

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB3 Immunization

Rionitara Wikarya, Novia Rita Aninora, Putri Permata Sari

Study Program of the Department of Nursing, Faculty of Psychology and Health,
Universitas Negeri Padang, Indonesia

rwikarya@gmail.com, noviarita13@gmail.com, putripermatasari1707@gmail.com

Article Information

Submitted: 01 May 2025

Accepted: 05 May 2025

Publish: 30 May 2025

Keyword: AEFI; DPT-HB-HiB Immunization; Maternal Knowledge; Maternal Motivation;

Copyright holder: Rionitara Wikarya, Novia Rita Aninora, Putri Permata Sari

Year: 2025

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Abstract

Introduction: Preventive efforts in health development is by implementing an immunization program. In Padang City, the coverage of complete basic immunization is at 69.2% and the coverage of DPT-HB-HiB3 immunization is the lowest, namely 66.1%. **Objective:** the aim of this study was to determine the relationship between adverse events following DPT-HB-HiB immunization and maternal knowledge with maternal motivation for DPT-HB-HiB3 immunization. **Method:** This study uses a quantitative research design with a cross-sectional approach. The study was conducted at the Alai Health Care from January to February 2025. The population in this study were mothers who had children aged 2 to 4 months. The sampling technique used purposive sampling with total 50 people. Data analysis was done univariately and bivariate using the chi square test. **Result and Discussion:** more than half (66%) respondents were experienced AEFI, more than half (76%) respondents were good knowledge, and more than half (70%) respondents were motivated to DPT-HB-HiB immunization. There, relationship between AEFI and maternal knowledge with maternal motivation to DPT-HB-HiB3. **Conclusions:** Respondents motivated because of the mother's experience in dealing with AEFI and the mother's knowledge about immunization, so that this knowledge can also motivate mothers to continue providing DPT-HB-HiB3 immunization to their children.

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB3 Immunization

Introduction

Health development can be done through promotive, preventive, curative, and rehabilitative efforts. One of the preventive efforts in health development is by implementing an immunization program. Immunization can prevent and reduce the incidence of illness, disability, and death due to Immunization-Preventable Diseases (PD3I). Each year, an estimated 2 to 3 million deaths occur due to Immunization-Preventable Diseases (PD3I) (Kementerian Kesehatan RI, 2021)

Immunization is the most effective and efficient public health effort in preventing diseases such as smallpox, polio, tuberculosis, hepatitis B, diphtheria, measles, rubella, and congenital rubella syndrome (CRS), tetanus, pneumonia (lung inflammation) and meningitis (inflammation of the brain membrane). The implementation of immunization in toddlers saves around 2-3 million lives worldwide each year and contributes greatly to the decline in the global infant mortality rate from 65 per 1,000 live births in 1990 to 29 in 2018 (Nandi & Shet, 2020)

West Sumatra is included in the category of four provinces with the lowest coverage of complete basic immunization in Indonesia in 2023, namely 58.2% and for Padang City, the coverage of complete basic immunization is at 69.2%. After assessing the coverage of basic infant immunization in Padang City in 2023, it can be concluded that the coverage of DPT-HB-HiB3 immunization is the lowest, namely 66.1%. In fact, the basic immunization program is provided free of charge by the government at Public Health Center and Integrated Service Post (Dinas Kesehatan Kota Padang 2024; Kementerian Kesehatan RI 2024)

Immunization coverage must be maintained high and evenly distributed throughout the region. This aims to avoid the occurrence of pocket areas that will facilitate the occurrence of Extraordinary Events (KLB). To detect early the occurrence of an increase in cases of diseases that have the potential to cause KLB, Immunization needs to be supported by epidemiological surveillance efforts (Kementerian Kesehatan RI, 2024)

Ridha in his research stated that the factors underlying the completeness of basic immunization are lack of knowledge, fear of side effects, cultural myths, religious beliefs, distance, and lack of adequate health service facilities so that it makes mothers hesitate and afraid to bring their children to get complete basic immunization. Among these factors, post-immunization events and maternal knowledge about immunization are the biggest factors (Ridha, 2022)

Post-immunization adverse events (AEFI) are caused by misuse of vaccines during vaccination. Post-immunization adverse events (AEFI) generally cause negative responses from the community towards basic immunization activities due to fear of the impacts that will arise. The negative response arises due to the community's ignorance in handling Post-immunization adverse events (AEFI), therefore knowledge of Post-immunization adverse events (AEFI) can help the implementation required by the assessment and management so that it can be accepted by the community, especially parents (Pebiola & Mariyani, 2024)

Septiani also stated that the knowledge factor plays an important role in the completeness of basic immunization, because knowledge can encourage the willingness and ability of the community which can later benefit from the success of complete immunization (Septiani & Mita, 2020)

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB3 Immunization

Method

This study used a quantitative research design with a cross-sectional approach. This design was chosen to analyze the relationship between post DPT-HB-HiB immunization events and maternal knowledge with maternal motivation for DPT-HB-HiB3 immunization. The study was conducted at the Alai Health Center work area in Padang City from January to February 2025. The population in this study were mothers who had children aged 2 to 4 months. The sampling technique used purposive sampling with a total of 50 people with the following inclusion criteria:

- 1) Mothers who were willing to become respondents and filled out informed consent
- 2) Able to read and write
- 3) Mothers who have KIA book

Exclusion criteria:

- 1) Mothers who never give their babies immunizations DPT-HB-HiB

Data were collected through a questionnaire designed to measure data were collected through a questionnaire designed to measure mothers' motivation to provide DPT-HB-HiB3 immunization. Data analysis was carried out univariately and bivariate with the chi-square test.

Result and Discussion

1. Result

Univariate Analysis

Table 1

Frequency Distribution of Respondents Based on Post DPT-HB-HiB Immunization Events

No	Post DPT-HB-HiB immunization events	f	%
1	Yes	33	66.0
2	No	17	34.0
Amount		50	100

Based on table 1, out of 50 respondents, 33 people (66.0%) experienced post DPT-HB-HiB immunization events.

Table 2

Frequency Distribution of Respondents Based on Maternal Knowledge

No	Maternal Knowledge	f	%
1	Good	38	76.0
2	Less	12	24.0
Amount		50	100

Based on table 2, out of 50 respondents, many of them were good knowledge, namely 38 people (76.0%).

Table 3

Frequency Distribution of Respondents Based on Maternal Motivation

No	Maternal Motivation	f	%
1	Motivated	35	70.0
2	Unmotivated	15	30.0
Amount		50	100

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB Immunization

Based on table 3, out of 50 respondents, many of them were motivated to DPT-HB-HiB3 immunization, namely 35 people (70.0%).

Bivariate Analysis

Table 4
Relationship between Post DPT-HB-HiB immunization events and maternal motivation to DPT-HB-HiB3 immunization

Motivation to DPT-HB-HiB immunization							
Post DPT-HB-HiB immunization events	Maternal Motivation				Total	p value	
	Motivated		Unmotivated				
	f	%	f	%	f		%
Yes	31	93.9	2	6.1	33	100	<0.001
No	4	23.5	13	76.5	17	100	
Total	35	70.0	15	30.0	50	100	

Based on table 4, mothers who have experience of post-immunization adverse events are more (93.9%) motivated to undergo DPT-HB-HiB3 immunization compared to mothers who do not have experience of post-immunization adverse events (23.5%). On the other hand, mothers who do not have experience of post-immunization adverse events are more (76.5%) not motivated to undergo DPT-HB-HiB3 immunization compared to mothers who have experience of post-immunization adverse events (6.1%). The results of the statistical test obtained a p-value <0.001, which means that there is a relationship between post-immunization adverse events DPT-HB-HiB and maternal motivation for DPT-HB-HiB3 immunization.

Table 5
Relationship between Maternal Knowledge and Maternal Motivation to DPT-HB-HiB3 immunization

HIVS Immunization							
Maternal Knowledge	Maternal Motivation				Total	p value	
	Motivated		Unmotivated				
	f	%	f	%	f	%	
Good	36	94.7	2	5.2	38	100	<0.001
Less	3	25	9	75	12	100	
Total	39	78.0	11	22.0	50	100	

Based on table 5, mothers who have good knowledge are more (94.7%) motivated to do DPT-HB-HiB3 immunization compared to mothers who have less knowledge (25%). Conversely, mothers who have less knowledge, more (75%) do not have the motivation to do DPT-HB-HiB3 immunization compared to mothers who have good knowledge (5.2%). The results of the statistical test obtained a p-value <0.001, which means that there is a relationship between maternal knowledge and maternal motivation for DPT-HB-HiB3 immunization.

2. Discussion

Relationship between adverse events following of DPT-HB-HiB immunization and maternal motivation for DPT-HB-HiB3 immunization

Based on the results of the study on the relationship between adverse events following immunization and maternal motivation for DPT-HB-HiB immunization, it was found that 66% of mothers experienced post-immunization events in their children and 34% did not experience post-immunization events. It can be concluded that more than half of the respondents experienced post-immunization events. Of the 33 respondents who

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB Immunization

experienced post-immunization events, (93.9%) of them still had the motivation to give their children DPT-HB-HiB3 immunization and of the 17 respondents (75%) who did not experience post-immunization events but also did not have the motivation to give their children DPT-HB-HiB3 immunization.

This study is in line with the study by Risya et al. (2019) which found that most toddlers received Advanced DPT immunization (Booster) as much as 82.3%. This shows that even though there is an AEFI reaction, the mother is still willing to continue the booster immunization. Post-immunization follow-up events (AEFI) are side effects that arise in the form of illness that is likely to occur due to immunization that has been carried out because the event occurs after immunization or post-immunization. Medical events related to immunization can be in the form of vaccine reactions, injection reactions, procedural errors, or coincidences, or causal relationships that cannot be determined (Sulistiyawati et al., 2023); (Pemiliana, Siregar, & Nasution, 2023)

Symptoms of AEFI can be caused by the vaccine itself, including local reactions, both mild and severe, general reactions such as fever and pain, collapse/shock, and so on. Symptoms of AEFI related to immunization procedure errors such as cold and painful abscesses, swelling, sepsis and fever. Symptoms of AEFI can also occur due to recipient factors, for example symptoms such as psychological factors, allergies, fainting and coincidental factors (Sampurna, 2022)

In this case, health workers have an important role as educators to provide information about the process, impacts and side effects of immunization, thereby reducing maternal anxiety and fear. It is important for health workers to provide correct and appropriate health information/promotion for mothers, with a social approach, according to the age, level of education and condition of the mother regarding immunization and post-immunization events. It is hoped that after that the mother can understand/increase her knowledge in terms of media facilities and information management received to participate in the immunization program according to government and health worker recommendations in a sustainable, comprehensive, safe and comfortable manner (Chrisnawati, Subarjo, Sapariah, & Anastasia, 2022)

Based on the research results, many mothers stated that they agreed to continue immunizing their children even though the children had experienced mild AEFI. This is possible because according to them, mild AEFI is normal after the child is immunized, the most important thing is proper and correct handling when AEFI occurs, for example fever after immunization, then the mothers will immediately give fever-reducing medication that has been given by the health worker who provided the immunization. The mother's positive attitude about AEFI may also be influenced by the personal experience of a previous child who was immunized and experienced AEFI and was then handled in the correct and proper way so that if the same thing happens to the child, the mother is not too worried and afraid to continue immunizing her child. The mother's trust in the immunization program that is required by the government and can provide benefits to her child can also influence the mother's attitude towards AEFI.

The researcher assumes that many factors and conditions influence the provision of immunization to infants, including environmental conditions. The environment is all conditions that exist around humans and their influence that can affect the development and behavior of people or groups. Family motivation is an effort given to other family members who need it, both morally and materially to motivate the person in carrying out activities. When the family, in this case the husband, does not support the mother to

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB Immunization

provide immunization to her baby, then the mother tends not to provide complete immunization to her baby. The mother does not experience anxiety and has low motivation to provide complete basic immunization to her baby; the mother is worried about the side effects that arise after immunization. This causes the mother to experience post-immunization trauma because her child has a fever, swelling or pain at the injection site will experience anxiety about the condition of her child if further immunization is carried out.

The side effects caused by immunization are a traumatic event that leaves a mark and causes anxiety. This condition causes the mother's need for a sense of security to not be met, so that the mother is not motivated to provide complete basic immunization to her baby. This is detrimental to the mother and her child because the child will not get immunity that will protect the child from infectious diseases and the mother is faced with a condition of continuous anxiety because the child is vulnerable to infectious diseases.

The relationship between maternal knowledge and maternal motivation for DPT-HB-HiB3 immunization

Based on the results of the study on maternal knowledge about immunization and post-immunization events, it is known that 76% of respondents have good knowledge and 24% of respondents have poor knowledge. It can be concluded that more than half of the respondents have good knowledge about immunization and post-immunization events.

The results of this study are in line with Wikarya's research (2023), which stated that most mothers (71.8%) have good knowledge about basic infant immunization and (28.2%) mothers have poor knowledge. Jayatmi (2023) also stated that most of the respondents' knowledge of mothers about immunization is in the good knowledge category (98%). Dewi (2024) also stated that the majority of mothers who have toddlers have good knowledge, namely respondents reaching (64.5%) ((Dewi, Wati, Assyfa, & Rae, 2024); (Jayatmi & Noviyani, 2023); (Wikarya, Sriyanti, & Mariko, 2023))

Research on the relationship between maternal knowledge and maternal motivation for DPT-HB-HiB3 immunization at Alai Health Center found that most mothers who have good knowledge also have the motivation to provide DPT-HB-HiB3 immunization to their children, namely (94.7%) and more than half of respondents with poor knowledge also do not have the motivation to give their children DPT-HB-HiB3 immunization, namely (75%). The results of the statistical test obtained a p-value <0.001, so it can be concluded that there is a significant relationship between maternal knowledge and maternal motivation.

The results of this study are in line with Suhaid's research (2024) which in his research results also stated that there is a significant positive relationship between maternal knowledge and motivation in his research in the context of exclusive breastfeeding. Motivation and knowledge are mutually reinforcing. By increasing one factor, it can also increase other factors. As with increasing knowledge of eating, motivation can also increase (Suhaid, 2024)

Knowledge is the result of knowing, and this occurs after someone senses a particular object. Knowledge is a very important domain for the formation of a person's actions. Without knowledge, a person has no basis for making decisions and determining actions for the problems faced. Behavior based on knowledge will be more lasting than behavior that is not based on knowledge (Irwan, 2017); (Chusniah Rachmawati, 2019)

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB3 Immunization

Through their efforts to solve various problems or find the truth, human knowledge continues to grow. The amount of information received by mothers has a significant impact on their level of vaccination knowledge. The level of maternal knowledge can be improved by providing additional information about vaccination. This will have an impact on mothers' positive attitudes and behaviors towards immunization, illustrating that knowledge can be an important key in encouraging better participation in immunization programs (Dewi et al., 2024)

Wikarya in his research results also stated that mothers will make decisions to provide basic immunizations to their babies according to the knowledge they have. The better the mother's knowledge, the mother's motivation to provide immunization will also increase so that later the mother will provide complete basic immunizations to her baby (Wikarya et al., 2023)

Knowledge and motivation are interrelated in the process of human behavior. Just as someone who has knowledge about the benefits of immunization and the possible side effects that occur and how to handle them tends to have the motivation to continue immunizing their children. Conversely, if someone already wants to immunize their child, this will encourage that person to seek relevant information about immunization.

Conclusion

Based on the results of research and data analysis from 50 respondents about the relationship between post dpt-hb-hib immunization adverse events and maternal knowledge with maternal motivation for dpt-hb-hib3 immunization at the Alai Health Center in Padang City in 2025 with the conclusion : there was a relationship between the post DPT-HB-HiB immunization events with maternal motivation for DPT-HB-HiB3 immunization and there was a relationship between maternal knowledge with maternal motivation for DPT-HB-HiB3 immunization.

Mothers are motivated to provide DPT-HB-HiB3 immunization to their babies even though they have experienced post-immunization events. The researcher assumes that this occurs because of the mother's experience in dealing with post-immunization events and the mother's knowledge about immunization, the benefits of immunization, the side effects of immunization, and how to handle post-immunization events, so that this knowledge can also motivate mothers to continue providing DPT-HB-HiB3 immunization to their children.

Reference

- Chrisnawati, Chrisnawati, Subarjo, Subarjo, Sapariah, Anggraini, & Anastasia, Maratning. (2022). [Gambaran Pengetahuan Ibu Tentang Kejadian Ikutan Pasca Imunisasi \(Kipi\) Dpt-Hib Di Puskesmas Asam-Asam Tahun 2021](#). *Jurnal Keperawatan Suaka Insan*.
- Chusniah Rachmawati, Windi. (2019). [Promosi kesehatan dan ilmu perilaku](#).
- Dewi, Annisa Rahmatia, Wati, Mevita Ganista, Assyfa, Nandieta Ratu, & Rae, Puspa Saresawati. (2024). [Hubungan Pengetahuan Ibu, Karakteristik Ibu, Dukungan Keluarga, dan Persepsi Ibu terhadap Kelengkapan Imunisasi Dasar](#). *Antigen: Jurnal Kesehatan Masyarakat Dan Ilmu Gizi*, 2(2), 110–123
- Dinas Kesehatan Kota Padang. (2024). *Profil Kesehatan Kota Padang Tahun 2023*. Padang: Dinas Kesehatan Kota Padang.
- Irwan, DISKMK. (2017). [Etika dan perilaku kesehatan](#). Yogyakarta: CV. Absolute Media.
- Jayatmi, Irma, & Noviyani, Ernita Prima. (2023). [Hubungan Pengetahuan, Dukungan Keluarga dan Peran Bidan dengan Kepatuhan Ibu dalam Pemberian Imunisasi DPT-HB-Hib di Wilayah Kerja Puskesmas Kalimulya](#). *Jurnal Ilmiah Kebidanan Indonesia*, 13(03), 107–112
- Kementerian Kesehatan Ri. (2021). *Profil Kesehatan Indonesia Tahun 2020*. Jakarta: Kementerian Kesehatan Ri.
- Kementerian Kesehatan Ri. (2024). *Profil Kesehatan Indonesia Tahun 2023*. Jakarta: Kementerian Kesehatan Ri..
- Nandi, Arindam, & Shet, Anita. (2020). [Why vaccines matter: understanding the broader health, economic, and child development benefits of routine vaccination](#). *Human Vaccines & Immunotherapeutics*, 16(8), 1900–1904.
- Pebiola, Nanda, & Mariyani, Mariyani. (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.
- Pemiliana, P. D., Siregar, R. J., & Nasution, A. S. (2023). [Asuhan kebidanan pada neonatus, bayi, balita dan anak pra sekolah](#). PT Inovasi Pratama Internasional.
- Ridha, Husna Nur. (2022). [Hubungan antara pengetahuan ibu tentang imunisasi dengan kelengkapan imunisasi dasar bayi usia 0-12 bulan di wilayah kerja puskesmas Junrejo Kota Batu 2021](#). Universitas Islam Negeri Maulana Malik Ibrahim.
- Sampurna, Mahendra Tri Arif. (2022). [Lindungi diri dengan imunisasi](#). Airlangga University Press.
- Septiani, Minda, & Mita, Zhuhra. (2020). [Hubungan Pengetahuan Ibu Dan Dukungan Keluarga Dengan Cakupan Pemberian Imunisasi Dasar Pada Batita Di Desa Sangso Kecamatan Samalanga Kabupaten Bireuen](#). *Journal of Healthcare Technology and Medicine*, 6(2), 911–922.
- Suhaid, Dewi Novitasari. (2024). [Hubungan Antara Motivasi dengan Pengetahuan Tentang ASI Eksklusif](#). *Jurnal Ilmiah Bidan*, 8(2), 15–20.
- Sulistiyawati, Feni, ST, S., Sutuari, Ni Ketut, KM, S., Sayekti, Wahyu Nindi, ST, S., Keb, M., Sari, Ni Putu Novita, & ST, S. (2023). *Panduan Kesehatan Anak*. Indonesia Emas Group.

Rionitara Wikarya, Novia Rita Aninora, Putri Permata Sari/KESANS

Relationship Between Adverse Events Following DPT-HB-HiB Immunization (AEFI) and Maternal Knowledge with Maternal Motivation to DPT-HB-HiB3 Immunization

Wikarya, Rionitara, Sriyanti, Roza, & Mariko, Rinang. (2023). [Determinant analysis of infant's basic immunization visits during the covid-19 pandemic](#). *Science Midwifery*, 10(6), 4673–4680.