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THE EFFECT OF HEALTH EDUCATION ON PREGNANT WOMEN'S KNOWLEDGE AND ATTITUDES TOWARD TRIPLE ELIMINATION

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ABSTRAK : PENGARUH PENDIDIKAN KESEHATAN TERHADAP PENGETAHUAN DAN SIKAP WANITA HAMIL TERHADAP ELIMINASI TRIPEL

Latar Belakang : Angka Kematian Ibu (AKI) saat ini masih jauh dari target Tujuan Pembangunan Berkelanjutan/Sustainable Development Goals (SDGs) yakni memiliki target menurunkan Angka Kematian Ibu (AKI) di bawah 70 per 100.000 Kelahiran Hidup (KH) dan menurunkan Angka Kematian Bayi (AKB) di bawah 25 per 100.000 KH Periode tahun 2016-2030. World Health Organisation (WHO) mencanangkan eliminasi penularan penyakit infeksi dari ibu ke anak (mother-to-child transmission). Tiga penyakit yang menjadi fokus adalah HIV, Hepatitis B, dan Sifilis. Penyakit tersebut merupakan penyakit infeksi yang endemik di wilayah Asia dan Pasifik. (WHO, 2018). Penularan Penyakit dari Ibu ke Anak (PPIA) atau *mother-to-child disease* suatu hal yang harus diperhatikan dalam ruang lingkup kesehatan ibu dan anak selama masa kehamilan, persalinan, dan nifas. Penularan penyakit tersebut dapat dicegah dengan pemeriksaan awal pada ibu hamil yaitu triple eliminasi.

Tujuan : Mengetahui Pengaruh Penyuluhan dalam Memengaruhi Pengetahuan dan Sikap Ibu Hamil tentang Triple Eliminasi di wilayah kerja Puskesmas Tomuan Kota Pematangsiantar.

Metode : Menggunakan rancangan *Quasi experimental* dengan pendekatan *pretest-posttest one group design*. *Pretest* dilakukan pada kelompok perlakuan mengenai penyuluhan terhadap pengetahuan dan sikap ibu nifas tentang triple eliminasi. Intervensi dilakukan dengan memberikan penyuluhan kepada ibu hamil. *Posttest* dilakukan setelah intervensi diberikan. Hasil sebelum dan setelah intervensi akan dibandingkan

Hasil : Terdapat perbedaan pengetahuan sebelum dan setelah diberikan penyuluhan triple eliminasi pada kelompok, dengan beda peningkatan pengetahuan yang bermakna yaitu pengetahuan responden meningkat 40.34% mengenai triple eliminasi setelah dberikan penyuluhan (p< 0.001). Terdapat perbedaan rata rata sikap yang bermakna sebelum dan setelah diberikan penyuluhan, dengan beda peningkatan sikap yang bermakna yaitu sikap responden terhadap triple eliminasi meningkat 29.16 % sesudah dberikan penyuluhan (p< 0.001).

Kesimpulan : Terdapat pengaruh penyuluhan terhadap peningkatan pengetahuan dan sikap ibu hamil tentang triple eliminasi.

Kata Kunci : Triple eliminasi, pengetahuan, sikap dan ibu hamil

ABSTRACT

Background: The Maternal Mortality Rate (MMR) remains far from the target set by the Sustainable Development Goals (SDGs), which aims to reduce MMR to below 70 per 100,000 live births and the Infant Mortality Rate (IMR) to below 25 per 100,000 live births for the 2016–2030 period. The World Health Organization (WHO) has initiated the elimination of mother-to-child transmission (MTCT) of infectious diseases. The three priority diseases are HIV, Hepatitis B, and Syphilis, which are endemic in the Asia-Pacific region (WHO, 2018). Prevention of mother-to-child transmission (PMTCT) is an important aspect of maternal and child health during pregnancy, childbirth, and the postpartum period. This transmission can be prevented through early screening of pregnant women with triple elimination.

Objective: To determine the effect of health education on the knowledge and attitudes of pregnant women regarding triple elimination at Tomuan Public Health Center, Pematangsiantar City.

Methods: This study used a quasi-experimental design with a pretest-posttest one group approach. The pretest was conducted on the intervention group to assess knowledge and attitudes toward triple elimination. The intervention consisted of providing health education to pregnant women. A posttest was conducted after the intervention, and the results before and after the intervention were compared.

Results: There was a significant difference in knowledge before and after the triple elimination education, with an increase of 40.34% in respondents' knowledge after the intervention (p < 0.001). There was also a

significant difference in attitudes, with an improvement of 29.16% in respondents' attitudes toward triple elimination after the education ($p < 0.001$).

Conclusion: Health education has a significant effect on improving the knowledge and attitudes of pregnant women regarding triple elimination.

Keywords: Triple elimination, knowledge, attitude, pregnant women

INTRODUCTION

The Regulation of the Minister of Health of the Republic of Indonesia Number 52 of 2017 governs the Triple Elimination Program, which aims to achieve the "3 Zero" targets by 2030: zero new infections (reduction in new cases), zero deaths (reduction in mortality), and zero stigma and discrimination (reduction of discrimination) (Kemenkes RI, 2017). The Triple Elimination Program is designed to eliminate the transmission of HIV/AIDS, Hepatitis B, and Syphilis from mother to child, while sustaining these achievements. This program aims to improve the health of women, children, and families through a coordinated approach (WHO, 2025).

Globally, an estimated 1.3 million women and girls living with HIV become pregnant each year. Without intervention, the rate of mother-to-child transmission (PMTCT) of HIV during pregnancy, childbirth, or breastfeeding ranges from 15% to 45% (WHO, 2025). HIV screening among pregnant women aims to prevent transmission to newborns. HIV can be transmitted from mother to child during pregnancy, delivery, and breastfeeding. In 2024, 3,389,523 pregnant women in Indonesia underwent HIV testing, with 2,584 (0.08%) testing positive (Kemenkes RI, 2024). (WHO, 2022)

Hepatitis B virus transmission can occur vertically from an infected mother to her baby. Vertical transmission, particularly during the perinatal period, is the most common route, and approximately 95% of infants infected during this period are at risk of developing chronic Hepatitis B. In 2024, 3,396,010 out of 4,867,979 targeted pregnant women were tested using RDT HBsAg, with 59,097 (1.45%) testing reactive (Kemenskes RI, 2024).

Syphilis is a sexually transmitted infection (STI) caused by *Treponema pallidum*. In pregnant women, the infection can be transmitted to the fetus through the placenta or during childbirth, potentially leading to miscarriage, stillbirth, or congenital syphilis. Among women with long-term syphilis infection, nearly half of pregnancies may be affected, with outcomes including stillbirth, miscarriage, perinatal death, congenital syphilis, or low birth weight. Therefore, syphilis screening during pregnancy is a crucial preventive measure. In 2024, 62.90% of pregnant women underwent syphilis screening, with 0.14% testing positive (Kemenkes RI, 2024). Most of these adverse birth outcomes are associated with limited access to and quality of maternal healthcare services. Approximately 21% occurred among pregnant women who did not attend antenatal care, 53% among those who attended antenatal care but were not screened for syphilis. (WHO, 2025) (Azhali, Setiabudi, & Alam, 2023)

Previous studies indicate that knowledge about triple elimination remains limited. Wulandari (2022) reported that 53.3% of respondents had poor knowledge, while Wiantini (2022) found that 51.1% of pregnant women had low knowledge prior to intervention. Health behavior is influenced by knowledge and can be categorized into promotive, preventive, curative, and rehabilitative behaviors. (Irwan, 2017). Based on research, one of the factors influencing mothers in undergoing triple elimination screening is maternal knowledge.(L. A. Wulandari, 2021)(Aryani, et al 2024)(A. Wulandari, et al 2022) (Labadjo & Lamangantjo, 2024)

Therefore, prevention efforts have been strengthened through the triple elimination initiative targeting the mother-to-child transmission (PMTCT). One of the essential PMTCT services is screening for HIV, syphilis, and Hepatitis B during antenatal care (ANC). The Triple Elimination Program, aligned with WHO recommendations, is expected to reduce transmission rates through preventive measures, including routine screening during ANC visits (WHO, 2021). As part of this strategy, the World Health Organization recommends implementing triple elimination screening during antenatal care to accelerate elimination efforts and improve the quality of maternal and child health. Health services play a crucial role in designing targeted educational interventions, counseling, and evidence-based programs to not only improve knowledge but also encourage behavioral change (Alifariki et al., 2025).

Based on the issues described above, it is necessary to implement a continuum of care services, beginning with health promotion through health education on the importance of triple elimination screening during antenatal care (ANC).

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This approach is expected to improve pregnant women's knowledge, which in turn can foster positive attitudes toward undergoing the screening.

RESEARCH METHODS

This study employed a quasi-experimental design with a pretest–posttest one group approach.(Notoadmojo, 2010) (Sahir, 2022) A pretest was conducted to assess the knowledge and attitudes of pregnant women regarding triple elimination prior to the educational intervention. The intervention consisted of health education sessions provided to pregnant women. A posttest was conducted after the intervention, and the results before and after were compared.

The study was conducted in the working area of Tomuan Public Health Center, East Siantar District, Pematangsiantar City, from September to October 2024. The population consisted of all pregnant women attending ANC at the health center. The sample included all pregnant women attending ANC during the study period, selected using consecutive sampling.

RESEARCH RESULTS

Characteristics of Study Subjects

The results of this study include descriptive (univariate) analysis to describe the characteristics of the respondents. The variables observed included age, education level, occupation, gravida status, and knowledge. A total of 30 pregnant women participated in this study.

Based on Table 1, the majority of respondents (28 individuals; 93.3%) were aged between 20 and 35 years. In terms of educational level, most respondents (18 individuals; 60%) had a higher level of education (senior high school or equivalent). Regarding gravida status, the majority of respondents (19 individuals; 63.3%) were primigravida. In terms of occupation, most respondents (20 individuals; 66.7%) were unemployed.

Table 1
Characteristics of Study Subjects

Characteristics	Respondents	
	n	%
Age		
< 20 dan > 35 years	2	6.7
20-35 years	28	93.3
Education		
Low	12	40
High	18	60
Occupation		
Unemployed	20	66.7
Employed	10	33.3
Gravida		
Primi dan Grand Multigravida	19	63.3
Multigravida	11	36.7

Differences in Pregnant Women's Knowledge of Triple Elimination Before and After Health Education at Tomuan Public Health Center, Pematangsiantar City

The analysis of pretest and posttest scores aimed to identify differences and improvements in knowledge following the educational intervention. The aspects assessed in this study included differences and increases in knowledge levels.

The analysis of pretest and posttest scores was conducted using a paired t-test; however, since the data were not normally distributed, the Wilcoxon signed-rank test was used as an alternative. The normality test using the Shapiro–Wilk method (Dahlan, 2014) (appropriate for sample sizes < 50) indicated that the knowledge data were not normally distributed ($p < 0.05$). The differences in knowledge scores are presented in Table 2.

Table 2
Differences in Pregnant Women's Knowledge of Triple Elimination Before and After Health Education

Variable	Pre Test	Post test	*p*	% Increase
Knowledge				
Median	50	65	<0.001*	40.34%
Min - Max	40-70	60-90		

**Wilcoxon test*

Table 2 shows that the knowledge variable experienced an increase in median scores after the triple elimination health education intervention. The improvement was statistically significant, with an increase of 40.34% in respondents' knowledge regarding triple elimination following the intervention ($p < 0.001$).

Differences in Pregnant Women's Attitudes Toward Triple Elimination Before and After Health Education at Tomuan Public Health Center, Pematangsiantar City

The analysis of pretest and posttest scores aimed to identify differences and improvements in attitudes following the educational intervention. The aspects assessed in this study included differences and changes in attitudes.

The analysis of pretest and posttest scores was conducted using a paired t-test. Prior to this, a normality test was performed using the Shapiro–Wilk test (appropriate for sample sizes < 50), which showed that the attitude data were normally distributed (p > 0.05). The differences in attitude scores are presented in Table 3.

Table 3
Differences in Pregnant Women's Attitudes Toward Triple Elimination Before and After Health Education

Variabel	Mean (s.b)	Difference(s.b)	CI 95%	% Increase
Attitude				
Before Education	20.57(2.8)	5.5(3.3)	4.2 - 6.7	29.16%
After Education	26.07(1.7)			

**Uji t*

Table 3 shows that there was a statistically significant difference in the mean attitude scores before and after the health education intervention. The improvement in attitude was significant, with an increase of 29.16% in respondents' attitudes toward triple elimination after the intervention (p < 0.001).

DISCUSSION

The results of this study indicate that the majority of pregnant women were within the healthy reproductive age range (20–35 years), accounting for 93.3% of respondents. This age group is considered optimal for pregnancy, as the risk of complications is relatively lower and the ability to receive and process health-related information tends to be better. According to Idris (2023), pregnant women aged 20–35 years are more likely to complete antenatal care examinations compared to those in high-risk age groups (<20 and >35 years).

Similarly, Wulandari (2023) reported a significant association between age and participation in triple elimination screening (p < 0.05), with an odds ratio (OR) of 0.368, indicating that women in high-risk age groups were 0.3 times more likely not to undergo screening. The same study also found a significant relationship between educational level and participation in triple elimination screening (p < 0.05), with an OR of 0.520, suggesting that respondents with lower educational levels were 0.5 times more likely not to participate in screening.

In terms of education, the majority of respondents had a higher level of education (60%). Educational level plays a crucial role in the acceptance and understanding of health information. This finding is supported by Idris (2023), who reported that respondents with higher education were 2.65 times more likely to complete antenatal care compared to those with only basic education. This finding is consistent with previous studies demonstrating that educational level is statistically associated with maternal compliance in attending antenatal care visits.

Regarding occupational status, most respondents were unemployed (66.7%). While this condition may limit access to certain sources of information, it may also provide more time and flexibility to participate in health education activities.

Gravida characteristics showed that the majority of respondents were primigravida (63.3%). First-time pregnant women generally have a higher level of curiosity and are more responsive to health education. This is supported by Idris (2023), who found a relationship between gravida status and completion of antenatal examinations. Women experiencing their first pregnancy tend to seek more information about their condition.

Several studies have also shown that maternal education level influences knowledge and perceptions regarding health examinations, including triple elimination screening. Widyanthini et al. (2024) reported that both the number of children and educational level were significantly associated with pregnant women's knowledge of triple elimination (HIV, syphilis, and Hepatitis B), with higher-educated women demonstrating better understanding of these screenings.

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The Effect of Health Education on Pregnant Women's Knowledge

The results of this study showed a significant increase in knowledge, with the median score rising from 50 to 65, representing an improvement of 40.34% ($p < 0.001$). This finding indicates that health education has a significant effect on improving pregnant women's knowledge regarding triple elimination (HIV, syphilis, and Hepatitis B).

This improvement can be attributed to the effectiveness of health education as a method for delivering information in a direct, structured, and systematic manner. The findings of this study are consistent with those reported by Wiantini (2022), who found that triple elimination counseling significantly influenced both the level of knowledge and the intention of pregnant women to undergo screening, with a p-value < 0.05. In addition, a community service study conducted by (Yuni, Masnarivan, Nasution, Ramadhani, & YMS, 2023)) demonstrated that health education significantly improved pregnant women's knowledge of triple elimination differing in the use of lecture and question-and-answer methods for health education, with a statistically significant increase observed after the intervention ($p = 0.005$).

Similarly, Fatmawati et al. (2024) reported that audio-visual educational media effectively increased maternal knowledge regarding the importance of triple elimination screening and enhanced their awareness to participate in such examinations. Furthermore, Wahyuni (2022) found that education on the Triple Elimination Program significantly improved pregnant women's interest and understanding of screening after the intervention compared to before. Ariyati (2023) also reported a significant relationship between pregnant women's knowledge of the prevention of mother-to-child transmission (PMTCT) of HIV and the utilization of HIV testing ($p < 0.05$). A similar study was also conducted by (Dewi & Sandhi, 2024), differing in the use of a booklet as the educational media. The results showed a significant difference in pregnant women's knowledge regarding triple elimination before and after the educational intervention using the booklet, with a p-value < 0.01, indicating a statistically significant improvement. A similar study was also conducted by (Sasanti, Ningrum, Dewi, Amelia, & Kehamilan, 2024), which used booklet media as the intervention. The results showed a difference in pregnant women's understanding of triple elimination before and after the educational intervention using the booklet. A similar study was also conducted by (Purnamasari, Rosita, & Fatonah, 2025) regarding health education using pocket book media. The study found a significant difference in the knowledge of prospective brides and grooms about Hepatitis B before and after the intervention, with a p-value < 0.05.

Based on these findings, it can be concluded that health education interventions consistently play an important role in improving pregnant women's knowledge regarding triple elimination, which is in line with the results of this study. Health promotion through educational activities is expected not only to raise awareness and increase knowledge but also to facilitate changes in health behavior (Alifariki, 2025).

The observed increase in knowledge also suggests that there was previously a lack of adequate information regarding triple elimination. After receiving health education, pregnant women demonstrated a better understanding of screening procedures and the prevention of mother-to-child transmission of infectious diseases.

THE EFFECT OF HEALTH EDUCATION ON PREGNANT WOMEN'S ATTITUDES

The results of this study demonstrated a significant improvement in pregnant women's attitudes, with the mean score increasing from 20.57 to 26.07, representing an improvement of 29.16% ($p < 0.001$). This finding indicates that health education not only enhances knowledge but also effectively promotes more positive attitudes toward the triple elimination program.

According to health behavior theory, increased knowledge plays an important role in shaping attitudes. This is supported by Wahyuni (2022), who found a significant difference in pregnant women's interest in undergoing examinations before and after receiving health education ($p < 0.05$). Similarly, Istawati et al. (2023) reported that pregnant women's attitudes toward triple elimination screening were significantly associated with their participation in such examinations, where women with positive attitudes were more likely to undergo screening ($p < 0.05$). In addition, Widyanthini et al. (2024) found that although the majority of respondents had good knowledge, negative perceptions were still present among 55.3% of pregnant women. This finding suggests that knowledge alone is not sufficient to establish positive attitudes, highlighting the need for continuous and relevant educational interventions such as health education programs. Furthermore, Ariyati (2023) reported a significant relationship between pregnant women's attitudes toward the prevention of mother-to-child transmission (PMTCT)

of HIV and the utilization of HIV testing services ($p < 0.05$). Based on the study conducted by Alya (2025) knowledge, educational background, attitudes, and support from healthcare professionals were found to have a significant influence on the uptake of triple elimination screening. Among these factors, the role of healthcare providers emerged as the most influential ($p < 0.05$). Therefore, active engagement of healthcare professionals is essential to increase the coverage of triple elimination screening among pregnant women.(Alya, Farisnih, Kusumawardani, Fera, & Paradhiba, 2025)

(Notoadmojo, 2014) Health education efforts in the context of triple elimination aim to improve public awareness, knowledge, attitudes, and behaviors, while also reducing stigma associated with HIV, Hepatitis B, and syphilis. Reducing stigma is essential to facilitate the implementation of health programs, particularly in case detection and early diagnosis. Strengthening these efforts is therefore crucial for the success of public health programs. Changes in attitude are particularly important, as positive attitudes can lead to actual behavioral changes, such as the willingness to undergo HIV, syphilis, and Hepatitis B screening during pregnancy. Thus, health education serves as an essential initial step in promoting positive health behavior changes among pregnant women.

CONCLUSION

Overall, the findings of this study indicate that health education is an effective intervention for improving pregnant women's knowledge and attitudes toward the triple elimination program. This is consistent with recent studies emphasizing that health education is a key strategy in preventing mother-to-child transmission of infectious diseases.

The observed increase in knowledge by 40.34% and attitudes by 29.16% demonstrates that the program has a substantial and significant impact. These findings highlight the importance of integrating structured educational interventions into maternal health services to support the success of triple elimination efforts.

RECOMMENDATIONS

Health education activities should be carried out regularly by healthcare providers using engaging educational media to achieve more optimal outcomes. Education on triple elimination should be delivered to pregnant women during antenatal care (ANC) visits.

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