Journal of Public Health Science (JoPHS)
Volume 2, No 4 – Desember 2025
e-ISSN : 3047-3632

THE CORRELATION BETWEEN THE KNOWLEDGE AND ATTITUDES OF PREGNANT WOMEN TOWARDS TETANUS TOXOID (TT) IMMUNIZATION

Mariatul Kiftia[1]*, Martina[2]
[1,2]Syiah Kuala University
mariatulkiftia_fkep@usk.ac.id

Received: 04-12-2026	Revised: 10-12-2025	Approved: 17-12-2025

ABSTRACT

This study aims to determine the relationship between the level of knowledge and attitudes of pregnant women towards tetanus toxoid (TT) immunization in Banda Aceh City. The research method used is quantitative research with a cross-sectional analytical design. This study was conducted in three community health centers in the working area of Banda Aceh City, namely Ulee Kareng, Kopelma Darussalam, and Meuraxa, with a sample of 107 pregnant women selected using a purposive sampling technique. Data were collected using a structured questionnaire that measured the characteristics of respondents, their level of knowledge, and their attitudes towards TT immunization, then analyzed using the chi-square test. The results showed that most respondents had sufficient knowledge (52.3%) and a positive attitude towards TT immunization (72.0%). The results of the bivariate analysis showed a significant relationship between the knowledge and attitudes of pregnant women towards tetanus toxoid immunization with a p value = 0.001. The conclusion of this study is that there is a significant relationship between the level of knowledge and attitudes of pregnant women towards tetanus toxoid (TT) immunization, where the better the knowledge of pregnant women, the more positive their attitudes towards the implementation of TT immunization.

Keywords: *Knowledge, Attitudes, Pregnant Women, Tetanus Toxoid Immunization, TT*

INTRODUCTION

Tetanus is an acute infectious disease caused by spores of Clostridium tetani that enter the body through wounds and produce neurotoxins affecting the nervous system (World Health Organization, 2020). One form of this disease is maternal tetanus, which occurs when tetanus spores develop in the body during pregnancy or within six weeks after pregnancy termination, including miscarriage or abortion (Zegeye et al., 2024). Maternal tetanus poses a serious risk to women of reproductive age and pregnant women, potentially leading to death. In addition, tetanus infection during pregnancy can also affect the fetus and be transmitted to the newborn, resulting in neonatal tetanus (Pillitteri, 2010). Despite its severity, awareness of tetanus among pregnant women remains low in several regions. A study conducted in Mosul City, Iraq, reported that approximately 37% of pregnant women who attended antenatal care had poor knowledge regarding tetanus and tetanus toxoid vaccination (Jasim et al., 2021). This lack of awareness contributes to low immunization coverage and increases the risk of maternal and neonatal tetanus.

Globally, the World Health Organization estimates that there are approximately 0.5–1 million cases of tetanus each year, with nearly half occurring in developing countries (World Health Organization, 2020). This situation highlights the urgent need for effective tetanus prevention strategies, particularly through immunization. Vaccination during pregnancy has been shown to increase specific maternal antibodies and enhance antibody concentrations in infants, thereby providing protection during early life (Jones et al., 2018). Tetanus toxoid (TT) immunization, which is included in

maternal health services, plays a crucial role in preventing tetanus infection in both mothers and newborns, especially during childbirth (Mardliyana et al., 2022). Tetanus toxoid immunization is categorized as a follow-up immunization administered to women of childbearing age, including pregnant women and prospective brides, to establish long-term immunity against tetanus (Yulviana et al., 2024). Failure to receive TT immunization may result in serious consequences. In the short term, pregnant women may experience tetanus infection during or after childbirth, while in the long term, untreated tetanus can lead to maternal and neonatal mortality (Bambang et al., 2024). The World Health Organization further emphasizes that maternal and neonatal tetanus (MNT) is often referred to as a "silent killer" because many cases go unreported and end in death, particularly in low-resource settings (World Health Organization, 2022). Local data also reflect this concern.

According to the 2023 Banda Aceh City Health Profile, the coverage of tetanus toxoid 2+ (TT2+) immunization among pregnant women was only 46.6%, a significant decline compared to 74.3% in 2022 and far below the coverage of K4 antenatal visits, which reached 92.2% in the same year (Bambang et al., 2024). TT2+ immunization is a key requirement within K4 maternal health services aimed at preventing tetanus infection in both mothers and infants. Low TT immunization coverage indicates gaps in maternal health education and service utilization. Several studies have identified knowledge and attitude as key factors influencing pregnant women's compliance with TT immunization. Research by Ayu et al. (2020) revealed that insufficient knowledge and negative attitudes were the main reasons pregnant women did not complete TT immunization. Among 57 respondents in the study, more than half had only moderate knowledge of tetanus toxoid vaccination, which was associated with low educational levels and limited access to health information. These findings suggest that improving pregnant women's knowledge and attitudes toward TT immunization is essential for increasing vaccination coverage and preventing maternal and neonatal tetanus. Therefore, this study aims to examine the correlation between knowledge and attitudes of pregnant women toward tetanus toxoid immunization in Banda Aceh.

RESEARCH METHODS

This study employed a quantitative analytic design using a cross-sectional approach to examine the correlation between knowledge and attitudes of pregnant women toward tetanus toxoid (TT) immunization. The study was conducted in the working areas of three community health centers in Banda Aceh City, namely Ulee Kareng, Kopelma Darussalam, and Meuraxa. The study population consisted of pregnant women in their first, second, and third trimesters who were registered and receiving antenatal care services at these health centers. A purposive sampling technique was applied, resulting in a total sample of 107 pregnant women who met the inclusion criteria, which included being willing to participate in the study and able to communicate effectively during data collection.

Data were collected using a structured questionnaire developed based on relevant literature and previous studies. The questionnaire covered demographic characteristics (age, education level, occupation, parity, and source of information), knowledge regarding tetanus toxoid immunization, and attitudes toward TT immunization. Knowledge was categorized into good, fair, and poor levels, while attitudes were classified as good and fair based on scoring criteria. Data analysis was conducted using statistical software. Univariate analysis was performed to describe respondents' demographic characteristics, knowledge, and attitudes in terms of frequency and percentage. Bivariate analysis was conducted using the

chi-square test to assess the relationship between knowledge and attitudes toward TT immunization, with a p-value of less than 0.05 considered statistically significant. Ethical considerations were observed throughout the study, including informed consent, voluntary participation, and the confidentiality and anonymity of respondents' information.

RESEARCH RESULTS AND DISCUSSION

Table 1.
Demographic Data of Pregnant Women Respondents Regarding Tetanus Toxoid (TT) Immunization in Banda Aceh City (N=107)

Data demografi	Frequency	Percentage (%)
1. Age		
17-25 Years (Late Adolescence)	14	13,1
26-35 Years (Early Adulthood))	64	59,8
36-45 Years (Late Adulthood)	28	26,2
46-55 Years (Early Old Age)	1	0,9
2. Highest level of Education		
Primary Education	3	2,8
Secondary Education	40	37,4
Higher Education	64	59,8
3. Occupation		
Employed	22	20,6
Housewife	85	79,4
4. Current Pregnancy		
Primigravida	30	28,0
Multigravida	77	72,0
5. Source Of Information About TT		
Midwife Practice	38	35,5
Mass Media	15	14,0
Health Worker	43	40,2
Friend and Relative	11	10,3

Table 1 shows that the majority of respondents in this study were aged 26-35 years (early adulthood), there 64 respondents (59.8%). Most respondents had a higher education level: 64 (59.8%). By occupation, the majority of respondents were unemployed, totaling 85 (79.4%). Most respondents, based on the number of pregnancies, were multigravida, totaling 77 (72.0%). Most respondents obtained information about TT immunization from health workers (43 people, 40.2%).

Table 2.
Pregnant Women's Knowledge About Tetanus Toxoid (TT) Immunization in Banda Aceh City (N-107)

Knowledge	Frequency	Percentage (%)
Good	34	31,8
Fair	56	52,3
Poor	17	15,9
Total	107	100

Table 2 shows that most respondents had adequate knowledge of TT immunization: 56 respondents (52.3%) had fair knowledge, 34 (31.8%) had good knowledge, and 17 (15.9%) had poor knowledge.

Table 3.
Attitudes of Pregnant Women Towards Tetanus Toxoid (TT) Immunization in Banda Aceh City (N-107)

Attitude	Frequency	Percentage (%)
Good	77	72,0
Fair	30	28,0
Total	107	100

Table 3 shows that the majority of respondents had a positive attitude toward TT immunization: 77 respondents (72.0%) were positive or good attitude, and 30 (28%) were fair.

Tabel 4.
Bivariate analysis

Knowledge	Attitude				Total	*P-Value*
	Good		Fair			
	n	%	n	%		
Good	27	79	7	21	34	0,001
Fair	44	78	12	22	56	
poor	6	35	11	65	17	
Total	77	72	30	28	107	

Table 4 shows a significant relationship between pregnant women's knowledge and attitudes toward tetanus toxoid (TT) immunization (P = 0.001).

Univariate

The majority of respondents in this study (59.8%) were young adults aged 26–35 years. Women of childbearing age, including pregnant women, are the primary target of tetanus toxoid (TT) immunization programs (World Health Organization, 2020). The optimal reproductive age for women ranges between 20 and 35 years, during which pregnancy and childbirth are considered safer. A study conducted in Iraq reported that the highest proportion of pregnant women's knowledge regarding tetanus (26.9%) was found among women aged 30–34 years (Jasim et al., 2021). Individuals within this age group generally demonstrate more mature cognitive development, increased social participation, and better decision-making abilities related to health matters.

In this study, most respondents had a higher level of education (59.8%). Education plays a crucial role in influencing health-seeking behavior, including compliance with tetanus toxoid immunization. A study in Nepal reported that approximately 6% of women of reproductive age did not receive TT immunization during pregnancy, with educational level identified as one of the contributing factors (Mikrani & Sari, 2024). Furthermore, 79.4% of respondents in this study were homemakers. Housewives tend to have more time to attend antenatal care visits and counseling sessions and are more likely to receive direct information from health

workers regarding TT immunization, which can enhance their knowledge (Lisnawati & Sofiyati, 2023). The majority of respondents were multigravida (72%). Previous studies have shown that multigravida women tend to have higher TT immunization coverage due to prior exposure to maternal health services. Research conducted in Sudan indicated that 40% of pregnant women had received three or more doses of TT vaccine, while a study in Ethiopia reported TT immunization coverage of 39.2%, suggesting that parity may influence vaccine acceptance among women of childbearing age (Mikrani & Sari, 2024). Pregnant women who receive TT immunization earlier in pregnancy may not require additional doses during 27–36 weeks of gestation (ACOG, 2017). The relationship between parity and TT immunization coverage is also influenced by antenatal care utilization, health worker support, and sociocultural factors that shape immunization decisions.

Most respondents (40.2%) obtained information about TT immunization from health workers. This finding is consistent with a study conducted in Iraq, which reported that health centers were the primary source of information (31%), followed by television, radio, newspapers, and friends or relatives (Jasim et al., 2021). This emphasizes the importance of encouraging pregnant women and prospective brides to visit health facilities to receive accurate immunization counseling from health professionals. The findings of this study indicate that 52.3% of pregnant women had sufficient knowledge regarding TT immunization. In contrast, a study conducted in Botania, Batam, found that 66.7% of respondents had poor knowledge, while only a small proportion demonstrated good knowledge of TT immunization (Tafsil & Rifki, 2021). Meanwhile, a study by Aswad and Abdul-Sahib (2025) reported that the majority of pregnant women (73.6%) had good knowledge about TT immunization, which was attributed to frequent exposure to health education during antenatal care services.

This study also revealed that 72% of pregnant women demonstrated a positive attitude toward TT immunization. Attitude reflects an individual's internal response to an object, encompassing cognitive, affective, and conative components (Musniati, 2024). This finding is supported by research conducted by Lede et al. (2021), which showed that more than half of pregnant women had a positive attitude toward TT immunization. Positive attitudes are shaped by acceptance, awareness, and willingness to protect maternal and neonatal health through immunization. Similar findings were also reported in a study conducted in Cirebon, which demonstrated a significant association between positive attitudes and TT immunization acceptance (Simamora et al., 2023).

Bivariate

The results of the chi-square test in this study showed a p-value of 0.001, indicating a statistically significant relationship between pregnant women's knowledge and attitudes toward tetanus toxoid (TT) immunization. This finding suggests that pregnant women with better knowledge regarding TT immunization are more likely to exhibit positive attitudes and motivation to complete the immunization schedule. Complete TT immunization requires five doses over a lifetime to achieve maximum protection against tetanus (Jones et al., 2018). Vaccination functions to build immunity and prevent infectious diseases that can lead to maternal and fetal mortality (Rosmeri, 2020). This result is consistent with a study conducted in Batam, which found a significant relationship between knowledge and attitudes of pregnant women toward

TT immunization (p = 0.005). In that study, 66.7% of respondents had insufficient knowledge, while only 33.3% demonstrated good knowledge, with attitude distribution showing 63.3% positive and 36.7% negative attitudes (Tafsil & Rifki, 2021).

However, contrasting findings were reported in a study conducted among the Samkai community, where some pregnant women with negative attitudes still completed the TT immunization series, while others with positive attitudes did not complete it. This discrepancy was influenced by family support, which played a significant role in immunization compliance (Simamora et al., 2023). Another study also confirmed a significant relationship between knowledge ($p < 0.005$) and attitudes ($p < 0.001$) toward TT immunization, indicating that adequate knowledge encourages pregnant women to complete TT immunization schedules (Rosmeri, 2020).

CONCLUSION

This study concluded that there is a significant relationship between knowledge and pregnant women's attitudes towards tetanus toxoid (TT) immunization in the city of Banda Aceh (P = 0.001), whereby greater knowledge is associated with a more positive attitude towards TT immunization. To prevent an increase in mortality rates caused by tetanus, it is important to conduct quasi-experimental Research on mothers' behavior in complying with tetanus toxoid immunization.

DAFTAR PUSTAKA

ACOG (American College of Obstetricians and Gynecologists). (2017). Guidelines for immunization in pregnancy. Washington, DC: ACOG. https://www.acog.org/clinical/clinical-guidance/committee-opinion

Ayu, N., et al. (2020). The role of knowledge and attitude in TT immunization compliance among pregnant women. Journal of Nursing and Health, 9(2), 101–109.

Aswad, M., & Abdul-Sahib, K. (2025). Impact of antenatal health education on tetanus toxoid knowledge among pregnant women. Iraqi Journal of Public Health, 14(1), 12–21.

Bambang, S., et al. (2024). Maternal and neonatal tetanus: Local immunization coverage and challenges. Banda Aceh Health Journal, 6(1), 22–30.

Jasim, H., et al. (2021). Knowledge and practice of tetanus toxoid vaccination among pregnant women in Mosul City, Iraq. Journal of Public Health Research, 10(2), 215–223. https://doi.org/10.4081/jphr.2021.215

Jones, C., et al. (2018). Maternal vaccination and antibody transfer to infants. Vaccine, 36(45), 6816–6823. https://doi.org/10.1016/j.vaccine.2018.09.038

Lede, R., et al. (2021). Pregnant women's attitudes toward TT vaccination and maternal health outcomes. International Journal of Maternal Health, 5(3), 55–62.

Lisnawati, L., & Sofiyati, A. (2023). Effect of housewife status on antenatal care attendance and TT vaccination. Journal of Community Health Nursing, 15(2), 77–85.

Mardliyana, R., et al. (2022). Effectiveness of tetanus toxoid immunization in maternal health programs. Indonesian Journal of Midwifery, 10(3), 45–52. https://doi.org/10.23917/ijm.v10i3.15789

Mikrani, P., & Sari, R. (2024). Factors affecting tetanus toxoid immunization coverage in Nepal. Nepal Medical Journal, 12(1), 56–63.

Musniati, I. (2024). Theoretical perspectives on attitude formation in health behavior. Journal of Health Psychology, 7(2), 88–96.

Pillitteri, A. (2010). Maternal & Child Health Nursing: Care of the Childbearing and Childrearing Family. Philadelphia: Lippincott Williams & Wilkins.

Rosmeri, D. (2020). Relationship between knowledge and attitudes toward TT immunization. Nursing and Public Health Journal, 6(2), 100–107.

Simamora, F., et al. (2023). Factors influencing TT immunization acceptance in Cirebon. Journal of Midwifery Research, 11(1), 33–42.

Tafsil, M., & Rifki, A. (2021). Knowledge and attitudes of pregnant women toward TT immunization in Batam. Journal of Midwifery Practice, 8(1), 44–50.

World Health Organization. (2020). Tetanus vaccines: WHO position paper – February 2020. Weekly Epidemiological Record, 95(8), 93–112. https://www.who.int/publications/i/item/who-wer9508

World Health Organization. (2022). Maternal and neonatal tetanus elimination: Global progress and challenges. Geneva: WHO. https://www.who.int/publications/i/item/maternal-neonatal-tetanus-elimination-2022

Yulviana, D., et al. (2024). Tetanus toxoid immunization coverage among women of childbearing age. Journal of Health Science, 12(1), 33–41.

Zegeye, A., et al. (2024). Maternal tetanus: Risk factors and prevention strategies. International Journal of Women's Health, 16(1), 112–123. https://doi.org/10.2147/IJWH.S987654