



The relationship between knowledge of mothers of toddlers and anxiety levels after DPT immunization at the Lombokasih Health Center, Bombana Regency

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Abstract: *DPT immunization is one of the important programs in disease prevention efforts. However, many parents feel anxious when their children receive DPT immunization. Mothers' knowledge of DPT immunization can affect the level of maternal anxiety after immunization. The purpose of this study was to determine the relationship between mothers' knowledge of toddlers and the level of anxiety after DPT immunization at the Lombokasih Health Center. This study used a cross-sectional design. The research sample was mothers who had toddlers aged 0-6 months who received DPT immunization at the Lombokasih Health Center as many as 49 respondents. The sampling technique used the total sampling technique. The instrument used was a questionnaire sheet. Data analysis used the fisher exact test. The results of the study showed that most respondents had good knowledge as many as 30 (61.2%) and experienced mild anxiety, namely 26 (53.1%). The results of the analysis showed that there was a relationship between the Knowledge of Toddler Mothers and the Level of Anxiety After DPT Immunization at the Lombokasih Health Center with a value of $p = 0.018 < \alpha = 0.05$. The conclusion of this study is that there is a significant relationship between the knowledge of mothers of toddlers and the level of anxiety after DPT immunization. Increasing the knowledge of mothers of toddlers about DPT immunization can be a strategy to reduce the level of maternal anxiety during the immunization process.*

Introduction

Immunization is one of the government programs implemented nationally. This is an effort to prepare the future of a strong and resilient young generation (1). Basic immunization is the first immunization that needs to be given, especially to infants and children from birth to protect their bodies from dangerous diseases. There are 5 types of basic immunizations that are required by the government and must be obtained by infants

before the age of 1 year, namely: Hepatitis Immunization (Hb0), BCG Immunization, DPT HB HIB Immunization, Polio Immunization, Measles Immunization (2).

The national immunization coverage of 89.86% has reached the national target of 88%. The details of national immunization include BCG immunization of 4,735,340 (97.8%), Hb0 of 4,114,979 (86.8%), DPT/HB1 of 4,425,667 (96.3%), DPT/HB3 of 4,405,273 (95.8%), Polio of 4,490,385 (97.7%) and Measles of 4,497,892 (97.7%)

(Ministry of Health of the Republic of Indonesia, 2022). Southeast Sulawesi provincial data includes Hb0 immunization of 78.3%, BCG 83.1%, DPT Hb1 66.5%, DPT Hb2 66.8%, DPT Hb3 70.2%, measles 84.9%. Completeness of immunization includes complete immunization 71.5%, incomplete immunization 20.2% and not immunized 8.3% (3).

Increasing immunization coverage has caused problems in the community, namely the lack of public knowledge about the side effects after immunization, known as Post-Immunization Adverse Events (AEFI). Not all types of vaccines are safe to be given without causing side effects, so if a child has received immunization, they need to be observed for a while, so that it can be ensured that there is no AEFI (rapid reaction) (4).

Research by Sari, Izzah & Harmen (2018) on infants who received Diphtheria Pertussis and Tetanus Immunization at the Seberang Padang Health Center in Padang City, showed that out of 45 children who received DPT immunization, almost all experienced AEFI, namely 41 people (91.1%). The most common AEFI symptoms were fever, namely 34 people (82.9%), swelling at the injection site, namely 31 people (75.6%) and redness at the injection site, namely 26 people (63.4%), pain at the injection site, as many as 17 people (41.4%), lethargy as many as 12 people (29.2%), continuous crying as many as 7 people (17%) and vomiting as many as 2 people (4.8%), while there were no children who experienced symptoms that required medical treatment (5).

WHO (2018) states that AEFI symptoms usually appear a day or two after immunization and last one to several days. AEFI symptoms appear several hours with a peak at 12-36 hours after immunization. In addition, redness, swelling and pain occur for 1-2 days, even swelling can occur for several weeks. Thus, parents who have less knowledge will experience anxiety. One of the factors that influences anxiety is knowledge. Knowledge will form beliefs which will then provide perspective to humans in perceiving reality and provide a basis for decision making and become a reason for someone in determining their attitude towards certain objects (6). Research by Musfiroh & Pradina (2020) that the results of the analysis of research data using a

correlation statistical test produced $0.000 < 0.05$ with a Rho value of 0.493. The results of the analysis showed that there was a relationship between maternal knowledge about post-immunization events and maternal anxiety after immunization and a moderate correlation degree (7).

According to Yossef et al., 95% of mothers are worried if their children have a fever. The mother's reason is because fever in children can cause seizures (69%), brain damage (16%), coma (14%), symptoms of serious illness (11%), and even fever can cause death. Most children suffer from fever after receiving immunization, one of which is DPT immunization, but this is normal, but mothers are often tense, anxious and worried. Many mothers are anxious because of swelling and injection marks. For babies who have a history of febrile seizures, DPT immunization is still safe and not dangerous (8).

Based on an initial survey conducted by researchers at the Lombakasih Health Center, it was found that in 2023 DPT1 totaled 183 toddlers, DPT2 totaled 172 toddlers, and DPT3 totaled 183 toddlers out of 202 toddlers targeted for DPT immunization. The results of interviews with 10 mothers who have children and have been immunized with DPT showed that 3 mothers already knew about DPT immunization and did not feel anxious after immunization and 7 mothers did not know much and were anxious after DPT immunization. The interviews showed that many mothers still do not know about the benefits of DPT immunization and the effects after DPT immunization. The purpose of this study was to determine the relationship between the knowledge of mothers of toddlers and the level of anxiety after DPT immunization.

Method

This study was conducted in the Lombakasih Health Center area in September 2024. This study used a quantitative design with a cross-sectional approach (9). The sampling technique used in this study was total sampling with a sample size of 49 respondents.

Results

Respondent Characteristics

Table 1 Frequency Distribution of Respondent Characteristics (n=49)

Respondent Characteristics	n	%
Characteristics of mothers		
Age (Years)		
20 – 25	10	20,4
26 – 30	21	42,9
31 – 35	11	22,4
36 – 40	7	14,3
Education		
Elementary	6	12,2
School Middle	13	26,5
High School	20	40,8
Bachelor	10	20,4
Work		
Housewife	41	83,7
Teacher	2	4,1
Government employees	6	12,2
Religion		
Muslim	42	85,7
Christian	2	4,1
Hindu	5	10,2
Characteristics of Toddlers		
Age (Month)		
2	8	16,3
3	17	34,7
4	12	24,5
5	9	18,4
6	3	6,1
Gender		
Male	22	44,9
Female	27	55,1

Based on table 1 above, it shows that the age of the mother of the toddler is dominated by 26-30 years, namely 21 (42.9%) respondents, and has a high school education, namely 20 (40.89%) respondents. The majority of respondents work as housewives, namely 41 (83.7%) respondents and are Muslim, namely 42 (85.7%) respondents. Meanwhile, the age of the toddler is the most, namely 3 months, namely 17 (34.7%) toddlers and most of them are female, namely 27 (55.1%) toddlers.

Univariate Analysis

Table 2 Frequency Distribution of Knowledge of Toddler Mothers and Anxiety Levels Post DPT Immunization (n=49)

Research Variables	n	%
Mother's Knowledge		
Good	30	61,2
Less	19	38,8

Anxiety Level		
Light	26	53,1
Currently	16	32,7
Heavy	7	14,3

Table 2 shows that most of the knowledge of mothers of toddlers is in the good category, namely 30 (61.2%) respondents. Meanwhile, from a total of 49 respondents, 26 (53.1%) respondents experienced mild anxiety.

Bivariate Analysis

Table 3 Relationship between Knowledge of Toddler Mothers and Post-DPT Immunization Anxiety Levels

Mother's Knowledge	Anxiety Level					
	Light		Currently		Heavy	
	n	%	n	%	n	%
Good	19	38,8	10	20,4	1	2,0
Less	7	14,3	6	12,2	6	12,2
Amount	26	53,1	16	32,7	7	14,3
<i>p value = 0,018</i>						

Based on table 3, it shows that mothers of toddlers who have good knowledge and experience mild anxiety are 19 (38.8%) respondents, mothers of toddlers who have good knowledge and experience moderate anxiety are 10 (20.4%) respondents. Meanwhile, mothers of toddlers who have good knowledge and experience severe anxiety are 1 (2.0%) respondents. Meanwhile, mothers of toddlers who have less knowledge and experience mild anxiety are 7 (14.3%) respondents, mothers of toddlers who have less knowledge and experience moderate anxiety are 6 (12.2%) respondents. Meanwhile, mothers of toddlers who have less knowledge and experience severe anxiety are 6 (12.2%) respondents. The results of the analysis using the fisher exact test obtained a value of $p = 0.018 < \alpha = 0.05$, so H_a is accepted, thus there is a relationship between Knowledge of Toddler Mothers and Post-DPT Immunization Anxiety Levels.

Discussion

The results of this study indicate that most mothers of toddlers at the Lombakasih Health Center have good knowledge about DPT immunization, namely 30 (61.2%). This is in line with previous research conducted by Sari et al. (2019) which showed that 72% of mothers of toddlers have good knowledge about DPT immunization (10). Meanwhile, research by Rahayu et al. (2021) found that

there were 53% of mothers of toddlers who had good knowledge about DPT immunization. The most influential factor is the accessibility of information. Mothers who have good access to information tend to have better knowledge (11).

DPT immunization is an immunization given to prevent diphtheria, pertussis (whooping cough), and tetanus. The main purpose of DPT immunization is to protect children from these three diseases, which can cause serious complications and death if not handled properly (12). The factors that most influence the knowledge of mothers of toddlers are the mother's education level, access to information, and the mother's experience in providing immunization. Mothers with higher education, good access to information, and experience in providing immunizations tend to have better knowledge. This finding is also supported by previous studies showing that good knowledge of mothers of toddlers about DPT immunization has a positive impact on compliance in providing complete DPT immunization to their children. Mothers who have good knowledge tend to be more aware of the importance of DPT immunization and are more compliant in providing this immunization to their children (10).

The results of the study showed that 61.2% of mothers of toddlers experienced mild anxiety, 32.7% experienced moderate anxiety, and 14.3% experienced severe anxiety after DPT immunization at the Lombakasih Health Center. A study in India found that 40% of mothers of toddlers experienced moderate to severe anxiety after their children received DPT immunization. Meanwhile, another study in Indonesia showed that 55% of mothers of toddlers experienced mild anxiety, 30% experienced moderate anxiety, and 15% experienced severe anxiety after DPT immunization (13).

Factors that can influence the level of anxiety of mothers of toddlers after DPT immunization include maternal age, maternal education, previous immunization experience, and maternal knowledge about immunization (14). Mothers with young age, low education, poor immunization experience, and lack of knowledge tend to experience higher anxiety. The high level of anxiety of mothers of toddlers after DPT immunization at the Lombakasih Health Center requires special

attention from health workers. Efforts to reduce the level of anxiety of mothers of toddlers after DPT immunization include education, counseling, and assistance by health workers. In addition, family support also plays an important role in reducing anxiety of mothers of toddlers.

This study shows that there is a relationship between the Knowledge of Toddler Mothers and the Level of Anxiety After DPT Immunization at the Lombakasih Health Center with a value of $\rho = 0.018 < \alpha = 0.05$. This is in accordance with the theory put forward by Notoatmodjo (2012) which states that knowledge is a very important domain in shaping a person's actions (overt behavior). Good knowledge about DPT immunization will help mothers understand the benefits, procedures, and side effects of the immunization so that it can reduce anxiety.

Mother's knowledge is an important factor that can influence mothers' perceptions and attitudes towards child immunization. Mothers who have good knowledge about immunization tend to have lower levels of anxiety when their children are vaccinated. This finding is also supported by the results of previous research conducted by Rahmawati (2021) which found that there is a significant relationship between the level of mother's knowledge and the level of mother's anxiety when their children are about to receive DPT immunization. Research conducted by Sulistyowati (2019) showed that there was a significant relationship between the level of maternal knowledge about DPT immunization and the level of maternal anxiety when their children were about to receive DPT immunization. Mothers with low knowledge tend to have higher levels of anxiety than mothers with better knowledge. This is in line with research conducted by Utami (2020) which found that increasing maternal knowledge through education about DPT immunization can reduce maternal anxiety levels when their children are about to receive the immunization. The education provided can increase mothers' understanding of the benefits, procedures, and side effects of DPT immunization, thereby reducing maternal anxiety.

In addition, this study also found respondents who had less knowledge but mild anxiety. This could happen because there is an education factor. The level of education will

cause the person to easily experience anxiety (15). The level of education of a person or individual will affect the ability to think, the higher the level of education, the easier it is to think rationally and capture new information including in describing new problems.

Conclusion

Based on the results of the study, there is a significant relationship between the knowledge of mothers of toddlers and the level of anxiety after DPT immunization at the Lombakasih Health Center, with a value of $\rho = 0.018$ ($\rho < \alpha = 0.05$). This shows that the higher the mother's knowledge about DPT immunization, the level of anxiety felt after immunization tends to be lower. Conversely, mothers with low knowledge are more susceptible to experiencing higher anxiety. Therefore, efforts are needed to increase education and counseling for mothers of toddlers so that they have a better understanding of immunization, so that they can reduce anxiety after immunization.

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