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Factors Associated with the Achievement of Rotavirus Immunization in the Working Area of Limboto Public Health Center

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ABSTRACT

Rotavirus is a leading cause of severe diarrhea among children globally, including in Indonesia, where the prevalence of diarrhea in children under five reaches 9.8% (SSGI 2021). Diarrhea contributes as the second leading cause of death after pneumonia among children aged 29 days–11 months (9.8%) and toddlers aged 12–59 months (4.55%). Rotavirus (RV) immunization is recommended by WHO and ITAGI as an effective preventive measure, yet its coverage in Indonesia remains low (5.4% of the 16% target as of March 2025). Based on a preliminary survey at Limboto Health Center, Gorontalo Regency, the RV immunization coverage in 2024 was 71.2%, with findings showing that parents did not fully understand the benefits of RV. This study aims to examine the factors associated with the achievement of Rotavirus Immunization among infants aged 6–12 months in the working area of Limboto Health Center, Gorontalo Regency. The research method used was observational analytic research with a cross-sectional approach in the working area of Limboto Health Center. Population: 718 parents of infants aged 6–12 months. Sample: 88 respondents. Data were collected through questionnaires and observations of the Maternal and Child Health (MCH) handbook and analyzed using univariate and bivariate (Chi-Square test) analyses. Results: There was a significant relationship between education and RV immunization coverage (p-value = 0.013), knowledge and RV immunization coverage (p-value = 0.000), and the role of health workers and RV immunization coverage (p-value = 0.001). Conclusion: Educational level, knowledge, and the role of health workers are significantly associated with Rotavirus immunization coverage among infants aged 6–12 months at Limboto Health Center. Efforts to increase RV coverage should focus on educating parents (especially those with lower education levels) and optimizing the role of health workers as communicators, motivators, and facilitators.

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INTRODUCTION

Rotavirus is the most common cause of severe diarrheal disease in young children worldwide. Rotavirus infects immature enterocytes in the villi of the small intestine and can spread extra-intestinally. Its symptoms vary, ranging from asymptomatic cases to severe dehydration, diarrhea, and vomiting. Death caused by Rotavirus infection is mainly due to severe dehydration and cardiovascular system failure (Rayyan et al., 2020).

In children, Rotavirus is the most common cause of diarrhea globally, and group A Rotavirus is the most frequently occurring. In addition, previous studies have confirmed that Rotavirus is responsible for 37.1% of acute diarrhea hospitalizations. The virus is detected more frequently in diarrheal stools (87%) than in normal stools (30.6%), and younger children are more susceptible than older ones, with peak incidence occurring between 6 and 24 months of age (Igwe et al., 2022).

Diarrheal disease remains a global health problem, including in Indonesia. Data from the 2021 Indonesian Nutritional Status Survey (SSGI) show a diarrhea prevalence of 9.8% among children under five. The 2020 Indonesia Health Profile states that diarrhea is the second leading cause of death after pneumonia among children aged 29 days–11 months (9.8% of deaths), and among toddlers aged 12–59 months (4.55%) (Ministry of Health, Republic of Indonesia, 2023).

According to WHO and UNICEF, around 1.7 billion cases of diarrhea occur in children annually, with 525,000 children under five dying from diarrhea each year. In developing countries, diarrheal disease is one of the top ten causes of child mortality, and about half of diarrhea cases in children are caused by Rotavirus. Global immunization coverage is estimated at 28% (Azis et al., 2020).

Apart from causing morbidity and mortality, diarrhea can also hinder child growth and development because recurrent diarrheal infections lead to loss of essential micronutrients required for growth, contributing to stunting. Data from the 2021 SSGI also indicate a high prevalence of diarrhea among children under five, reaching 9.8% (Aprilyna et al., 2025).

The Indonesian government is committed to preventing death and disability due to vaccine-preventable diseases such as diarrhea. The government aims to transform the health system to build a stronger, more innovative system that provides greater benefits to the community. Among the six pillars of transformation, the primary healthcare transformation pillar focuses on strengthening promotive and preventive services. One of the current strategies is the introduction of Rotavirus immunization (Ministry of Health RI, 2023a).

One of the most effective efforts to prevent Rotavirus infection is Rotavirus vaccination. Diarrhea control will be more effective when combined with prevention through Rotavirus immunization (RV), as recommended by the World Health Organization (WHO) and the National Immunization Technical Advisory Group (ITAGI). WHO introduced a two-dose effective vaccine to prevent Rotavirus-related diarrheal disease. WHO recommends administering Rotavirus immunization (RV) to infants as part of national immunization programs in all countries, especially those with high mortality due to Rotavirus Gastroenteritis (RVGE) (Ministry of Health RI, 2023).

According to WHO reports, the estimated global coverage of Rotavirus immunization in 2020 was 46%, which is still lower than WHO's target of over 80% (Atalell et al., 2022). According to data from the Ministry of Health in 2023, Rotavirus immunization coverage in Indonesia remains low. As of March 2025, only 5.4% of the national target of 16% had been achieved (Ministry of Health RI, 2025).

Low immunization uptake is influenced by several factors related to immunization behavior, consisting of three components: predisposing factors, enabling factors, and reinforcing factors. Predisposing factors include knowledge, education, occupation, attitudes, and family support. Enabling factors consist of accessibility of immunization services and availability of facilities and infrastructure. Reinforcing factors include the role of health workers and community health volunteers (Fitriani et al., 2021).

Knowledge is an important factor contributing to Rotavirus immunization coverage. Individuals with better knowledge tend to develop more positive attitudes and behaviors—parents who are knowledgeable about the benefits of Rotavirus immunization are more likely to bring their children to the health post for RV immunization. This aligns with Indriati's (2024) study showing a significant relationship between maternal knowledge and completeness of basic immunization, with a p-value of 0.000 ($p < 0.05$).

In addition to knowledge, parental education level also influences Rotavirus immunization coverage. Education enhances a person's capacity to understand health information. This is supported by Nurvinanda & Puji Lestari (2023), who found that respondents with higher education levels were 0.138 times more likely to complete advanced immunization compared to those with lower education levels.

Another factor influencing Rotavirus immunization coverage is the role of health workers. Health workers have a responsibility to educate communities about health problems, disease symptoms, and appropriate preventive steps, helping shape positive health behavior. They are also a source of consultation regarding health issues. Nurvinanda & Puji Lestari (2023) also found that respondents who received strong support from health workers were 4.772 times more likely to complete advanced immunization than those who received less support.

Based on preliminary data in the working area of Limboto Health Center, there were 718 infants aged 6–12 months. Interviews with six parents whose children had not received Rotavirus immunization revealed that four of them did not know the benefits of Rotavirus immunization, three had a high-school education level, and four stated that health workers only provided general immunization education without explaining Rotavirus immunization specifically.

Based on the above data and issues related to Rotavirus immunization, the researcher is interested in conducting a study on the factors associated with Rotavirus immunization coverage among infants aged 6–12 months in the working area of Limboto Health Center, Gorontalo Regency.

RESEARCH METHOD

Research Design

This study used an analytical observational design with a cross-sectional approach, which is a type of research conducted to measure the independent and dependent variables at one point in time (Sugiyono, 2018). This research was carried out in the working area of Limboto Public Health Center, Gorontalo Regency.

Data Analysis Techniques

Univariate Analysis

Univariate analysis is an analysis conducted on each variable individually. The results are analyzed to determine the distribution and percentage of each variable.

Bivariate Analysis

Bivariate analysis is used to determine the relationship or correlation between two or more variables being studied. In this research, the statistical test used was the Chi-Square test, which is employed to examine the relationship between variables with categorical data. If the calculated significance value (p) is less than the error level of 5% (0.05), then the hypothesis (H1) is accepted and H0 is rejected, meaning there is a relationship between the independent variable and the dependent variable. If the significance value (p) is greater than the error level of 5% (0.05), then the hypothesis (H1) is rejected and H0 is accepted, meaning there is no relationship between the independent variable and the dependent variable.

RESULTS

Characteristics of Mothers

Table 1. Frequency Distribution of Mothers' Characteristics

No	Karakteristik	Frekuensi (n)	Presentasi (%)
1	**Pendidikan**		
	Dasar (SD-SMP)	5	5,7
	Menengah (SMA)	54	61,4
	Tinggi (sarjana)	29	33
2	**Pekerjaan**		
	IRT	47	53,4
	Swasta	26	29,5
	ASN	15	17,0
	Total	**88**	**100**

Source: Primary Data, 2025

Based on the table above, it shows that the educational characteristics of the mothers studied at Limboto Health Center were mostly high school graduates, totaling 54 people (61.4%), while the lowest was elementary school graduates with 5 people (5.7%). The most common occupation among mothers was housewives (47 people or 53.4%), and the least was civil servants (15 people or 17%).

Child Characteristics

Table 2. Frequency Distribution of Child Characteristic

No	Karakteristik	Frekuensi (n)	Presentasi (%)
1	**Usia**		
	6 Bulan	16	18,2
	7 Bulan	10	11,4
	8 Bulan	20	22,7
	9 Bulan	19	21,6
	10 Bulan	5	5,7
	11 Bulan	10	11,4
	12 Bulan	8	9,1
2	**Jenis kelamin**		
	Laki-laki	37	42,0
	Perempuan	51	58,0
	Total	**88**	**100**

Sumber: Data primer 2025

Based on the table above, it shows that the age characteristics of the children studied at Limboto Public Health Center were highest at 8 months, totaling 20 children (22.7%), and the lowest were those aged 10 months, totaling 5 children (5.7%). The gender distribution of the children shows that the majority were female, totaling 51 children (58%), while the least were male, totaling 37 children (42%).

Univariate Analysis
Parents' Knowledge

Table 3. Frequency distribution of parents' knowledge

Pengetahuan	Frekuensi (n)	Presentasi (%)
Kurang	7	8,0
Cukup	13	14,8
Baik	68	77,3
Total	**88**	**100**

Sumber: Data primer 2025

Based on the table above, it shows that the highest proportion of parents of infants studied at Limboto Public Health Center had good knowledge, totaling 68 people (77.3%), while the lowest proportion had poor knowledge, totaling 7 people (8%).

Role of Health Workers

Table 4. Frequency distribution of the Role of Health Workers

Peran petugas kesehatan	Frekuensi (n)	Presentasi (%)
Kurang	7	8,0
Cukup	17	19,3
Baik	64	72,7
Total	**88**	**100**

Source: Primary Data 2025

Based on the table above, it shows that the role of health workers in the implementation of rotavirus immunization at Limboto Public Health Center was highest in the good category, totaling 64 people (72.7%), and lowest in the poor category, totaling 7 people (8%).

Rotavirus Immunization Achievement

Table 5. Frequency Distribution of Rotavirus Immunization Achievement

Capaian Imunisasi Rotavirus	Frekuensi (n)	Presentasi (%)
Tidak lengkap	13	14,8
Lengkap	75	85,2
Total	**88**	**100**

Source: Primary Data 2025

Based on the table above, it shows that the achievement of Rotavirus Immunization at Limboto Public Health Center was highest in the complete category, with 75 infants (85.2%), and lowest in the incomplete category, with 13 infants (14.8%).

Bivariate Analysis

The Relationship Between Education Factors and Rotavirus Immunization Achievement in Infants Aged 6–12 Months in the Working Area of Limboto Public Health Center, Gorontalo Regency

Table 6. Relationship Between Education Factors and Rotavirus Immunization Achievement in Infants Aged 6–12 Months

Pendidikan	Capaian Imunisasi Rotavirus						
	Tidak lengkap		Lengkap		Total		P=Value
	n	%	n	%	n	%	0,013

Pendidikan dasar	3	3,4	2	2,3	5	**5,7**
Pendidikan menengah	7	8	47	53,4	54	**61,4**
Pendidikan tinggi	3	3,4	26	29,5	29	**33**
Total	**13**	**14,8**	**75**	**85,2**	**88**	**100**

Source: Primary Data 2024

Based on the table above, it shows that among 5 (5.7%) parents with basic education, 3 infants (3.4%) had incomplete rotavirus immunization and 2 infants (2.3%) had complete immunization. Meanwhile, among 54 (61.4%) parents with secondary education, 8 infants (8%) had incomplete rotavirus immunization and 47 infants (53.4%) had complete immunization. Furthermore, among 29 (33%) parents with higher education, 3 infants (3.4%) had incomplete immunization and 26 infants (29.5%) had complete immunization. The chi-square test results showed a statistical value or p-value = 0.013 < 0.05, therefore H0 is rejected. Thus, it can be concluded that there is a relationship between education level and Rotavirus Immunization achievement in infants aged 6–12 months in the working area of Limboto Public Health Center, Gorontalo Regency.

The Relationship Between Knowledge Factors and Rotavirus Immunization Achievement in Infants Aged 6–12 Months in the Working Area of Limboto Public Health Center, Gorontalo Regency

Table 7. Relationship Between Knowledge Factors and Rotavirus Immunization Achievement in Infants Aged 6–12 Months

Pengetahuan	**Capaian Imunisasi Rotavirus**						**P=Value**
	Tidak lengkap		**Lengkap**		**Total**		
	n	**%**	**n**	**%**	**n**	**%**	
Kurang	4	4,5	3	3,4	7	**7,9**	
Cukup	5	5,7	8	9,1	13	**14,8**	0,000
Baik	4	4,5	64	72,7	68	**77,3**	
Total	**13**	**14,8**	**75**	**85,2**	**88**	**100**	

Based on the table above, it shows that among 7 (7.9%) parents with poor knowledge, 4 infants (4.5%) had incomplete rotavirus immunization and 3 infants (3.4%) had complete immunization. Meanwhile, among 13 (14.8%) parents with sufficient knowledge, 5 infants (5.7%) had incomplete rotavirus immunization and 8 infants (9.1%) had complete immunization. Furthermore, among 68 (77.3%) parents with good knowledge, 4 infants (4.5%) had incomplete immunization and 64 infants (72.7%) had complete immunization. The chi-square test results showed a statistical value or p-value = 0.000 < 0.05, therefore H0 is rejected. Thus, it can be concluded that there is a relationship between parental knowledge and Rotavirus Immunization achievement in infants aged 6–12 months in the working area of Limboto Public Health Center, Gorontalo Regency.

The Relationship Between the Role of Health Workers and Rotavirus Immunization Achievement in Infants Aged 6–12 Months in the Working Area of Limboto Public Health Center, Gorontalo Regency

Table 8. Relationship Between the Role of Health Workers and Rotavirus Immunization Achievement in Infants Aged 6–12 Months

Peran Petugas Kesehatan	**Capaian Imunisasi Rotavirus**						**P=Value**
	Tidak lengkap		**Lengkap**		**Total**		
	n	**%**	**n**	**%**	**n**	**%**	
Kurang	3	3,4	4	4,5	7	**7,9**	
Cukup	6	6,8	11	12,5	17	**19,3**	0,001
Baik	4	4,5	60	68,2	64	**72,7**	
Total	**13**	**14,8**	**75**	**85,2**	**88**	**100**	

Source: Primary Data 2025

Based on the table above, it shows that among 7 (7.9%) parents who stated that the role of health workers was poor, 3 infants (3.4%) had incomplete rotavirus immunization and 4 infants (4.5%) had complete immunization. Meanwhile, among 17 (19.3%) parents who stated that the role of health workers was adequate, 6 infants (6.8%) had incomplete immunization and 11 infants (12.5%) had complete immunization. Furthermore, among 64 (72.7%) parents who stated that the role of health workers was good, 4 infants (4.5%) had incomplete immunization and 60 infants (68.2%) had complete immunization.

The chi-square test results showed a statistical value or p-value = 0.001 < 0.05, therefore H0 is rejected. Thus, it can be concluded that there is a relationship between the role of health workers and Rotavirus Immunization achievement in infants aged 6–12 months in the working area of Limboto Public Health Center, Gorontalo Regency.

Discussion

Univariate Analysis

Parents' Education of Infants Aged 6–12 Months in the Working Area of Limboto Public Health Center, Gorontalo Regency

Parents' Education of Infants Aged 6–12 Months in the Working Area of Limboto Public Health Center, Gorontalo Regency

The results of the study showed that most of the mothers examined at Limboto Public Health Center had a senior high school (SMA) education, totaling 54 people (61.4%), while the lowest level was elementary school (SD) with 5 people (5.7%). Secondary education or high school level, as shown by the majority of parents, illustrates that education becomes an important factor for individuals and a fundamental basis within the family.

Education is a learning process carried out to increase human abilities and behavioral changes by gaining knowledge so that they can overcome limitations in acting due to a low level of education (Wulandari, 2021). According to Hasibuan (2020), education means guidance given by one person to another so that they can understand something. It is undeniable that the higher a person's education, the easier it is for them to receive information, and eventually, the knowledge they possess will increase. Conversely, if a person has a low level of education, it will hinder the development of attitudes toward receiving new information and values introduced to them.

The study also found that there were still 5 parents with basic education (junior high school). This may be due to various factors, including the family's economic background or lack of awareness regarding the importance of education within the family.

Based on the findings related to education, the researcher concludes that every individual needs education to live life optimally. To interact more effectively with the environment and make the best use of their life span, education is very important. With education, individuals are able to support their families. Education helps individuals make good decisions and increases their chances of achieving success in life. It is also important for society because it helps people grow into productive members of the community, positively contributing to the economy.

Parents' Knowledge of Infants Aged 6–12 Months in the Working Area of Limboto Public Health Center, Gorontalo Regency. The results of this study showed that most parents had good knowledge, with 68 people (77.3%), while only 7 people (8%) had poor knowledge.

The good knowledge possessed by most parents shows that they already have adequate information regarding rotavirus immunization. This good level of knowledge is influenced by parental education and the availability of information sources in the community, particularly from health workers. This is in line with Wulandari (2021), who states that internal factors that influence the formation of knowledge include education.

Knowledge is the result of sensing an object, which is understood and comprehended through human sensory tools. This process of sensing occurs through the five senses: sight, hearing, smell, taste, and touch (Hasibuan, 2020).

The findings of this study are supported by previous research conducted by Indriaty (2024) at BPM Bidan L in Bandung City, which found that mothers' knowledge levels about immunization included 4 people (9.5%) with poor knowledge, 9 people (21.4%) with sufficient knowledge, and 29 people (69.1%) with good knowledge.

The study also found that 7 parents still had poor knowledge about rotavirus immunization. According to the researcher, this may be caused by a lack of information obtained by parents, either from social media or the surrounding community. This is consistent with the parents' responses in the questionnaire, where some stated that they had never received any information about rotavirus immunization.

Based on these findings, the researcher concludes that knowledge is the result of knowing, obtained through information from printed or electronic media and through education. With adequate knowledge, individuals can apply what they know in real-life situations.

The Role of Health Workers in the Working Area of Limboto Public Health Center, Gorontalo Regency

The results showed that the role of health workers in the implementation of rotavirus immunization at Limboto Public Health Center was mostly in the good category, with 64 people (72.7%), while the lowest was the poor category with 7 people (8%). The good role of health workers illustrates that they are actively providing education regarding rotavirus immunization to parents.

Health workers have a role in educating the community about health problems, signs of disease, and appropriate steps to take in order to change behavior. In addition, health workers serve as a place for consultation regarding health issues or health-related behaviors. A health worker is someone who dedicates themselves to the health sector and possesses knowledge and skills obtained through education in the health field, which requires authorization to carry out health efforts (Hanani, 2023).

According to Notoatmodjo (2019), the roles of health personnel are divided into several categories, namely communicator, motivator, facilitator, and counselor. A health worker also has the role of an educator, which is carried out by helping clients and families increase their level of health knowledge, recognize disease symptoms, and understand the interventions provided, thereby leading to behavioral changes in clients and their families.
The results of this study are in line with the findings of Hidayat (2023), who found that of 58 respondents, most of them, namely 42 (72.4%), received adequate support from health workers. Research by Retno (2022) also showed that among 60 respondents, 21 (35.0%) mothers reported poor health worker involvement, while 39 (65.0%) mothers reported good involvement from health workers.

Based on the findings of this study, the researchers concluded that health workers act as the frontline in the implementation of immunization programs within the community. Health workers are individuals who dedicate themselves to the health sector and possess knowledge and skills obtained through education in the health field, which for certain types requires authorization to carry out health efforts.

Completeness of Basic Immunization

The results of the study showed that the achievement of Rotavirus immunization at Limboto Health Center was highest in the complete category, totaling 75 infants (85.2%), and lowest in the incomplete category, totaling 13 infants (14.8%). These findings indicate that parents already have awareness of the importance of providing Rotavirus immunization to infants as a preventive measure against diarrhea.

Rotavirus is the most common cause of severe diarrhea in young children worldwide. It infects immature enterocytes in the small intestinal villi and can spread extraintestinally. Symptoms vary from asymptomatic to severe dehydration, diarrhea, and vomiting. Deaths caused by Rotavirus infection generally occur due to severe dehydration and cardiovascular failure (Rayyan et al., 2020).

Diarrhea control efforts will be more effective when combined with preventive measures such as Rotavirus immunization (RV), as recommended by the World Health Organization (WHO) and the National Immunization Technical Advisory Group (ITAGI). Immunization is a method to increase a person's immunity to a disease by administering a harmless form of "artificial infection" sufficient to stimulate an immune response, so that when exposed to the actual pathogen, the individual does not become ill. The national immunization program includes basic immunizations that must be completed before one year of age, namely Hepatitis B, BCG, DPT-Hb-Hib, Polio, Measles, and the monovalent Rotavirus vaccine (Sampurna, 2022).

The findings of this study align with the explanation of the Ministry of Health of the Republic of Indonesia (2023) that the Rotavirus vaccine (RV) is a live attenuated oral vaccine capable of replicating in the human intestine to induce an immune response. There are two types of Rotavirus vaccines: monovalent (RotaRix) and pentavalent (RotaTeq).

Bivariate Analysis

Relationship between Parental Education and Rotavirus Immunization Achievement among Infants Aged 6–12 Months in the Working Area of Limboto Health Center, Gorontalo Regency

The study found that 5 (5.7%) parents with basic education had 3 infants (3.4%) with incomplete Rotavirus immunization and 2 infants (2.3%) with complete immunization. Meanwhile, among 54 (61.4%) parents with secondary education, 7 infants (8%) had incomplete immunization and 47 infants (53.4%) had complete immunization. Furthermore, among 29 (33%) parents with higher education, 3 infants (3.4%) had incomplete and 26 infants (29.5%) had complete immunization.

Chi-square test results showed a statistical value or p-value = 0.013 < 0.05; therefore, H0 is rejected, indicating a significant relationship between parental education level and Rotavirus immunization achievement among infants aged 6–12 months in the working area of Limboto Health Center, Gorontalo Regency.

Education is a fundamental aspect for every individual. A mother's education level plays an important role in her ability to accept new information. The higher the mother's education level, the easier it is for her to understand the importance of immunization for her child. Mothers with higher education levels generally have better knowledge compared to those with lower education, which influences their behavior in bringing their children to health facilities for immunization (Wulandari, 2021).

This is consistent with the opinion of Hasibuan (2020), who explained that education serves as guidance provided to someone so that they understand a concept. The higher a person's education level, the easier it is for them to receive information, which ultimately increases their knowledge. Conversely, low education may hinder a person's ability to understand and accept new information.

This finding is further supported by the study of Nurvinanda & Puji Lestari (2023), which showed that respondents with higher education were 0.138 times more likely to provide complete follow-up immunization compared to those with lower education levels.

Based on the study results, the researchers concluded that education is a process that influences an individual's behavior because higher education affects decision-making processes, including decisions related to obtaining Rotavirus immunization for infants.

Relationship between Knowledge Levels and Rotavirus Immunization Achievement among Infants Aged 6–12 Months in the Working Area of Limboto Health Center, Gorontalo Regency

The study found that 7 (7.9%) parents with low knowledge had 4 infants (4.5%) with incomplete Rotavirus immunization and 3 infants (3.4%) with complete immunization. Meanwhile, among 13 (14.8%) parents with moderate knowledge, 5 infants (5.7%) had incomplete immunization and 8 infants (9.1%) had complete immunization. Furthermore, among 68 (77.3%) parents with good knowledge, 4 infants (4.5%) had incomplete and 64 infants (72.7%) had complete immunization.

Chi-square test results showed a statistical value or p-value = 0.000 < 0.05; therefore, H0 is rejected, indicating a significant relationship between parental knowledge and Rotavirus immunization achievement.

These findings indicate that knowledge directly influences Rotavirus immunization achievement among infants. Knowledge is a crucial factor for immunization uptake. Parents with good knowledge about the benefits of Rotavirus immunization tend to bring their children to posyandu to receive it.

This finding aligns with research by Indriati (2024), which demonstrated a significant relationship between maternal knowledge and completeness of basic immunization (p-value = 0.000).

Hasibuan (2020) also stated that individuals with good knowledge tend to have better thinking patterns and behaviors. Knowledge is one of the key factors influencing immunization completeness—greater knowledge increases the likelihood of complete immunization.

The study also revealed that 4 infants (4.5%) had parents with good knowledge but incomplete immunization, while 3 infants (3.4%) had parents with low knowledge but complete immunization. This may occur due to other factors such as parental occupation and family support. Working parents may have limited time to bring their children to posyandu, whereas a lack of family support can also hinder immunization completion.

This is consistent with Deby (2021), who stated that family support is a social process that connects family members with their environment. Families provide emotional and practical support that influences individuals' actions and decisions, including health-related decisions.

Based on study findings, expert opinions, and supporting research, the researchers concluded that knowledge is a key factor in Rotavirus immunization achievement. Knowledge can be obtained through various information sources, including print and electronic media, and is further supported by family involvement.

Relationship between the Role of Health Workers and Rotavirus Immunization Achievement among Infants aged 6–12 Months in the Working Area of Limboto Health Center, Gorontalo Regency

The study showed that 7 (7.9%) parents who reported poor health worker involvement had 3 infants (3.4%) with incomplete and 4 infants (4.5%) with complete immunization. Meanwhile, among 17 (19.3%) parents who reported moderate involvement, 6 infants (6.8%) had incomplete immunization and 11 infants (12.5%) had complete immunization. Furthermore, among 64 (72.7%) parents who reported good involvement, 4 infants (4.5%) had incomplete and 60 infants (68.2%) had complete immunization.

The chi-square test yielded a p-value = 0.001 < 0.05, indicating a significant relationship between the role of health workers and Rotavirus immunization achievement.

Health workers have a role in educating the community about health issues, disease symptoms, and appropriate measures to take to change behavior. They also serve as a place for consultation involving health issues or health behaviors. A health worker is someone who dedicates themselves to the health sector and possesses knowledge and skills obtained from health-related education meeting specific requirements (Hanani, 2023).

This is consistent with the explanation by Sugesti (2023), who stated that the role of health workers is crucial in the success of child immunization. As educators, health workers help clients and families increase health knowledge, recognize symptoms, and understand interventions, resulting in behavior change. Health workers also act as consultants regarding health issues.

This is further supported by Nurvinanda & Puji Lestari (2023), who found that respondents receiving good health worker involvement were 4.772 times more likely to provide complete follow-up immunization compared to those receiving poor involvement.

Based on these findings, the researchers concluded that the role of health workers is essential in improving Rotavirus immunization achievement. Their involvement provides parents with necessary information and support, which increases parents' willingness to immunize their infants against Rotavirus.

CONCLUSION

The factors of education, knowledge, and the role of healthcare workers are significantly associated with the achievement of Rotavirus immunization among infants aged 6–12 months at the Limboto Health Center. Efforts to increase RV coverage should focus on educating parents (especially those with lower educational backgrounds) and optimizing the role of healthcare workers as communicators, motivators, and facilitators.

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Ranah bukti global: Lancet Global Health / Malawi trial (2018)