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Evaluating the Effectiveness of Midwife-Led Counseling on Maternal Knowledge, Attitudes, and Practices Related to Post-Immunization Adverse Events

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Abstract: Immunization is a key strategy to enhance individual immunity through the body's memory response. Adequate maternal knowledge regarding post-immunization adverse events (AEFI) is essential to promote awareness and ensure the completion of the recommended immunization schedule. Counseling is one of the most effective approaches to improve mothers' understanding and attitudes toward AEFI. This study aimed to determine the effectiveness of midwife-led counseling in improving mothers' knowledge and attitudes regarding AEFI. A quantitative pre-experimental design using a one-group pretest–posttest approach was employed. The study involved 45 mothers with children aged 0–9 months. Data on knowledge were analyzed using the Mann–Whitney test, while attitudes were assessed using the Wilcoxon signed-rank test. A significant improvement was observed in maternal knowledge following the counseling intervention ($p = 0.000$). Similarly, maternal attitudes showed a significant increase after counseling ($p = 0.000$). These findings indicate that midwife-led counseling effectively enhances both knowledge and attitudes related to AEFI. Counseling provided by midwives is effective in improving maternal knowledge and attitudes regarding post-immunization adverse events. Broader community engagement is recommended to support the dissemination of information on the early management of AEFI.

Keywords: AEFI; Attitude; Counseling; Effectiveness; Knowledge

Introduction

Immunization is one of the Indonesian government's primary public health strategies for preventing infectious diseases. As stated in the Law of the Republic of Indonesia No. 23 of 1992, health efforts include activities carried out by the government and the community to maintain and improve health status through disease prevention programs, including immunization. Immunization serves to stimulate the body's immune system by creating immunological memory, enabling an individual to respond more effectively to future exposure (World Health Organization, 2021). It remains one of the most effective and efficient public health interventions for reducing morbidity and mortality, particularly in infants and young children (Fauzi et al., 2025; Siregar, 2024).

The Ministry of Health of Indonesia emphasizes that immunization is a fundamental prevention strategy against vaccine-preventable diseases (VPDs), as outlined in Minister of Health Regulation No. 12 of 2017. Specific targets include achieving complete basic immunization (IDL) coverage, Universal Child Immunization (UCI), and further immunization for toddlers, school-aged children, and women of reproductive age (Ministry of Health, 2017). National immunization data show an increase in IDL coverage from 84.2% in 2021 to 99.6% in

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2022, although regional disparities persist. For instance, in 2023 Banten Province achieved high IDL coverage at 95.4%, while Highland Papua recorded only 8.9% (Indonesian Ministry of Health, 2023; Ministry of Health, 2024).

High immunization coverage is often accompanied by increased reports of Adverse Events Following Immunization (AEFI). The Ministry of Health defines AEFI as any medical event occurring after vaccination, including illnesses or deaths that occur within 30 days post-immunization (Omoleke et al., 2022). According to data from the South Tangerang City Health Office, 273 AEFI cases were reported between January and May 2025, with the Situ Gintung Health Center recording the highest number of cases among 35 community health centers in the region.

Maternal knowledge plays a critical role in determining immunization completeness. Knowledge shapes attitudes, which subsequently influence maternal behavior in seeking and adhering to the recommended immunization schedule (Hartaty et al., 2019). Prior evidence supports the association between maternal knowledge and appropriate AEFI management. A study by Pebiola et al. (2024) found a significant relationship between maternal knowledge and AEFI handling ($p = 0.004$), indicating that better-informed mothers demonstrate more effective responses to post-immunization reactions.

Counseling is one of the key interventions that can improve maternal understanding and attitudes toward AEFI. A preliminary study conducted by the researchers involving 10 mothers with infants aged 0–9 months showed that only three mothers could identify mild AEFI symptoms and appropriate home management, such as administering medication, applying compresses, and ensuring adequate rest. The remaining seven mothers reported limited knowledge and uncertainty regarding AEFI.

Based on these findings, it is essential to evaluate whether counseling provided by midwives can effectively improve maternal knowledge, attitudes, and behaviors related to AEFI. Therefore, this study aimed to determine the effectiveness of midwife-led counseling on mothers' knowledge and attitudes regarding post-immunization adverse events at the UPTD Situ Gintung Health Center in 2025.

Method

Study Design

This study employed a quantitative pre-experimental design using a one-group pretest–posttest approach. The design was selected to determine the effectiveness of midwife-led counseling on mothers' knowledge and attitudes regarding post-immunization adverse events (AEFI).

Population and Sample

The study population consisted of mothers with children aged 0–9 months who visited the UPTD Situ Gintung Community Health Center in South Tangerang from January to June 2025. The sample size was determined using the Slovin formula with an allowable error of 5%, resulting in a total of 45 respondents who met the inclusion criteria. The inclusion criteria were: (1) mothers aged ≥18 years, (2) mothers who had infants aged 0–9 months, and (3) mothers who were willing to participate and complete both the pretest and posttest. Mothers who were unable to complete the counseling session were excluded.

Data Collection Procedure

Data collection was carried out in June 2025 within the working area of the Situ Gintung Community Health Center. Respondents first completed a pretest questionnaire assessing their baseline knowledge and attitudes regarding AEFI. Counseling sessions were then delivered by trained midwives using standardized educational materials, covering definitions, types, symptoms, and appropriate home management of AEFI. After the counseling session, respondents completed the posttest questionnaire to assess changes in their knowledge and attitudes.

Instruments

Data were collected using a structured questionnaire developed based on Ministry of Health guidelines and previous AEFI studies. The questionnaire comprised sections on demographic information, knowledge (multiple-choice items), and attitudes (Likert-scale items). Validity and reliability tests were conducted prior to data collection, with all items meeting acceptable thresholds (Cronbach's alpha > 0.70).

Data Analysis

Data were analyzed using non-parametric statistical tests due to a non-normal distribution as determined by the Shapiro–Wilk test. Changes in knowledge scores between pretest and posttest were analyzed using the Mann–Whitney test, while changes in attitude scores were analyzed using the Wilcoxon signed-rank test. A p-value ≤ 0.05 was considered statistically significant. All analyses were performed using SPSS version 25.

Result and Discussion

This section presents the findings of the study regarding respondents' demographic characteristics, as well as changes in knowledge and attitudes related to Post-Immunization Adverse Events (KIPI) before and after the counseling intervention. Descriptive statistics are used to summarize participant characteristics, while inferential tests assess the effectiveness of counseling delivered by midwives.

Table 1. Distribution of Respondents Based on Age (n=45)

Age (years)	Frequency	Percentage (%)
20–<30	17	37.8
30–<40	22	48.9
>40	6	13.3
Total	45	100.0

Table 1 shows that almost half of the respondents (48.9%) were aged 30–<40 years, followed by 37.8% in the 20–<30 age group, and only 13.3% aged above 40 years. This indicates that the majority of mothers participating in this study were in reproductive age.

Table 2. Distribution of Respondents Based on Education (n=45)

Education Level	Frequency	Percentage (%)
Junior High School	7	15.6
Senior High School	29	64.4
College/University	9	20.0
Total	45	100.0

As shown in Table 2, most respondents had a senior high school education (64.4%), while 20.0% completed tertiary education. Only 15.6% had a junior high school educational background.

Table 3. Distribution of Respondents Based on Occupation (n=45)

Occupation	Frequency	Percentage (%)
Civil Servant	4	8.9
Private Employee	12	26.7
Laborer	25	55.6
Housewife	4	8.9
Total	45	100.0

More than half of the respondents (55.6%) worked as laborers, while 26.7% were private employees. Civil servants and housewives each accounted for 8.9% of respondents

Table 4. Distribution of Respondents Based on Knowledge of KIPI Before and After Counseling (n=45)

Knowledge Level	Pre-test n (%)	Post-test n (%)
Good	0 (0.0)	18 (40.0)
Adequate	34 (75.6)	23 (51.1)
Poor	11 (24.4)	4 (8.9)
Total	45 (100.0)	45 (100.0)

Table 4 indicates a substantial improvement in knowledge following the counseling intervention. No respondents demonstrated good knowledge during the pre-test; however, this increased to 40.0% in the post-test. Meanwhile, poor knowledge decreased from 24.4% to 8.9%.

Table 5. Distribution of Respondents Based on Attitude Toward KIPI Before and After Counseling (n=45)

Attitude	Pre-test n (%)	Post-test n (%)
Positive	20 (44.4)	28 (62.2)
Negative	25 (55.6)	17 (37.8)
Total	45 (100.0)	45 (100.0)

Before counseling, 55.6% of respondents exhibited negative attitudes toward KIPI. After counseling, the proportion of respondents with positive attitudes increased markedly to 62.2%.

Table 6. Effectiveness of Counseling on Mothers' Knowledge (Mann–Whitney Test)

Variable	Mean Rank	p-value
Pre-test Knowledge	32.56	
Post-test Knowledge	58.44	0.000

As shown in Table 6, the mean rank of knowledge increased from 32.56 (pre-test) to 58.44 (post-test), indicating a substantial improvement in maternal knowledge following counseling. The Mann–Whitney test yielded a p-value of 0.000 (<0.05), demonstrating that the intervention significantly increased mothers' knowledge regarding KIPI.

Table 7. Effectiveness of Counseling on Mothers' Attitudes (Wilcoxon Signed Rank Test)

Variable	Mean Score	p-value
Pre-test Attitude	34.622	
Post-test Attitude	44.488	0.000

Table 7 shows that the average attitude score increased from 34.622 before counseling to 44.488 after counseling, with a mean difference of 9.866. The Wilcoxon Signed Rank test produced a p-value of 0.000 (<0.05), indicating that counseling by midwives effectively improved respondents' attitudes toward KIPI.

Discussion

Effectiveness of Counseling on Mothers' Knowledge Regarding Post-Immunization Adverse Events (KIPI)

The findings of this study show that counseling provided by midwives significantly improved maternal knowledge related to KIPI, as indicated by the Mann–Whitney test ($p = 0.000$). The shift from 0% to 40.0% of respondents having good knowledge after counseling demonstrates the substantial impact of structured educational interventions. These findings reaffirm that targeted counseling can effectively address knowledge gaps among mothers (Notoatmodjo, 2018; Pramodya et al., 2016).

These results are consistent with previous studies. Pramodya et al. (2016) reported that immunization counseling significantly increased maternal knowledge and attitudes, with $p = 0.000$. Similarly, Ismanto (2014) found a significant improvement in parental knowledge after health education, with a paired t-test result of $t = -16.399$, $p = 0.000$. Safitri & Sirait (2021) also identified a strong association between participation in immunization counseling and increased knowledge levels ($p = 0.000$) (Mandesa et al., 2014; Safitri et al., 2021).

Improvements in knowledge following counseling can be explained by increased access to accurate information, which is a primary determinant of knowledge acquisition. Educational inputs, according to Notoatmodjo (2018), create immediate cognitive effects that broaden understanding and correct misconceptions. The observed improvement in knowledge categories in this study suggests that counseling succeeded in clarifying information about KIPI, allowing mothers to better comprehend symptoms, risks, and appropriate responses (Notoatmodjo, 2018).

Enhancing maternal knowledge is critical because knowledge serves as the foundation for health-related decision-making and preventive behavior. Respondents' improved understanding after receiving counseling reflects their increased awareness and the internalization of accurate information about immunization safety. Such improvements are vital for promoting compliance with immunization schedules and reducing anxiety associated with vaccine side effects (Santoso et al., 2021; WHO, 2020).

Effectiveness of Counseling Mothers' Attitudes Toward Post-Immunization Adverse Events (KIPI)

The Wilcoxon Signed Rank test results ($p = 0.000$) indicate a significant positive change in maternal attitudes after counseling. The increase in positive attitudes from 44.4% to 62.2% demonstrates that counseling not only imparts knowledge but also shapes emotional and cognitive responses toward KIPI. This aligns with the concept that health education can influence perceptions and reduce negative attitudes related to immunization (Azwar, 2012; Dybsand et al., 2019; Lepiller et al., 2020; Qiao et al., 2022).

These findings support those of Mandesa et al. (2014), who reported that health education significantly improved parental attitudes regarding AEFI. Attitudes are shaped by a combination of personal experience, social influence, cultural norms, education, and emotional factors (Azwar, 2012). The structured counseling in this study likely addressed fears and misconceptions, thereby fostering a more positive outlook toward immunization and its potential side effects (Azwar, 2012; Mandesa et al., 2014).

Health education aims to transform negative or harmful behavior into positive, health-promoting behavior. According to Notoatmodjo (2018), providing clear and relevant information enables individuals to reassess their attitudes and form more adaptive behavioral intentions. The interactive approach used in this study—allowing mothers to ask questions and seek clarification—may have contributed to the observed improvement in attitudes (Notoatmodjo, 2018).

The researchers believe that the attitude change observed in this study occurred due to several contributing factors: the relevance of the counseling material, mothers' attentiveness during the sessions, and their active engagement in discussions. Such factors enhance message retention and emotional acceptance, which are essential components of attitude formation. This highlights the importance of delivering counseling using clear communication strategies tailored to the audience's needs (Glanz et al., 2015; Rosenstock, 1974).

Conclusion

This study demonstrates that counseling delivered by midwives is effective in significantly improving mothers' knowledge and positively influencing their attitudes regarding post-immunization adverse events (KIPI). The increase observed in both knowledge and attitude scores between pre-test and post-test indicates that structured counseling serves as an essential strategy for strengthening maternal understanding and responsiveness toward immunization-related events.

Therefore, it is recommended that community health centers enhance collaborative planning across programs and sectors by involving community leaders and other influential figures in disseminating information regarding the early management of KIPI. Strengthening community-based education and engagement is expected to improve public acceptance of immunization programs and contribute to safer immunization practices within the community.

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Author Contributions
F. and N.D.S. conducted the conceptualization of the study. R.N. and S.W.Y. designed the methodology, while R.N. managed the software and data processing. Validation was performed collaboratively by F., N.D.S., and R.N. Formal analysis was carried out by R., and the investigation was completed by S.W.Y. The resources needed for the research were provided by N.D.S., and data curation was managed by R.N. The original draft of the manuscript was prepared by F. and R.N., with additional contributions to the writing, review, and editing process provided by S.W.Y. and R. Visualization was handled by R.N. The overall supervision of the study was conducted by F., project administration was managed by N.D.S., and funding acquisition was the responsibility of F.

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Conflicts of Interest
The authors declare no conflict of interest.

References

Azwar, S. (2012). *Sikap manusia: Teori dan pengukurannya*. Pustaka Pelajar.

Dybsand, L. L., Hall, K. J., & Carson, P. J. (2019). Immunization attitudes, opinions, and knowledge of healthcare professional students at two Midwestern universities in the United States. *BMC Medical Education*, *19*(1), 242. https://doi.org/10.1186/s12909-019-1678-8

Fauzi, A. S., Tsani, L. I., Karsinah, & Khasanah, F. R. (2025). Protecting Children's Health: The Role Of Immunization In Reducing Morbidity In Indonesia. *KENDALI: Economics and Social Humanities*, *4*(1), 170–177. https://doi.org/10.58738/kendali.v4i1.804

Glanz, K., Rimer, B. K., & Viswanath, K. (2015). *Health behavior: Theory, research, and practice* (5th ed.). Jossey-Bass.

Hartaty, H., & Menga, M. K. (2019). Mother's Knowledge of Immunization in Infants. *Jurnal Ilmiah Kesehatan (JIKA)*, *1*(1), 40–44. https://doi.org/10.36590/jika.v1i1.6

Indonesian Ministry of Health. (2023). *Indonesia Health Profile 2023*. Kemenkes RI.

Lepiller, Q., Bouiller, K., Slekovec, C., Millot, D., Mazué, N., Pourchet, V., Balice, R., Garrien-Maire, F., Simon, E., Wintenberger, V., Guillaume, A., Monaton, M.-F., Van Eis, B., Bertrand, X., Bennabi, D., Moulin, T., Anxionnat, R., & Nerich, V. (2020). Perceptions of French healthcare students of vaccines and the impact of conducting an intervention in health promotion. *Vaccine*, *38*(43), 6794–6799. https://doi.org/10.1016/j.vaccine.2020.08.036

Mandesa, E. M., Sarimin, D. S., & Ismanto, A. Y. (2014). Pengaruh pedidikan kesehatan terhadap pengetahuan dan sikap orang tua tentang kejadian ikutan paska imunisasi (Kipi). *Jurnal Keperawatan UNSRAT*, *2*(1), 104887. https://doi.org/10.35790/jkp.v2i1.4756

Ministry of Health. (2024). *National Immunization Coverage Report 2024*. Kemenkes RI.

Notoatmodjo, S. (2018). *Promosi kesehatan dan ilmu perilaku*. Rineka Cipta.

Omoleke, S. A., Getachew, B., Isyaku, A., Aliyu, A. B., Mustapha, A. M., Dansanda, S. M., Kanmodi, K. K., Abubakar, H., Lawal, Z. I., & Kangiwa, H. A. (2022). Understanding and experience of adverse event following immunization (AEFI) and its consequences among healthcare providers in Kebbi State, Nigeria: a qualitative study. *BMC Health Services Research*, *22*(1), 741. https://doi.org/10.1186/s12913-022-08133-9

Pebiola, N., & Mariyani, M. (2024). Hubungan Pengetahuan Ibu dan Penanganan Kejadian Ikutan Pasca Imunisasi (KIPI) di PMB Heni Kampung Cipaeh Desa Gunung Kaler Kabupaten Tangerang. *Malahayati Nursing Journal*, *6*(5), 1982–1991. https://doi.org/10.33024/mnj.v6i5.11266

Pramodya, R. D., Susanti, A. I., & Nirmala, S. A. (2016). Pengaruh Penyuluhan Mengenai Imunisasi terhadap Pengetahuan dan Sikap Ibu di Desa Sukarapih Kec. Sukasari. *Jurnal Sistem Kesehatan*, *1*(2), 112–120. https://doi.org/10.24198/jsk.v1i2.10342

Qiao, S., Tam, C. C., & Li, X. (2022). Risk Exposures, Risk Perceptions, Negative Attitudes Toward General Vaccination, and COVID-19 Vaccine Acceptance Among College Students in south Carolina. *American Journal of Health Promotion*, *36*(1), 175–179. https://doi.org/10.1177/08901171211028407

Rosenstock, I. M. (1974). Historical Origins of the Health Belief Model. *Health Education & Behavior*, *2*(4), 328–335. https://doi.org/10.1177/109019817400200403

Safitri, R., & Sirait, R. A. (2021). Pengaruh Keikutsertaan Dalam Penyuluhan Tentang Imunisasi Terhadap Tingkat Pengetahuan Masyarakat. *Jurnal Kesmas Dan Gizi (JKG)*, *3*(2), 131–135. https://doi.org/10.35451/jkg.v3i2.564

Santoso, S., & Lestari, W. (2021). Maternal knowledge and behavior related to immunization safety. *International Journal of Public Health Science*, *10*(4), 876–883.

https://doi.org/10.11591/ijphs.v10i4.20958
Siregar, H. K. (2024). Pengembangan Sistem Kesehatan Primer yang Berfokus pada Pencegahan untuk Menangani Tantangan Penyakit Menular dan Tidak Menular di Masyarakat. *Jurnal Cahaya Mandalika*, *4*(1), 901–918. Retrieved from https://www.ojs.cahayamandalika.com/index.php/jcm/article/view/3307
WHO. (2020). *Managing adverse events following immunization*. WHO Press.
World Health Organization. (2021). *Immunization and vaccines: Key facts*. WHO Press.