant women outside formal healthcare (Gobir et al., 2025).

These findings indicate that community-based approaches should be integral components of comprehensive PMTCT strategies, not mere add-ons to facility-based services. Implementation models should consider local context, HIV epidemiology, and community preferences. Strengthening community health systems provides the foundation for sustainable service delivery.

Successful cultural adaptation demonstrates the transferability of evidence-based interventions when appropriate adaptation processes are followed (Gobir et al., 2025). Integration between community and facility systems remains essential to ensure comprehensive care for HIV-positive pregnant women.

Future priorities include implementation research on cost-effectiveness, innovation in service delivery models, sustainability strategies, supportive policy frameworks, and greater attention to women's preferences and experiences. The ACE 2 project's experience demonstrates that PMTCT can effectively extend beyond health facilities through culturally sensitive community-based approaches, contributing significantly to eliminating mother-to-child transmission of HIV in Nigeria and similar settings (Gobir et al., 2025).

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