

Original Research

The Relationship Between Mothers' Knowledge and Attitudes Toward Measles–Rubella (MR) Immunization in Children Aged 24 Months

Sri Maryani, Kismi Asih Adethia, Eka Falentina Tarigan* and Ovita Sari Cantika

Midwifery Undergraduate Program, STIKes Mitra Husaa Medan, Medan, Sumatera Utara 20142, Indonesia

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*Correspondence:

Eka Falentina Tarigan
Address: STIKes Mitra Husaa Medan,
Medan, Sumatera Utara 20142, Indonesia.
Email: ekafalentina5@gmail.com

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ABSTRACT

Introduction: Measles and rubella are infectious diseases that can affect anyone. According to the World Health Organization, in 2017 an estimated 110,000 children under five years of age died globally due to measles. This study aimed to analyze the relationship between mothers' knowledge and attitudes toward the administration of Measles–Rubella (MR) immunization in children aged 24 months. **Methods:** This study employed an observational analytic design. The research was conducted at Sidomulyo Primary Health Center, Tungkall Ilir District, in May 2023. The study sample consisted of a portion of children aged two years and above, with a total sample size of 161 respondents. The sampling technique used was simple random sampling. **Results:** The results showed that, based on knowledge, the majority of respondents had good knowledge, accounting for 104 respondents (64.6%). Based on attitude, most respondents demonstrated a positive attitude, totaling 99 respondents (61.5%). Bivariate analysis indicated that the majority of respondents with good knowledge also had a positive attitude toward MR immunization, with 80 respondents (49.7%). The chi-square test results showed a p-value of 0.000 ($p < 0.05$). **Conclusion:** The study concluded that there is a significant relationship between mothers' knowledge and attitudes toward the administration of Measles–Rubella (MR) immunization in children aged 24 months. It is recommended that the head of the primary health center pay attention to children who have not received MR immunization and implement outreach approaches to ensure that all children receive MR immunization.

Keywords: Knowledge; attitude; measles–rubella immunization; MMR

1. INTRODUCTION

One of the national health development strategies to achieve a healthy population is the implementation of health-oriented national development, meaning that every program effort must contribute positively to the creation of a healthy environment and healthy behavior. As a reference, health development adopts the “Healthy Paradigm” concept, which emphasizes health promotion (promotive) and disease prevention (preventive) rather than treatment (curative) and rehabilitation (rehabilitative), implemented comprehensively, integratively, and sustainably. According to Law No. 36 of 2012 concerning health, the healthy paradigm prioritizes promotive and preventive efforts without neglecting curative and rehabilitative measures. One of these efforts is implemented through immunization programs.⁽¹⁾

Health development directed toward the “Healthy Paradigm” emphasizes promotive and preventive efforts over curative and rehabilitative approaches, as also stated in Law No. 36 of 2009 concerning health.⁽²⁾ One of these efforts is

carried out through immunization programs. According to the World Health Organization,⁽³⁾ in 2017 an estimated 110,000 deaths globally, mostly among children under five years of age, were caused by measles. Globally, rubella cases in 2016 were estimated at 22,361, including infants born with Congenital Rubella Syndrome (CRS) due to rubella infection.⁽⁴⁾

Surveillance activity reports in Indonesia indicate that more than 11,000 suspected measles cases are reported annually. Between 2010 and 2015, the estimated number of measles cases was 23,164, and rubella cases reached 30,463. These figures are likely underestimated, considering that many cases in the field remain unreported. The measles incidence rate in Indonesia increased from 2015 to 2017, rising from 3.20 to 5.60 per 100,000 population.⁽⁵⁾ Reports from 2014 to July 2018 recorded a total of 57,056 suspected measles and rubella cases, including 8,964 confirmed measles cases and 5,737 confirmed rubella cases.⁽⁵⁾ Measles and rubella are contagious diseases that can infect anyone, both males and females, thereby causing significant health problems. These diseases are caused by viruses transmitted through the respiratory tract. Measles (morbilli) is a dangerous disease that can lead to serious illness, lifelong complications, and death. Rubella generally affects children and is considered a mild disease; however, it can become very severe if it infects pregnant women during the first trimester, potentially causing fetal death, stillbirth, and Congenital Rubella Syndrome (CRS).⁽⁶⁾

Disability, morbidity, and mortality caused by measles and rubella can be reduced through effective prevention. One health service effort that can be implemented is the administration of Measles–Rubella (MR) immunization to develop immunity against measles and rubella. Low MR immunization coverage in the community may lead to outbreaks that pose risks to the population, as herd immunity is not achieved.⁽⁶⁾ Increasing MR immunization coverage is a global obligation that must be carried out by all countries to protect their populations.⁽⁷⁾ Given the increasing burden of measles and rubella, Indonesia committed to eliminating and controlling these diseases by 2020. This commitment aligns with the Global Vaccine Action Plan (GVAP) and the Global Measles and Rubella Strategic Plan 2012–2020, which aim to achieve a world free of measles, rubella, and CRS. MR immunization campaigns and introduction programs are government strategies to protect against measles and rubella.⁽⁶⁾

MR immunization is administered to children starting from 9 months of age up to <15 years, regardless of previous immunization status, during campaigns recommended by the Ministry of Health in collaboration with WHO and academic institutions in 2014. After the campaign, MR immunization becomes part of routine immunization given at 9 months, 18 months, and to children in the first grade of elementary school or equivalent.⁽⁶⁾

Previous research by Winarsih, et al. (2013) found a relationship between parental roles in providing basic immunization and children's immunization status.⁽⁸⁾ Parental roles in providing MR immunization are essential to protect children from measles and rubella by preventing virus transmission. The study also showed that mothers were reluctant to bring their children for immunization due to concerns about fever, swelling, skin redness, and increased irritability after immunization.

Research by Amatullah et al. (2025) identified several factors associated with measles immunization among infants in the working area of Lhoong Health Center, Aceh Regency, including maternal attitudes, husband's support, and education level.⁽⁹⁾ Similarly, Pangaribuan (2018) reported that knowledge, support from health workers, and family support influenced the completeness of booster immunization among toddlers at Sentosa Baru Primary Health Center, Medan.⁽¹⁰⁾

A preliminary survey conducted at Sidomulyo Primary Health Center, Tungkall Ilir District, Banyuasin Regency, involving 10 mothers, found that 8 mothers did not know the benefits of Measles–Rubella (MR) immunization, and therefore did not bring their children to the integrated health post (posyandu). Based on the background described above, it is necessary to conduct a study on the relationship between mothers' knowledge and attitudes toward Measles–Rubella (MR) immunization in children aged 24 months at Sidomulyo Primary Health Center, Tungkall Ilir District, Banyuasin Regency, in 2023.

2. METHODS

2.1 Study Design and Setting

This study employed an analytic observational design with a cross-sectional approach. The research was conducted at Sidomulyo Primary Health Center, Tungkall Ilir District, Banyuasin Regency, in May 2023.

2.2 Population and Sample

The population in this study consisted of all mothers who had children aged ≥ 2 years in the working area of Sidomulyo Primary Health Center, totaling 270 individuals based on 2022 records. The sample size was calculated using the Slovin formula, resulting in 161 respondents. The sampling technique used was simple random sampling. Respondents were selected based on inclusion criteria, namely mothers who had children aged two years and above and were willing to participate in the study.

2.3 Data Collection

Primary data were collected directly by the researcher using a structured questionnaire distributed to respondents. Before completing the questionnaire, respondents were given explanations regarding the purpose of the study and instructions for completing the questionnaire. The researcher assisted respondents during the completion process when necessary. The questionnaire was pilot-tested in a population with similar characteristics at a different location to ensure clarity and feasibility.

Secondary data were obtained from Posyandu reports and records available at Sidomulyo Primary Health Center, as well as from relevant literature, textbooks, and health journals related to the study topic.

2.4 Variables

The independent variable in this study was mothers' knowledge regarding MR immunization. The dependent variable was mothers' attitudes toward MR immunization for children aged 24 months.

2.5 Data Analysis

Data were analyzed using both univariate and bivariate analyses. Univariate analysis was performed to describe respondents' characteristics, knowledge, and attitudes, which were presented in frequency and percentage distributions. Bivariate analysis was conducted to determine the relationship between mothers' knowledge and attitudes toward MR immunization. The chi-square test was used to assess the association between categorical variables. A p-value of less than 0.05 was considered statistically significant, indicating a significant relationship between knowledge and mothers' attitudes toward MR immunization. Data management and analysis conducted by using Excel and SPSS software.

2.6 Ethical Practices

This study adhered to ethical standards and obtained informed consent. Ethical approval was granted by the Ethics Committee of STIKes Mitra Husada Medan (Reference No. 971/KEP-MHM/IV/2023).

3. RESULTS

3.1 Univariate Analysis

Based on Table 1, among 161 respondents, the majority had a higher education background, totaling 89 respondents (55.3%). Based on occupation, most respondents were civil servants, accounting for 65 respondents (40.4%). Based on age, the majority were aged >35 years, with 80 respondents (49.7%). In terms of knowledge, most respondents had good knowledge, totaling 104 respondents (64.6%). Regarding attitudes toward MR immunization, the majority of respondents had a positive attitude, totaling 99 respondents (61.5%).

Table 1. Distribution of respondents' characteristics

Characteristics	Frequency (F)	Percentage (%)
Education level		
Elementary school	26	16.1
Junior high school	7	4.3
Senior high school	39	24.2
Higher education	89	55.3
Occupation		
Housewife	32	19.9
Civil servant	65	40.4
Entrepreneur	38	23.6
Private sector employee	26	16.1
Age		
< 20 years	17	10.6
20–35 years	64	39.8
> 35 years	80	49.7
Knowledge		
Good	104	64.6
Moderate	46	28.6
Poor	11	6.8
Attitude		
Positive	99	61.5
Negative	62	38.5
Total	161	100

3.2 Bivariate Analysis

Based on Table 2, the cross-tabulation analysis between knowledge and mothers' attitudes toward MR

immunization showed that the majority of respondents had good knowledge and a positive attitude, totaling 80 respondents (49.7%). The chi-square test results showed a p-value of 0.000 ($p < 0.05$), indicating that H_0 was rejected and H_1 was accepted. This means that there is a

significant relationship between mothers' knowledge and attitudes toward Measles–Rubella (MR) immunization in children aged 24 months at Sidomulyo Primary Health Center, Tungkal Ilir District, Banyuasin Regency.

Table 2. Relationship Between Knowledge and Mothers' Attitudes Toward Measles–Rubella (MR) Immunization in Children Aged 24 Months

Knowledge	Positive		Negative		Total		p-value
	N	%	N	%	N	%	
Good	80	49.7	24	14.9	104	64.6	0.000
Moderate	16	9.9	30	18.6	46	28.6	
Poor	3	1.9	8	5.0	11	6.8	
Total	99	61.5	62	38.5	161	100	

4. DISCUSSION

The cross-tabulation analysis between knowledge and mothers' attitudes toward MR immunization showed that the majority of respondents who had good knowledge also demonstrated a positive attitude toward providing MR immunization, totaling 80 respondents (49.7%). The chi-square test yielded a p-value of 0.000 ($p < 0.05$), indicating that H_0 was rejected and H_1 was accepted. This result confirms that there is a significant relationship between mothers' knowledge and attitudes toward Measles–Rubella (MR) immunization in children aged 24 months at Sidomulyo Primary Health Center, Tungkal Ilir District, Banyuasin Regency, in 2023.

The results of this study are consistent with research conducted by Keswara et al. (2020), using a sample of 80 respondents from four integrated health posts (*Posyandu*), the study found a significant relationship between knowledge level and maternal behavior in providing MR immunization ($p = 0.012$). Knowledge is the result of human sensory perception or awareness obtained through the senses; therefore, higher levels of knowledge are expected to influence attitudes and behavior.⁽¹¹⁾

Knowledge is a very important domain in shaping an individual's actions. Behavioral formation is determined by several internal factors, including motivation, knowledge, and perception.⁽¹²⁻¹⁴⁾ Knowledge is the result of knowing, which occurs after individuals perceive a particular object. Cognitive or knowledge aspects are crucial in shaping overt behavior. Based on experience and research, behavior that is grounded in

knowledge tends to be more sustainable than behavior that is not based on knowledge.⁽¹⁵⁾

A study conducted by Ramadani et al. (2020) involving 42 respondents showed that the majority of respondents had a positive attitude (60%). This positive attitude was attributed to efforts such as socialization and education provided to respondents regarding the importance of MR immunization for toddlers. In addition, improving positive attitudes among parents also requires the role of health workers in continuously promoting MR immunization not only within health facilities but also outside, such as during *posyandu* activities in the community. The use of posters or banners may also help increase community motivation to provide MR immunization to toddlers.⁽¹⁶⁾

According to the researcher's assumption, mothers with good knowledge will have sufficient information and broader insight. In this study, the majority of mothers had good knowledge about MR immunization, which may influence their attitudes and behaviors in paying attention to children's needs for disease prevention through immunization.

5. CONCLUSION

Based on knowledge level, the majority of respondents were categorized as having good knowledge, totaling 104 respondents (64.6%). Based on attitudes toward MR immunization, most respondents demonstrated a positive attitude, totaling 99 respondents (61.5%). The bivariate analysis using cross-tabulation between knowledge and mothers' attitudes toward MR immunization showed that the majority of respondents with good knowledge also had a positive attitude toward

providing MR immunization, totaling 80 respondents (49.7%).

The chi-square test results showed a p-value of 0.000 ($p < 0.05$), indicating that H_0 was rejected and H_1 was accepted. This means that there is a significant relationship between mothers' knowledge and attitudes toward Measles–Rubella (MR) immunization in children aged 24 months at Sidomulyo Primary Health Center, Tungkal Ilir District, Banyuasin Regency, in 2023.

5.1 Recommendations

It is recommended that the head of the primary health center pay attention to children who have not received MR immunization and implement outreach approaches so that all children can receive MR immunization. Educational institutions are expected to use these findings as reference material to enhance students' knowledge at STIKes Mitra Husada regarding MR immunization. Future researchers are encouraged to conduct further studies on factors influencing MR immunization uptake using other variables that have not been examined. Respondents, particularly parents, are also expected to improve their knowledge of child health, including MR immunization, which can prevent disease and reduce mortality and morbidity rates.

Ethical Approval

Ethical approval was granted by the Ethics Committee of STIKes Mitra Husada Medan (Reference No. 971/KEP-MHM/IV/2023).

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Competing Interests

All the authors declare that there are no conflicts of interest.

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No funds were received for this study.

Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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