

Knowledge and attitude factors as determinants of pregnant women's participation in triple elimination program in North Bali

Ni Nyoman Ayu Desy Sekarini^{1*}, Linda Yanti², and Putu Irma Pratiwi¹

¹Midwifery Departement, Faculty of Medicine, Ganesha University of Education, Singaraja, Bali, Indonesia

²Midwifery Department, Health Science Faculty, Universitas Harapan Bangsa, Banyumas, Jawa Tengah, Indonesia

Abstract. In 2022, Bangkalan District had the lowest basic immunization coverage in East Java, with 64.7%, compared to the statewide average of 91.7%. This low coverage, which increases the risk of morbidity and mortality, is the result of misconceptions about immunizations. The WHO reports that 1.5 million children die annually from diseases that may have been avoided if they had received the vaccination, highlighting the broader public health implications. This study looked at the socioeconomic and cultural factors influencing parents' decisions to vaccinate their children in Bangkalan. As part of a cross-sectional study, 87 mothers of toddlers older than two years from the Blega Health Center were selected using simple random selection. Results indicated that knowledge and attitudes significantly influence participation (P -value < 0.05). Higher knowledge levels and positive attitudes toward prevention correlate with increased participation in the program. These findings highlight the need for education-based interventions to improve knowledge and address negative attitudes. Enhancing awareness is crucial to promote active participation and achieve the program's goals in North Bali.

1 Introduction

The health and well-being of pregnant women are critical factors in ensuring the health of future generations. To maintain the health and well-being of pregnant women, special examinations and care are required, specifically antenatal care (ANC). ANC should be performed at least six times during pregnancy: once in the first trimester (0-12 weeks), twice in the second trimester (13-28 weeks), and three times in the third trimester (28-42 weeks) [1]. Various factors can influence ANC visits, including education level, employment status, health insurance coverage, accessibility of health services, travel time to health facilities, residential area, pregnancy history, parity, desired pregnancy, and pregnancy complications [2]. ANC services include ten service standards known as the 10T, one of which involves conducting laboratory tests for triple elimination: HIV, syphilis, and hepatitis B [1], [3].

* Corresponding author: ayu.desy@undiksha.ac.id

Current data indicate that over 90% of HIV, syphilis, and hepatitis B infections in children are transmitted from their mothers. The prevalence of these infections among pregnant women in Indonesia is 0.3% for HIV, 1.7% for syphilis, and 2.5% for hepatitis B. The risk of mother-to-child transmission is significant: 20%-45% for HIV, 69%-80% for syphilis, and over 90% for hepatitis B [4]. Efforts to eliminate the transmission of HIV, syphilis, and hepatitis B are conducted simultaneously due to the similar transmission patterns of these three diseases, which occur through sexual intercourse, contaminated fluids/blood, and from mother to child [1]. Triple elimination examinations are conducted during the first ANC visit, ideally before 20 weeks of gestation. This program aims to detect and treat these infections early in pregnancy, thereby reducing the risk of complications for both mother and baby [5]. The triple elimination examination can minimize vertical transmission from infected mothers to their babies through antenatal screening, treatment for infected mothers, follow-up care, and vaccination for infants born to infected mothers [6].

Data from the North Bali region shows that in 2022, the target number of pregnant women was 10,676, and 10,298 (96.46%) had undergone HIV screening, 9,425 (88.28%) had been tested for syphilis, and 10,676 (95.35%) had been tested for Hepatitis B. This data indicates that the government's target of 100% has not been achieved. Furthermore, data in North Bali (2023) there will be 14,167 people at risk HIV-infected and receiving appropriate health services standards from an estimated 12,012 people at risk of HIV infection (117.94%). There were 259 HIV cases, most of which were men, namely 158 cases (61.00%). Highest HIV cases were in the 25-49 year age group, namely 179 cases or 69.11%. [7] Most of the research by Kundaryanti and Suciawati (2022) shows that not all or only a portion of pregnant women have undergone triple elimination screening. A total of 55.7% of pregnant women have not yet undergone triple elimination screening. This study also explains that some pregnant women hold negative attitudes toward the triple elimination screening, with 40.2% of pregnant women expressing negative attitudes toward the procedure [8]. The main causes of low HIV, syphilis, and Hepatitis B screening during pregnancy are stigma toward individuals who are infected, lack of spousal involvement, and systemic healthcare service factors [9]. Krisnawatu et al. (2018) found that 86.7% of 90 respondents in the Seririt II health center's working area had low knowledge about triple elimination. A lack of information from midwives, the surrounding environment, or other sources such as social media is one of the factors contributing to the low knowledge of pregnant women [10]. Petralina's (2020) study found that 82% of 40 respondents had a low level of knowledge [11].

HIV, syphilis, and Hepatitis B can pose risks to both the mother and her fetus. Pregnant women infected with two or three diseases, such as HIV, Hepatitis B, and Hepatitis C, are at higher risk of hepatotoxicity, accompanied by increased maternal and perinatal morbidity and mortality rates [12]. Pregnant women infected with Hepatitis B have an elevated risk of gestational diabetes mellitus, intrahepatic cholestasis of pregnancy (ICP), neonatal asphyxia, and preterm birth [13]. HIV status during pregnancy can be associated with increased markers of intestinal integrity, monocyte activation, systemic inflammation, and a decrease in AGP levels. These factors may contribute to the risk of premature birth in pregnant women with HIV [14].

The objective of this study is to analyze the knowledge and attitudes of pregnant women regarding their participation in the Triple Elimination program in Buleleng Regency, Bali. The urgency of this research lies in the high number of pregnant women with HIV, syphilis, and Hepatitis B (Triple Elimination), which can be transmitted to their children. Pregnant women are the key to achieving the success of the Triple Elimination screening targets, and their knowledge and attitudes must be understood, as these will influence their behavior in undergoing Triple Elimination screening. Pregnant women who have undergone the Triple Elimination screening are aware of their disease status, allowing for the prevention of

transmission to their unborn children. The results of this research will serve as a reference for increasing the participation of pregnant women in undergoing triple elimination tests.

2 Method

2.1 Study Design

This research is a quantitative study employing an analytical design with a cross-sectional approach.

2.2 Study Location

This research was conducted in Buleleng Regency, Bali Province, which consists of nine districts. This study was conducted from June to August 2024.

2.3 Population and Sample

The population of this study consists of 10,676 pregnant women undergoing prenatal examinations in the regency. The sample of this study includes all pregnant women in their first, second, and third trimesters who attended examinations at 36 Independent Midwife Practices (PMB) in Buleleng Regency, met both inclusion and exclusion criteria. The inclusion criteria for this study include pregnant women listed in the registration books of the 36 Independent Midwifery Practices who are willing to participate as respondents. The exclusion criteria consist of following: pregnant women previously diagnosed with a history of HIV, syphilis, or Hepatitis B.

The sampling technique used in this study is probability sampling with cluster random sampling, where samples from the population members are selected randomly by dividing them into groups or clusters, fulfilling both inclusion and exclusion criteria. A total of 371 pregnant women participated as respondents in this study. The sample size was calculated using a formula for cross-sectional studies. A margin of error of no more than 0.05 was used as the parameter, with a confidence level of 95%.

2.4 The Variable, Instrument, And Measurement

The type of data collected in this study is primary data obtained directly from the respondents. The data collected includes the knowledge and attitudes of pregnant women related to the triple elimination program as well as the execution of triple elimination screenings. Knowledge data was collected using a research instrument in the form of a questionnaire, with the following categories: Good Knowledge: 57%-100%, Poor Knowledge: <56%. Attitude data was also collected using an attitude questionnaire based on the Guttman scale, with a Negative Attitude defined by a score <50%, and a Positive Attitude by a score >50%. Triple elimination screening data was gathered by recording whether the screening was performed or not. The questionnaire was validated and tested for reliability using the Kolmogorov-Smirnov test, as the number of respondents exceeded 50.

2.5 Data Analysis

The data analysis used in this study is chi-square analysis to examine the association between knowledge and attitudes and the participation of pregnant women in triple elimination testing.

Ethical licenses have been obtained from the Health Research Ethics Commission of Sekolah Tinggi Ilmu Kesehatan Buleleng number 811/EC-KEPK-SB/V/2024.

3 Result and Discussion

This study involved 371 respondents, consisting of pregnant women who were willing to participate and met the research criteria. The characteristics of the respondents are described in the following table:

Table 1. Respondent Characteristics

No.	Characteristics	Frequency (n=371)	Percentage (%)	Knowladge (p-Value)	Ettitude (p-Value)
1.	Age				
	< 20 years	30	8,1	0,894	0,551
	20-35 years	314	84,6		
	>35 tahun	27	7,3		
2.	Education Level				
	Did not Complete Elementary School	1	16,3	0,007*	0,141
	Basic Education	118	31,8		
	Secondary Education	223	60,1		
	Higher Education	29	7,8		
3.	Status Gravida			0,445	0,634
	Primigravida	97	26,1		
	Multigravida	274	73,9		
4.	Gestational Age				
	Trimester 1	49	13,2	0,518	0,228
	Trimester 2	150	40,4		
	Trimester 3	172	46,4		

*Correlation significant at the 0,01 level (2-tailed)

Based on Table 1, it can be seen that the characteristics of the respondents by age show that the majority, 314 (84.6%), are aged 20-35 years. The educational background of the respondents indicates that most, 223 (60.1%), have a secondary education level. Regarding gravidity status, 217 (58.5%) of the respondents are classified as multigravida. Most respondents, 172 (46.4%), are in the third trimester of pregnancy.

As shown in Table 1, the majority of respondents fall within the age range of 20-35 years. This age range is considered a healthy reproductive age, as women's reproductive organs are functioning well and are prepared for pregnancy. Pregnancies in women under 20 or over 35 years old are at higher risk, potentially leading to low birth weight, hypertension, preeclampsia, and other complications. Women under 20 may not have a uterus that has reached normal size, which can lead to issues during pregnancy such as preeclampsia. Women over 35 may experience degenerative cellular processes that can result in decreased organ function, including peripheral blood vessels. This decline in function can lead to changes in blood pressure, increasing the risk of preeclampsia [15]. Pregnant women over 35 are more likely to experience excessive weight gain, gestational diabetes, and gestational hypertension. Additionally, they are at greater risk of requiring induced labor or cesarean sections. Possible impacts on babies from mothers over 35 include premature birth, low birth weight, and poor Apgar scores [16]. The analysis revealed no significant correlation between age and knowledge, with a p-value greater than 0.5, indicating no relationship between the two variables. This finding is consistent with studies by Felix (2019) and Nina (2017), which also concluded that age does not influence knowledge levels [17][18]. The analysis revealed

no significant correlation between age and attitude, with a p-value greater than 0.5, indicating no relationship between the two variables. This finding is consistent with studies by A study from Josephine (2022) conducted on maternal mental health and pregnancy attitudes found that maternal age did not significantly affect attitudes toward pregnancy. This suggests that the attitudes of pregnant women, including how they view their pregnancy, may be more influenced by personal circumstances and support rather than by age alone [19].

As seen in Table 1, most respondents, 223 (60.1%), have a secondary education level or equivalent. The analysis revealed significant correlation between educational and knowledge, with a p-value less than 0.5, indicating relationship between the two variables. Education level is related to an individual's knowledge and the process of information acceptance. Generally, the higher the education level, the better the knowledge or reception of information. Pregnant women with basic and higher education have a greater chance of undergoing HIV testing compared to those with non-formal education. This is because women with higher education are likely to have stable employment, allowing them to access healthcare services. Additionally, women with higher education also have a greater exposure to information regarding HIV/AIDS, enabling them to make informed decisions about HIV screening [20].

The characteristics of the respondents regarding gravida status show that the majority, 274 (73.9%), are multigravida, and a significant number of respondents, 172, are in the third trimester, indicating that this is their second pregnancy or more. Gravida status and gestational age are also factors that can influence the condition of pregnant women and are among the factors that can lead to preeclampsia. Primigravida women are 5.564 times more likely to experience preeclampsia compared to multigravida women, and women in their third trimester are 4.429 times more likely to experience preeclampsia compared to those in the first or second trimesters [15]. The analysis revealed no significant correlation between Gravida status, knowledge and attitude, with a p-value greater than 0.5, indicating no relationship between the variables. Primigravida women revealed no statistically significant association between their level of knowledge, attitude and their gravida status. The findings indicated that other factors, such as educational background, were more strongly linked to knowledge levels than the number of pregnancies [21]. Study on prenatal breastfeeding attitudes found no significant relationship between gravida status and maternal attitudes. These findings suggest that gravida status alone might not be a key factor influencing attitudes during pregnancy, but other socio-demographic and informational variables could play a more substantial role [22].

Table 2. Relationship Between Attitude and Triple Elimination Testing

Examination	Knowledge		Total	P Value
	Poor	Good		
HIV				0,025
No	10	43	53	
Yes	28	290	318	
Syphilis				0,01
No	11	44	55	
Yes	27	289	316	
Hepatitis				0,006
No	11	42	53	
Yes	27	291	318	

Based on Table 2, it can be seen that respondents with good knowledge include 290 pregnant women who underwent HIV testing, 289 pregnant women who were tested for syphilis, and 291 who were screened for hepatitis.

Table 3. Relationship Between Attitude and Triple Elimination Testing

Examination	Attitude		Total	P Value
	Poor	Good		
HIV				
No	6	47	53	0,004
Yes	9	309	318	
Sifilis				
No	6	49	55	0,005
Yes	9	307	316	
Hepatitis				
No	6	47	53	0,004
Yes	9	309	318	

Based on Table 3, it can be observed that respondents with a good attitude include 309 pregnant women who underwent HIV testing, 316 who were tested for syphilis, and 318 who were screened for hepatitis. According to Table 2, 290 pregnant women have good knowledge regarding HIV testing, 289 for syphilis, and 291 for hepatitis. There is a relationship between knowledge and the utilization of HIV testing services for pregnant women during antenatal care visits [23]. The study found that a majority of pregnant women have good knowledge about the triple elimination tests; however, some still have insufficient knowledge, leading them not to participate in these tests. Conversely, pregnant women with good knowledge are more likely to engage in these health behaviors, with a 3.18 times higher likelihood of undergoing HIV testing [24].

The analysis showed a significant relationship between knowledge and HIV testing (P-value 0.025), syphilis (P-value 0.01), and hepatitis (P-value 0.006), all less than 0.05, indicating a correlation between knowledge and these tests. According to research by Liliana and Sauw (2021), there is a significant relationship between knowledge and the behavior of pregnant women regarding iron consumption. Pregnant women with good knowledge tend to behave according to what they know [25]. Research by Munna et al. (2020) also indicates a relationship between the knowledge level of pregnant women and their behavior in utilizing maternal and child health books [26]. Knowledge about the triple elimination tests is influenced by various factors, both internal and external. Petralina (2020) states that age, education, occupation, parity, and sources of information are influential. This study also highlights that environmental factors affect the knowledge acquisition process due to reciprocal interactions that shape an individual’s understanding [11].

Based on Table 3, the P-value from the relationship between attitudes and HIV testing is 0.04, for syphilis is 0.05, and for hepatitis is 0.04, indicating a relationship between pregnant women’s attitudes and the triple elimination tests. Lastrini and Kurniasari (2022) found a correlation between maternal attitudes and the incidence of low birth weight. A positive attitude contributes to positive behavior [27]. Pregnant women with a good attitude are 2.5 times more likely to undergo HIV testing .[24]. Fauziani et al. (2020) identified factors affecting pregnant women's knowledge regarding the triple elimination tests, including their education level, job status, attitudes, available facilities, and support from healthcare providers and partners. The multiple logistic regression analysis yielded a P-value of 0.004 (< 0.05), indicating significant relationships among these variables with the implementation of HIV/AIDS testing in pregnant women. Respondents who are employed have 29 times the chance, good facilities have 27 times the chance, spousal support has 13 times the chance, and healthcare provider support has 18 times the chance of undergoing HIV/AIDS testing [28].

4 Conclusion

This study found that most respondents had good knowledge and attitudes towards the triple elimination test. The analysis revealed a relationship between knowledge and attitudes with the implementation of the test. However, there were some pregnant women who, despite having good knowledge and attitudes, did not undergo the test according to the established standards. This study did not conduct qualitative analysis to explore the reasons behind this. Future research is recommended to carry out a qualitative study to further investigate the causes of non-compliance with the triple elimination test standards.

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