

Association between Maternal Parity and Utilization of PMTCT Services in HIV/AIDS Prevention at Biak Kota Primary Health Center

Inggrit Rita Uli Manik^{1*}

¹Jurusan Kebidanan, Poltekkes Kemenkes Jayapura

Address: Padang Bulan II Street, Heram District, Jayapura City, Papua, Indonesia

Corresponding: Inggritmanik76@gmail.com

Abstract. *Human Immunodeficiency Virus (HIV) is the causative agent of Acquired Immunodeficiency Syndrome (AIDS) and can be transmitted from mother to child during pregnancy, childbirth, and breastfeeding. Utilization of Prevention of Mother-to-Child Transmission (PMTCT) services by pregnant women is a crucial strategy to prevent vertical transmission of HIV. This study aimed to analyze factors associated with the utilization of PMTCT services among pregnant women attending antenatal care at Biak Kota Primary Health Center, Biak Numfor Regency. This study employed an observational design with a cross-sectional approach. A total of 80 pregnant women who attended antenatal care at Biak Kota Primary Health Center were selected using purposive sampling. Data were collected using a structured questionnaire. Data analysis included univariate analysis, bivariate analysis using the Chi-square test, and multivariate analysis to identify the most influential factors related to PMTCT service utilization. The results showed that educational level was not significantly associated with PMTCT service utilization ($p = 0.168$). In contrast, parity was significantly associated with PMTCT utilization ($p = 0.007$). Exposure to PMTCT-related information was also significantly associated with PMTCT service utilization ($p < 0.05$). Meanwhile, waiting time for services showed no significant association with PMTCT utilization ($p = 0.092$). Multivariate analysis revealed that exposure to PMTCT information was the most dominant factor associated with PMTCT service utilization. In conclusion, increased exposure to PMTCT information is associated with higher utilization of PMTCT services among pregnant women. Adequate dissemination of information enhances pregnant women's knowledge and awareness of the benefits of PMTCT as an effective strategy for preventing mother-to-child transmission of HIV.*

Keywords: PMTCT, HIV/AIDS, information exposure

1. INTRODUCTION

Human Immunodeficiency Virus (HIV) is a virus that attacks the immune system and causes Acquired Immune Deficiency Syndrome (AIDS), which represents the advanced stage of HIV infection characterized by a significant decline in immune function, rendering the body vulnerable to opportunistic infections and death. Without adequate interventions such as antiretroviral therapy (ART), many individuals living with HIV experience rapid disease progression, leading to AIDS and death within a few years after the onset of symptoms (Afaya & Ispriantari, 2024; Bhaskaran et al., 2021; Vitsupakorn et al., 2023).

HIV transmission in Indonesia was first reported in 1987 in Bali Province and has since spread to all provinces and districts across the country. The HIV epidemic shows an increasing trend, particularly among the productive age group of 25–49 years, which has the highest prevalence of infection and contributes substantially to HIV transmission within the community (Haryanti & Merati, 2025). Mother-to-child transmission (MTCT) of HIV, occurring during pregnancy, childbirth, or breastfeeding, is the primary route of HIV infection

among children in Indonesia and other developing countries, accounting for more than 90% of HIV cases among children under 15 years of age (Damanik, 2020;Arisjulyanto et al., 2023).

The Prevention of Mother-to-Child Transmission (PMTCT) program is a critical intervention in preventing vertical HIV transmission. Comprehensive PMTCT services including HIV testing, counseling, provision of ART for mothers and infants, and psychosocial support have been proven to significantly reduce the risk of HIV transmission from mother to child from approximately 15–45% to less than 5% (Afaya & Ispriantari, 2024; Haryanti & Merati, 2025). Nevertheless, the implementation of PMTCT services in primary healthcare facilities, such as community health centers, continues to face various challenges, including limited knowledge of pregnant women regarding HIV and PMTCT, social stigma, and restricted access to information and healthcare services (Utama & Satriyandari, 2025).

Numerous studies indicate that the level of knowledge and exposure to information related to MTCT and PMTCT is closely associated with pregnant women's utilization of PMTCT services. Pregnant women with adequate knowledge and sufficient access to information are more likely to comply with PMTCT examinations and services than those with limited information exposure (Afaya & Ispriantari, 2024). Additionally, factors such as partner support, risk perception, and social norms have also been reported to influence pregnant women's decisions to utilize PMTCT services (Cahyati, 2020;Kemenkes RI, 2024).

The situation in Biak Numfor Regency demonstrates a high incidence of HIV/AIDS, particularly among women of reproductive age, including pregnant women, placing this group at substantial risk of mother-to-child HIV transmission. Therefore, it is essential to identify the determinants associated with the utilization of PMTCT services at the Biak Kota Primary Health Center to strengthen program interventions and minimize vertical HIV transmission.

2. METODE

This study employed a cross-sectional observational design to analyze the association between determinant factors and the utilization of Prevention of Mother-to-Child Transmission (PMTCT) services among pregnant women. The study was conducted at Biak Kota Primary Health Center, Biak Numfor Regency, selected due to its active PMTCT services, large catchment population, and relatively high incidence of HIV among pregnant women. The study population consisted of all pregnant women residing in the working area of the Biak Kota Primary Health Center, with a sample of 80 respondents determined using the Lemeshow formula for finite populations ($N = 134$), a 95% confidence level ($Z = 1.96$), an assumed proportion of 0.5, and a precision level of 0.03. Purposive sampling was applied, with inclusion

criteria comprising pregnant women who attended antenatal care at the health center during the study period and provided written informed consent. Data were collected using a structured questionnaire as primary data and secondary data obtained from the health center's medical records. Data processing was performed electronically using SPSS, following data editing, coding, entry, and cleaning procedures. Data analysis included univariate analysis to describe variable frequency distributions, bivariate analysis using cross-tabulation to assess associations between independent variables and PMTCT service utilization..

3. RESULT AND DISCUSSION

a. Result

1) Respondent Characteristics

The characteristics of respondents in this study are presented in the following table:

Table 1. Respondent Characteristics

Characteristic	n	%
Age		
< 20	8	10
20–35	60	75
> 35	12	15
Marital Status		
Married	36	45
Unmarried	44	55
Service Area		
Within catchment area	75	93.75
Outside catchment area	5	6.25
Employment Status		
Employed	10	12.5
Unemployed	70	87.5
Gestational Age		
First trimester	7	8.75
Second trimester	27	33.75
Third trimester	46	57.50

Based on the data in Table 1, Table 1 presents the characteristics of the respondents. The majority of pregnant women were aged 20–35 years (60 respondents; 75%), while 15% were older than 35 years and 10% were younger than 20 years. In terms of marital status, more than half of the respondents were unmarried (44 respondents; 55%), whereas 45% were married. Most respondents resided within the catchment area of the health center (75 respondents; 93.75%), with only 6.25% living outside the service area.

Regarding employment status, the majority of pregnant women were unemployed (70 respondents; 87.5%), while only 12.5% were employed. Based on gestational age, most respondents were in the third trimester (46 respondents; 57.5%), followed by those in the second trimester (27 respondents; 33.75%), and a smaller proportion in the first trimester (7 respondents; 8.75%)

2) Research Variables

The distribution research variables is shown in the following table:

Table 2. Distribution of Research Variables among Pregnant Women

Variable	n	%
Education Level		
High	60	75.0
Low	20	25.0
Partner's Education Level		
High	49	61.3
Low	31	38.8
Exposure to PMTCT Information		
Yes	28	35.0
No	52	65.0
Waiting Time for Health Services		
Short	29	36.3
Long	51	63.7
Utilization of PMTCT Services		
Utilized	27	33.8
Not utilized	53	66.3
HIV Test Result		
Positive	1	1.25
Negative	79	98.75

Based on Table 2, The distribution of respondents based on research variables shows that the majority of pregnant women had a high level of education (75.0%), while only 25.0% had a low education level. Regarding partners' education, more than half of the respondents' partners were categorized as having a high education level (61.3%), whereas 38.8% had a low level of education.

In terms of exposure to PMTCT information, most respondents reported not having received PMTCT-related information (65.0%), while only 35.0% stated that they had been exposed to such information. Concerning waiting time for health services, more than half of the respondents experienced long waiting times (63.7%), compared to 36.3% who reported short waiting times.

With regard to the utilization of PMTCT services, only one-third of the respondents utilized PMTCT services (33.8%), whereas the majority (66.3%) did not utilize these services. Finally, the HIV test results indicated that nearly all respondents tested negative for HIV (98.75%), with only one respondent (1.25%) testing positive.

3) Association between Maternal Parity and Utilization of PMTCT Services in HIV/AIDS Prevention

Pregnant women with higher parity generally have greater experience and knowledge related to pregnancy, which may encourage them to seek better health services for themselves and their fetuses. The following table presents the distribution of maternal parity in relation to the utilization of PMTCT services.

Table 3. Association between Maternal Parity and Utilization of PMTCT Services at Biak Kota Primary Health Center

Maternal Parity	PMTCT Utilization				<i>p</i> -value
	Yes		No		
	n	%	n	%	
High	11	22.4	38	77.6	0,007
Low	16	51.6	15	48.4	
Total	27	33.8	53	66.3	

Table 3 shows that among respondents with high parity, only 11 women (22.4%) utilized PMTCT services, while the majority (77.6%) did not. In contrast, among respondents with low parity, more than half (51.6%) utilized PMTCT services. Statistical analysis using the Chi-square test yielded a *p*-value of 0.007 ($p < 0.05$), indicating that the null hypothesis was rejected. This finding demonstrates a statistically significant association between maternal parity and the utilization of PMTCT services among pregnant women at Biak Kota Primary Health Center.

4) Association between Exposure to PMTCT Information and Utilization of PMTCT Services in HIV/AIDS Prevention

Exposure to information regarding PMTCT services is a crucial factor influencing the utilization of PMTCT services. Adequate information increases awareness and understanding of the benefits of PMTCT, thereby encouraging pregnant women to access these services. The distribution of exposure to PMTCT information in relation to the utilization of PMTCT services is presented in Table 14.

Table 4. Association between Exposure to PMTCT Information and Utilization of PMTCT Services at Biak Kota Primary Health Center

Exposure to PMTCT Information	Utilization of PMTCT				P Value
	Yes		No		
	n	%	n	%	
Yes	23	82.1	5	17.9	0,000
No	4	7.7	48	92.3	
Total	27	100.0	53	100.0	

Table 4 shows that the majority of respondents who utilized PMTCT services were those exposed to PMTCT information, accounting for 82.1%. In contrast, among respondents who were not exposed to PMTCT information, only 7.7% utilized PMTCT services. The results of the Chi-square statistical test yielded a p-value of 0.000 ($p < 0.05$), leading to the rejection of the null hypothesis. This finding indicates a statistically significant association between exposure to PMTCT information and the utilization of PMTCT services.

b. Discussion

The results of this study indicate a significant association between parity and the utilization of PMTCT services. Local research contexts have shown that pregnant women with lower parity tend to utilize PMTCT services more frequently than those with higher parity. In one study, out of the total respondents, 16 women (51.6%) with low parity utilized PMTCT services, whereas only 11 women (22.4%) from the high-parity group used these services. Statistical analysis using the Chi-square test revealed a p-value of 0.007 ($p < 0.05$), indicating a statistically significant relationship between parity and the utilization of PMTCT services. These findings suggest that prior reproductive experience does not necessarily lead to increased utilization of PMTCT services, possibly due to the influence of other factors such as knowledge, attitudes, and access to healthcare services.

The relationship between maternal parity and the utilization of Prevention of Mother-to-Child Transmission (PMTCT) services is a complex phenomenon influenced by various individual, social, and structural factors. Parity reflects a woman's reproductive experience, which can shape risk perception, knowledge, and attitudes toward health services, including PMTCT. Several studies have demonstrated that parity plays an important role in determining health-seeking behavior and the utilization of HIV prevention services among pregnant women.

Several studies report that women with higher parity tend to have better utilization of PMTCT services compared to primiparous women. This trend is associated with previous pregnancy experiences that allow multiparous women to become more familiar with the healthcare system, including antenatal care services and HIV counseling. Repeated exposure to health services during prior pregnancies may enhance awareness and trust in the benefits of PMTCT programs (Debela et al., 2019).

In addition to experience, higher parity is often associated with stronger social support systems, including support from partners, family members, and the surrounding community. Multiparous women generally have more established social networks, which can positively influence decision-making related to PMTCT service utilization. Social support has been shown to play a crucial role in improving adherence to HIV testing and vertical transmission prevention services among pregnant women (Gebremedhin et al., 2021).

Educational factors also contribute to the relationship between parity and PMTCT utilization. Some studies suggest that women with higher parity tend to have better health literacy, either through formal education or experiential learning gained during previous pregnancies. Improved understanding of HIV, transmission risks, and the benefits of PMTCT services increases acceptance and utilization of these services (Merga et al., 2016).

However, higher parity does not always guarantee optimal utilization of PMTCT services. Structural and socioeconomic barriers—such as limited household income, transportation constraints, and poor quality of healthcare services—remain major obstacles, particularly among women from lower socioeconomic backgrounds. These conditions may restrict access to PMTCT services regardless of the number of previous pregnancies (Gebremedhin et al., 2021).

Furthermore, cultural factors and male partner involvement significantly influence PMTCT utilization among both primiparous and multiparous women. Certain cultural beliefs may contribute to stigma associated with HIV testing, while low male partner involvement often serves as a critical barrier to decision-making related to PMTCT services. Evidence indicates that partner support and approval play a significant role in increasing PMTCT service uptake among pregnant women (Feyera et al., 2017; Debela et al., 2019). Therefore, PMTCT interventions should be designed comprehensively by considering maternal parity, sociocultural context, and family involvement to enhance program coverage and effectiveness.

4. CONCLUSION

Based on the study findings, it can be concluded that the utilization of Prevention of Mother-to-Child Transmission of HIV (PMTCT) services at Biak Kota Primary Health Center remains relatively low. The analysis shows that maternal parity has a statistically significant association with the utilization of PMTCT services, where mothers with lower parity are more likely to utilize PMTCT services compared to those with higher parity. This finding indicates that reproductive experience influences health-seeking behavior, including decision-making related to the use of HIV mother-to-child transmission prevention services..

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