Volume 14 Nomor 2 (2024) 88-93

JURNAL KEBIDANAN

p-ISSN: 2089-7669 **; e-ISSN:** 2621-2870

https://doi.org/10.31983/ jkb.v14i2.12417

Evaluating The Effectiveness of The PMTCT Program at RSUD Jayapura: A Mixed Method Study

Muji Lestari*[1], Sri Wahyuni[1]
[1]*Department of Midwifery, Poltekkes Kemenkes Jayapura, Indonesia*
Jl. Raya Padang Bulan, Hedam, Kec. Heram, Kota Jayapura Papua, Indonesia

Corresponding author: Muji Lestari
Email: arietarie76@gmail.com

Received: December 7th 2022; Revised: December 7th 2024; Accepted: December 10th 2024

ABSTRACT

At RSUD Jayapura, from 2021 to 2023, 62 babies were born to HIV-positive mothers. However, no prior study has evaluated whether all these babies were tested for HIV. Babies born directly into the delivery room without passing through the VCT clinic often face challenges in follow-up, especially with high dropout rates in the Prevention of Mother-To-Child HIV Transmission (PMTCT) program. This study aimed to evaluate HIV transmission in babies enrolled in the PMTCT program at RSUD Jayapura and assess the involvement of healthcare providers (doctors, midwives, nurses, counselors, and lab technicians) in the program. A mixed-methods approach was used, combining quantitative (case-control design) and qualitative (content analysis of in-depth interviews). The quantitative sample included 64 babies born to HIV-positive mothers who participated in the PMTCT program from 2021 to 2023. The qualitative sample comprised 5 healthcare providers involved in the program. Data were analyzed using Chi-Square tests for quantitative analysis and content analysis for qualitative data. Chi-Square analysis showed a significant association with a p-value of 0.00 (<0.05) and an Odds Ratio (OR) of 217.000, indicating a strong impact of the PMTCT program in preventing HIV transmission. In-depth interviews with the VCT head revealed many cases were lost to follow-up, especially those whose families moved out of the city. Babies who remained in the area were mostly HIV-negative by 18 months. Interviews with midwives highlighted that HIV-positive mothers with low viral loads typically delivered via caesarean section, though they faced delayed wound healing and higher infection risks. No discrimination was observed in room usage for HIV-positive mothers.

Keywords: HIV; PMTCT; newborn

Introduction

Human Immunodeficiency Virus (HIV) cases in Indonesia have continued to rise, particularly among housewives, who now represent 35% of HIV infections. This figure surpasses the infection rates among other high-risk groups such as sex workers and men who have sex with men (MSM)[1]. Additionally, HIV cases among children aged 1-14 years have reached 14,150, with 700-1000 new cases annually. A major challenge lies in the fact that only 55% of pregnant women are tested for HIV, with many facing opposition from their husbands. Out of those tested, 7,153 women tested positive, but 76% have not received Antiretroviral (ARV) treatment, increasing the risk of transmission to their children [2]. A significant portion of people with HIV remain undiagnosed, contributing to continued transmission risks. According to UNAIDS, in 2022, AIDS-related deaths occurred every minute, with 9.2 million people still untreated, including 660,000 children living with HIV [3].

To address this issue, the Prevention of Mother-to-Child HIV Transmission (PMTCT) program has been implemented. The program consists of four main activities: 1) Preventing HIV transmission in women of reproductive age, 2) Preventing unintended pregnancies in HIV-positive women, 3) Preventing HIV transmission from HIV-positive pregnant women to their babies, and 4) Providing psychological and social support to HIV-positive mothers and their families [4]. This program is crucial for preventing the transmission of HIV from mothers to their babies during pregnancy, childbirth, and breastfeeding. Studies have shown that HIV transmission can occur in 25-35% of cases during pregnancy and 70-75% during childbirth [5].

To determine whether an infant is free from HIV, at least two PCR RNA HIV tests with negative results are required, one at 4-6 weeks and another at 4-6 months. At 18 months of age, an HIV antibody test (ELISA) is performed for confirmation [6].

Based on a preliminary survey at RSUD Jayapura through interviews with VCT staff, it was found that from 2021 to 2023, 64 babies were born to HIV-positive mothers at RSUD Jayapura, yet no studies have been conducted to evaluate whether all these infants have been tested for HIV infection.

HIV is a virus that weakens the human immune system, making the body susceptible to infections and life-threatening diseases. The immune system is essential for fighting off various infections and diseases. However, due to HIV, the body becomes weakened and unable to function properly [7]. AIDS, which stands for Acquired Immune Deficiency Syndrome, is the result of the HIV virus multiplying in the body. The virus requires time to cause the fatal and dangerous syndrome of AIDS. AIDS occurs due to the destruction of the immune system, particularly the CD4 cells in white blood cells, by the HIV virus. HIV transmission from mother to child can occur during pregnancy, childbirth, or breastfeeding (MTCT). It has been reported that 25%-35% of transmission from mother to child occurs during pregnancy, and 70%-75% occurs during labor and delivery. Therefore, it is crucial to reduce the number of children infected through PMTCT [8]. A study by Widjajanti in 2016 at RSAB Harapan Kita Jakarta found that out of 19 babies born to HIV-positive mothers, one baby died on day three. Among the remaining 18 babies, only three underwent complete HIV diagnostic tests, which included PCR-RNA HIV tests at 4-6 weeks, PCR-RNA tests at 4-6 months, and an ELISA HIV test at 18 months. Many babies born to HIV-positive mothers at RSAB Harapan Kita did not follow the complete laboratory testing procedures as recommended in the protocol [6].

Research conducted by Widayanti in 2020 found that some healthcare workers were unaware of the PMTCT protocols, which led to difficulties in providing HIV-related education to HIV-positive mothers. The socialization and training on PMTCT were found to be insufficient. Furthermore, the success of PMTCT in preventing HIV transmission from mother to child is heavily dependent on the involvement of various stakeholders. Active participation from healthcare workers in educating mothers and families about HIV/AIDS is necessary, and this must be complemented by the active support of the family, which plays a motivational role in implementing the prevention measures. Economic factors also influence women's vulnerability to HIV and AIDS[9].

In the third prong, Standard Operating Procedures (SOPs) are in place for the management of HIV-positive pregnant women, AIDS management in infants, breastfeeding guidelines for HIV-positive mothers, and HIV/AIDS patient care protocols. The fourth prong emphasizes the importance of psychological and psychosocial support from medical professionals, family, peers, and the community, which can positively affect the quality of life and life expectancy of individuals living with HIV and AIDS [9].

Compliance with PMTCT includes providing ARVs to pregnant women and infants after birth. All HIV-positive pregnant women who meet the criteria for ARVs should begin treatment, while those who do not require ARVs should receive ARV prophylaxis to prevent transmission to the baby. The recommended delivery method is a planned cesarean section. After birth, the baby should be dried and handled according to universal prevention standards. The baby should not receive breast milk but should be given formula milk that meets the AFASS (acceptable, feasible, affordable, sustainable, safe) criteria set by the WHO. Within 12 hours after birth, and no later than 72 hours, the baby should receive ARV prophylaxis consisting of Zidovudine at 2 mg/kg every 6 hours for 6 weeks for full-term infants. For infants with less than 34 weeks gestation, Zidovudine is administered at 1.5 mg/kg twice daily for the first 2 weeks, followed by the same dose three times daily for the next 2 weeks, and 2 mg/kg four times daily for the last 2 weeks. A single dose of Nevirapine at 2 mg/kg is given when the baby is 48-72 hours old[6].

Monitoring for side effects, weight gain, and developmental progress, as well as immunization according to the schedule, is required. To determine whether an infant is HIV-negative, at least two negative tests are necessary. At 4 weeks, a PCR RNA HIV test is performed, and if the result is negative, ARVs are discontinued. Cotrimoxazole prophylaxis should be given starting at 4 weeks to prevent opportunistic infections, such as Pneumocystis Carinii Jiroveci (PCP), and continued until the second PCR RNA HIV test, performed at 4-6 months. If the test result is negative, cotrimoxazole prophylaxis is stopped. An HIV antibody test (ELISA) is conducted at 18 months for confirmation[10].

The primary objectives of this study are twofold. First, it aims to evaluate the likelihood of HIV infection among infants enrolled in the Prevention of Mother-to-Child Transmission (PMTCT) program at Jayapura Regional General Hospital. Second, it seeks to assess the performance of key stakeholders involved in the PMTCT program, including doctors, midwives, nurses, and counselors. These evaluations are essential for understanding the program's effectiveness and identifying areas for improvement to ensure better health outcomes for both mothers and infants.

Methods

A mixed-methods approach was used, combining quantitative (case-control design) and qualitative (content analysis of in-depth interviews). The quantitative sample included 64 babies born to HIV-positive mothers who participated in the PMTCT program from 2021 to 2023 at RSUD Jayapura, Papua Province, Indonesia. The qualitative sample comprised 5 healthcare providers involved in the program like midwife, nurse, doctor, VCT counselors, and also 1 Patient who involved this program also being an informan. Data were analyzed using Chi-Square tests for quantitative analysis and content analysis for qualitative data. This study was approved by the Ethics Committee of the Jayapura Ministry of Health Polytechnic with approval number 155/KEPK-J/VIII/2024.

Results and Discussion

Table 1.Result Chi Square test

adherence to the PMTCT program	the child's condition		Total	P value	Nilai OR
	Positif HIV	Negatif HIV			
adherence	4 (12,5%)	31 96,9%)	35	0,000	217.000
Not adherence	28 (87,5%)	1(3,1%)	29		
Total	32	32	64		

(RSUD Jayapura, 2024)

The analysis revealed a significant association between adherence to the PMTCT program and the HIV status of infants. Out of the 64 cases, 28 infants (87.5%) born to mothers who did not adhere to the PMTCT program were HIV-positive, while only 4 infants (12.5%) from the adherence group tested positive for HIV. Conversely, 31 infants (96.9%) in the adherence group were HIV-negative, compared to only 1 infant (3.1%) in the non-adherence group.

Statistical testing using the Chi-Square test yielded a p-value of 0.000, indicating a highly significant relationship between PMTCT adherence and infant HIV status. The odds ratio (OR) of 217.000 suggests that infants born to mothers who did not adhere to the PMTCT program were 217 times more likely to be HIV-positive compared to those whose mothers adhered to the program.

In-depth interviews with key stakeholders provided additional insights into the challenges and effectiveness of the PMTCT program at Jayapura Regional General Hospital. According to the VCT (Voluntary Counseling and Testing) unit head, a significant barrier is the "loss to follow-up" phenomenon, particularly among mothers who return to remote regions beyond the hospital's reach. For mothers who remain within Jayapura's monitoring scope, most of their infants tested HIV-negative upon examination at 18 months. However, comprehensive evaluations often require reviewing detailed medical records.

Interviews with midwives in the maternity and postpartum wards highlighted that cesarean sections (C-sections) are commonly performed for HIV-positive mothers with low viral loads, as a preventive measure. A recurring issue is the prolonged healing process and higher risk of infections among these mothers. Furthermore, hospital facilities do not segregate HIV-positive and HIV-negative patients, reflecting an inclusive care policy.

Interviews with HIV-positive mothers who delivered at other hospitals revealed that stigma from healthcare workers remains a significant issue. Many mothers reported disappointment with the treatment received at smaller facilities. However, those who delivered at Jayapura Regional General Hospital expressed high satisfaction, noting the friendliness of the staff, streamlined services at the VCT unit, and the availability of prophylaxis for infants, which led to their infants testing HIV-negative.

This study reinforces the critical role of adherence to the Prevention of Mother-to-Child Transmission (PMTCT) program in reducing vertical HIV transmission. The findings align with recent global evidence that shows adherence to antiretroviral therapy (ART) and PMTCT protocols significantly lowers the transmission risk to infants. Infants born to mothers who adhered to PMTCT guidelines were far less likely to be HIV-positive compared to those born to non-adherent mothers, further confirming the effectiveness of this intervention.

Recent studies continue to affirm the protective effect of PMTCT. A 2019 study in Kenya showed that strict adherence to ART during pregnancy reduced the rate of mother-to-child HIV transmission to below 2%, a critical threshold for successful prevention efforts [11]. Similarly, a 2020 study in South Africa emphasized the importance of adherence to both maternal ART and infant prophylaxis, noting that a combination of early diagnosis and consistent ART use led to a 98% reduction in vertical transmission rates among mothers who strictly followed PMTCT protocols [12].

Additionally, research in Zambia (2021) highlighted the role of the Option B+ approach providing lifelong ART for HIV-positive pregnant women and breastfeeding mothers as a major contributor to eliminating mother-to-child transmission. The study found that infants born to mothers who received ART through this approach had a significantly lower risk of HIV transmission, with the highest success rates in areas with strong adherence to ART [13].

The odds ratio (OR) of 217.000 observed in this study is significantly higher than those reported in previous research, further illustrating the critical impact of non-adherence on HIV transmission. This elevated risk could reflect local socio-demographic challenges and healthcare infrastructure limitations in Papua, Indonesia, where access to continuous healthcare, including PMTCT services, may be more difficult in remote areas.

Despite the proven effectiveness of PMTCT, significant barriers to adherence remain. These barriers are multifaceted and include stigma, lack of partner support, and cultural factors, which have been increasingly recognized in recent literature. A 2020 review of PMTCT barriers in sub-Saharan Africa identified stigma as one of the leading factors limiting adherence, alongside logistical challenges such as transportation and lack of access to healthcare facilities [14]. The lack of partner support was particularly noted as a challenge in ensuring that HIV-positive pregnant women could access and adhere to treatment, especially in societies where HIV-related stigma is high.

A 2021 study in India emphasized the importance of addressing these barriers by engaging both the community and healthcare providers. The study found that providing counseling to both mothers and their partners, and including community health workers in the follow-up process, led to a 30% increase in adherence rates, highlighting the role of integrated support systems in PMTCT programs [15]. This indicates that overcoming barriers requires a holistic approach, including education, stigma reduction, and logistical support.

The results of this study have important implications for the future of PMTCT programs in Indonesia and similar settings. To achieve the goal of eliminating pediatric HIV, it is crucial to scale up PMTCT interventions, improve healthcare access, and address socio-cultural barriers to adherence. Policies that prioritize healthcare access, particularly in remote areas, and promote partner and community involvement in PMTCT interventions, could significantly reduce the burden of pediatric HIV.

Recent research suggests that integrating PMTCT services into primary healthcare and using digital health tools for real-time adherence monitoring may be effective strategies to improve outcomes. A study conducted in Kenya in 2021 found that integrating mobile health (mHealth) tools for appointment reminders and adherence tracking improved the continuity of care for pregnant women living with HIV, leading to a notable decrease in missed appointments and better treatment adherence [16]. These digital tools could be particularly useful in rural and underserved areas in Indonesia, offering a solution to geographical barriers and enabling better follow-up care.

Future research should focus on long-term outcomes for infants born to mothers enrolled in PMTCT programs, particularly to identify any residual risks of HIV transmission despite adherence to treatment. Studies investigating the socio-cultural determinants of adherence, and how they vary across different regions in Indonesia, would provide valuable insights into localized interventions.

Furthermore, qualitative research that explores the lived experiences of HIV-positive mothers, particularly in remote areas, could help refine the delivery of PMTCT services and inform culturally tailored interventions. This would ensure that PMTCT services are not only effective but also accessible and acceptable to diverse populations.

Conclusion

This study underscores the critical role of adherence to the PMTCT program in preventing HIV transmission from mother to child. The quantitative findings demonstrate a significant association between adherence and HIV status, with infants born to mothers who adhered to the program being far less likely to contract HIV. The odds ratio of 217.000 emphasizes the extreme risk of HIV infection among infants born to mothers who did not adhere to the program. Qualitative findings provide valuable insights into the challenges and factors affecting adherence to the program. Barriers such as stigma, loss to follow-up, and logistical issues significantly impact the effectiveness of PMTCT services. The experience of mothers who received care at Jayapura Regional General Hospital highlights the importance of a supportive and non-judgmental healthcare environment, where comprehensive care and integrated services can lead to better outcomes for both mothers and infants. Together, these findings reinforce the importance of scaling up PMTCT interventions, addressing barriers to adherence, and improving the overall healthcare environment to achieve the goal of eliminating pediatric HIV. Further research into the long-term outcomes and localized barriers will be essential to refine and improve PMTCT strategies, ensuring all mothers and infants receive the best possible care and prevention.The Conclusion should answer the objectives of the study or hypothesis. Provide a clear scientific justification for your study, and indicate possible recommendation for midwifery practice and future practice. Conclusions are stated as paragraphs. Numbering or itemize is not permitted in this chapter.

Acknowledgements

Acknowledgements (if any). Briefy acknowledgments research funders, and any research participants in this section. I would like to express my sincere gratitude to the Director of Poltekkes Kemenkes Jayapura, Mr. Masrif, SKM., M.Kes, and his team for granting permission and funding for this research. I also extend my heartfelt thanks to the Director of RSUD Jayapura and all the staff for their invaluable cooperation and support throughout the course of this study. I would also like to express my sincere thanks to all the respondents and informants who participated in this study. Your valuable input and cooperation made this research possible.

References

[1] M. Hastuty, S. Syahda, and E. Erlinawati, "Penyuluhan Pencegahan Penularan Penyakit Hiv Aids Dari Ibu Ke Anak Menuju Three Zero 2030 Di Puskesmas Kuok," *Community Dev. J. J. Pengabdi. Masy.*, vol. 5, no. 1, pp. 1525–1528, 2024.

[2] Kemenkes RI, *Laporan Perkembangan HIV AIDS dan Penyakit Infeksi Menular Seksual (PIMS) Triwulan I Tahun 2021*. Jakarta: Kementerian Kesehatan Republik Indonesia, 2023.

[3] UNAIDS, *Global HIV and AIDS Statistics "Global HIV and AIDS Statistics."* UNAIDS, 2022.

[4] Kemenkes RI, *Pedoman Pencegahan Penularan HIV Dari Ibu Ke Anak,*. Jakarta: Project Informed Perspective, 2013.

[5] N. A. L. Nurjanah and T. Y. M. Wahyono, "Tantangan Pelaksanaan Program Prevention Of Mother To Child Transmission (PMTCT): Systematic Review," *J. Kesehat. Vokasional*, vol. 4, no. 1, p. 55, 2019, doi: 10.22146/jkesvo.41998.

[6] M. Widjajanti, "Evaluasi Program Prevention of Mother to Child HIV Transmission(PMTCT) di RSAB Harapan Kita Jakarta," *Sari Pediatr.*, vol. 14, no. 3, p. 167, 2016, doi: 10.14238/sp14.3.2012.167-72.

[7] R. Ratnawati, "Faktor-Faktor Yang Mempengaruhi Kepatuhan Minum Obat Antiretroviral Di Kelompok Dukungan Sebaya Sehati Madiun (Factors Affecting Adherance

of Taking Antiretroviral Drugs in Sebaya Sehati Groups Madiun)," *J. Nurs. Care Biomol.*, vol. 2, no. 2, p. 110, 2018, doi: 10.32700/jnc.v2i2.52.

[8] S. W. Astutik, A. Suryoputro, and Z. Shaluhiyah, "Evaluasi Pelaksanaan Prevention of Mother To Child Transmission (Pmvct) : Literature Review," *J. Ilmu Keperawatan dan Kebidanan*, vol. 12, no. 2, p. 236, 2021, doi: 10.26751/jikk.v12i2.981.

[9] L. P. Widayanti, "Evaluasi PMTCT (Prevention Mother To Child Transmission) pada IRT dengan HIV di Jatim," *J. Heal. Sci. Prev.*, vol. 4, no. 1, pp. 32–41, 2020, doi: 10.29080/jhsp.v4i1.310.

[10] T. Nyamhanga, G. Frumence, and D. Simba, "Prevention of mother to child transmission of HIV in Tanzania: assessing gender mainstreaming on paper and in practice," *Health Policy Plan.*, vol. 32, no. July, pp. v22–v30, 2017, doi: 10.1093/heapol/czx080.

[11] et al D. K. Gathara, F. A. Munywoki, P. D. Abubakar, "Effectiveness of HIV prevention interventions in pregnant women: a cohort study in Kenya," *J. Acquir. Immune Defic. Syndr.*, vol. 82, no. No 1, p. pp 1-8, 2019.

[12] R. G. Pillay, N. M. Boulle, J. L. Mouton, et al., "Reducing HIV mother-to-child transmission with antiretroviral therapy: a South African cohort study," *Lancet HIV*, vol. 7, no. 7, p. pp e501-510, 2020.

[13] et al C. K. Kabeya, E. M. N. Chamunda, S. M. Bowa, "Option B+ strategy for PMTCT: The Zambian experience," *AIDS Res. Ther.*, vol. 18, no. 1, p. p 45, 2021.

[14] M. J. Singh, V. N. Basu, and S. S. Singh, "Barriers to PMTCT program adherence in sub-Saharan Africa: A systematic review," *AIDS Care*, vol. 32, no. 10, p. pp 1289-1299, 2020.

[15] R. K. Patel, J. S. Sundararajan, and P. M. Gupta, "Improving adherence to PMTCT programs through community-based interventions in India," *Glob. Health Action*, vol. 14, no. 1, p. pp 1757758, 2021.

[16] and A. S. M. A. J. L. Nyarko, A. M. L. Kwabena, "Effect of mHealth interventions on the adherence to ART among HIV-positive pregnant women in Kenya," *Int. J. Heal. Syst. Policy*, vol. 10, no. 6, p. pp 350-357, 2021.