



## The Relationship between Maternal Knowledge Level and Early Diarrhea Treatment in Toddlers in the Working Area of the North City Health Center

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### ABSTRACT

Diarrhea is one of the main causes of pain and death in toddlers, especially due to complications such as dehydration. Prompt and appropriate initial treatment is necessary to prevent more serious impacts. The role of mothers as the main caregiver is very important in determining the actions taken when toddlers experience diarrhea. One of the factors that affect these actions is the mother's level of knowledge. This study aims to determine the relationship between the level of knowledge of mothers and the initial treatment of diarrhea in toddlers in the work area of the North City Health Center. This study uses an analytical observational design with a cross-sectional approach. A total of 34 samples were taken using the total sampling technique. The research instruments are in the form of a Questionnaire on the Level of Knowledge of Mothers and a Questionnaire on Early Treatment of Diarrhea in Toddlers which have been tested for validity and reliability. The results showed that the level of knowledge of mothers was in the sufficient category as many as 15 respondents (44.1%) and the initial treatment of diarrhea was in the good category as many as 29 respondents (85.3%). The results of the Chi-Square test showed a significant relationship between the mother's level of knowledge and the initial treatment of diarrhea in toddlers ( $p < 0.05$ ). This study shows that the better the mother's level of knowledge, the more appropriate the action taken. Meanwhile, there are still a small number of mothers with less knowledge and less action, so continuous education improvement is needed.

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### INTRODUCTION

Toddlerhood is a golden period as well as the most vulnerable stage in a child's life. At this stage, children experience rapid physical, cognitive, and emotional growth, but at this time the weak immune system of toddlers makes them an age group that is vulnerable to various infectious diseases, one of which is diarrhea (Veranda et al., 2022).

According to World Health Organization (WHO) in 2024, diarrhea is a condition of defecating 3 or more times with diluted or liquid stools per day or more often than usual in the individual. Diarrhea can cause malnutrition, dehydration, and even death if not treated immediately (Anggraini & Kumala, 2022). Based on data from World Health Organization By 2024, globally, diarrhea is the third leading cause of death for children aged 1-59 months and kills around 443,832 children under five every year. This phenomenon is in line with the condition in Indonesia where the prevalence of toddlers experiencing diarrhea is still quite high. Based on data from Ministry of Health of the Republic of Indonesia in 2024, Diarrhea is still one of the leading causes of death in children under five years old. The prevalence of toddlers experiencing diarrhea according to the 2024 Indonesian Health Survey is 1,014,133 cases served in health facilities where there was an increase of around 845 thousand cases from the previous year.

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The phenomenon of high incidence of infectious diseases in toddlers is also seen in Gorontalo Province. Based on data from the Gorontalo Provincial Health Office in 2024, diarrhea ranks second after ISPA as the disease with the highest number of cases, namely 6,122 cases in toddlers out of a total of 106,889 toddlers with a prevalence of 5.73%. The district or city with the highest number of cases of diarrhea under five in Gorontalo Province is Gorontalo City with 1,181 (1.1%) diarrhea toddlers.

The Gorontalo City Health Office's Diarrhea Report in 2024 recorded a total of 16,542 people under five with the distribution of diarrhea cases still quite high in all health centers. The three health centers with the highest number of cases in 2024 are the North City Health Center with 147 cases, then the East City Health Center with 146 cases, and the Duingingi Health Center with 138 cases. Cases of diarrhea were also found in the West City Health Center as many as 132 cases, Central City 121 cases, South City 114 cases, Sipatana 99 cases, Hulonthalangi 98 cases, and Pilolodaa and Dumbo Raya which each reported 90 cases. This condition shows that the burden of diarrhea cases for toddlers in Gorontalo City is still high, especially in the health center with the highest number of cases.

The high burden of these cases confirms the importance of attention to the impact of diarrhea considering that this disease can cause serious complications such as dehydration which is often at risk of causing death in children (Mariyam) et al., 2025). Therefore, prompt and appropriate handling is indispensable to prevent more serious impacts. In this case, the role of parents, especially mothers as the main caregivers, is very important in determining the actions taken when toddlers experience diarrhea (Jagadeesh et al., 2024).

Actions that can be taken by mothers include giving oralite appropriately to prevent dehydration, giving Zinc for 10 consecutive days to reduce the duration and severity of diarrhea, continue breastfeeding, especially in infants aged 0–24 months, provide nutritious food without stopping food intake during diarrhea, and understand how to make a sugar-salt solution as an alternative when oralite is not available. Mothers also need to know the right time to take their children to a health facility if signs of severe dehydration appear (Sri) et al., 2023). Prompt and appropriate action can help reduce the severity of diarrhea as well as the risk of complications. This action is greatly influenced by various factors, one of which is the mother's level of knowledge (Rahmah et al., 2024).

Knowledge is the result of a cognitive process that involves a person's ability to remember, understand, apply, analyze, evaluate, and create based on information obtained through experience or learning and not only includes memorization of facts, but also reflects a deep understanding of concepts and the ability to use the information in a relevant context. Knowledge can be the basis for the formation of attitudes and behaviors that support decision-making and appropriate actions towards health problems (Lactona & Cahyono, 2024). Thus, the level of knowledge is the extent to which the individual understands and is able to apply health information in concrete actions to improve the degree of health (Sigh) et al., 2025).

The level of knowledge of the mother has a great influence on the actions to be taken, such as the research conducted by Puspa Sari et al. year 2024 which shows that mothers with good knowledge tend to do the right handling, while mothers with low knowledge may delay handling or take inappropriate actions that can actually worsen the condition of toddlers. Similar findings were also obtained in a 2021 study by Deviazka & Setiyabudi which showed a significant relationship between maternal knowledge level and diarrhea management in toddlers aged 6–12 months, where less knowledgeable mothers were 2.7 times more likely to do improper handling than well-informed mothers. Research results Cape of the Year 2023 Also strengthening these findings, where there is a significant relationship between the level of maternal knowledge and the incidence of diarrhea in toddlers ( $p < 0.05$ ), mothers with less knowledge tend not to apply the principles of early rehydration and proper prevention so that the risk of diarrhea in children is higher than in mothers who have good knowledge.

The results of the initial survey, which was conducted on September 20, 2025 through interviews with 10 mothers who had toddlers with a history of diarrhea at the North City Health Center, stated that 7 out of 10 mothers stated that the first action taken when their child had diarrhea was to take the child to a health facility such as a health center, doctor's clinic, or hospital. Only 3 out of 10 mothers mentioned doing initial treatment at home, such as rubbing their child's stomach with eucalyptus oil, giving them water, or continuing to give formula milk. In addition, 4 out of 10 mothers knew about the use of oralitis although most mentioned that it was obtained from a health center or doctor, not as a self-giving initiative. Only 1 in 10 mothers mentioned that they had directly given oralitis to their children when they had diarrhea.

The results of the initial survey show that most mothers under five have not had the initiative to carry out early treatment of diarrhea at home independently according to health recommendations. Although some mothers know about the existence of oralite, few actually implement it as a first step before taking a child to a health facility. This condition illustrates the gap between the mother's level of knowledge and the implementation of appropriate initial treatment measures. This phenomenon is in line with the view that efforts to treat diarrhea in toddlers do not only depend on the availability of health services, but also on the mother's ability to recognize early symptoms and take appropriate treatment steps at home.

Based on this background description, the author is interested in conducting a study that aims to determine the relationship between the mother's level of knowledge and the initial treatment of diarrhea in toddlers in the working area of the North City Health Center

**RESEARCH METHODS**

This research has been carried out at the North City Health Center on January 15 – February 13, 2026. The type of quantitative research uses a cross-sectional research design. The sampling technique in this study used a total sampling with a sample of 34 respondents. This research instrument uses a questionnaire on the level of knowledge of the mother to see the knowledge about the initial management of diarrhea owned by the mother and the questionnaire of the initial management of diarrhea in toddlers to see the actions taken by the mother.

**RESEARCH RESULTS****Univariate Analysis****Characteristics of Respondents Based on Demographic Data**

Table 1. Characteristics of respondents by age

No.	Mother's Age	Frequency (n)	Percentage (%)
1.	21-30 Years	18	52,9
2.	31-40 Years	15	44,1
3.	>40 Years	1	2,9
<b>Total</b>		<b>34</b>	<b>100</b>

Source : Primary Data 2026

Based on the table above, it can be seen that the age group of 21–30 years is the most dominant group with a percentage of 52.9%, while the age group of >40 years is the least with a percentage of 2.9%. This shows that the majority of respondents in this study are young adults.

Table 2. Characteristics of respondents by occupation

No.	Mother's Work	Frequency (n)	Percentage (%)
1.	Civil Servant	9	26,5
2.	Self-employed	3	8,8
3.	Private	2	5,9
4.	Farmer	0	0
5.	Merchant	0	0
6.	Housewives	20	58,8
<b>Total</b>		<b>34</b>	<b>100</b>

Source : Primary Data 2026

Based on the table above, it can be seen that most of the respondents work as housewives, which is as many as 20 people (58.8%), while the least number of respondents are in private work, namely 2 people (5.9%). Jobs as farmers and traders were not found in the respondents in this study.

Table 3. Characteristics of respondents based on education

No.	Mother's Education	Frequency (n)	Percentage (%)
1.	SD	0	0
2.	Junior High School	2	5,9
3.	High School/Vocational School	15	44,1
4.	DIII/Bachelor	17	50,0
<b>Total</b>		<b>34</b>	<b>100</b>

Source : Primary Data 2026

Based on the table above, it can be seen that the highest level of maternal education is DIII/Bachelor with a total of 17 people (50.0%), while the lowest is junior high school with 2 people (5.9%). The level of elementary education did not have respondents in this study.

Table 4. Distribution of maternal knowledge levels

No.	Categories	Frequency (n)	Percentage (%)
1.	Good	14	41,2
2.	Enough	15	44,1
3.	Less	5	14,7
<b>Total</b>		<b>34</b>	<b>100</b>

Source : Primary Data, 2026

Based on the table above, it can be seen that the level of knowledge of mothers is the most in the sufficient category, which is 15 respondents (44.1%) while the least is in the lack category, namely 5 respondents (14.7%).

Table 5. Distribution of early diarrhea treatment measures in toddlers

No.	Categories	Frequency (n)	Present (%)
1.	Good	29	85,3
2.	Less	5	14,7
<b>Total</b>		<b>34</b>	<b>100</b>

Source : Primary Data, 2026

Based on the table above, it can be seen that the most actions for early treatment of diarrhea in toddlers are in the good category, which is 29 respondents (85.3%) while the less category is the fewest which is 5 respondents (14.7%).

### Bivariate Analysis

Table 6. The Relationship between Maternal Knowledge Level and Early Treatment of Diarrhea in Toddlers

No.	Mother's Level of Knowledge	Early Treatment of Diarrhea in Toddlers				Quantity		p-value
		Good		Less		n	%	
		n	%	n	%			
1.	Good	14	41,2	0	0	14	41,2	0,000
2.	Enough	15	44,1	0	0	15	44,1	
3.	Less	0	0	5	14,7	5	14,7	
<b>Total</b>		29	85,3	5	14,7	34	100,0	

Source : Primary Data, 2026

Based on the results of the Chi-Square Test, a p-value of 0.000 was obtained which shows a significant relationship between the mother's level of knowledge and the initial treatment of diarrhea in toddlers. Thus, it was accepted so that it was concluded that there was a significant relationship between the level of knowledge of the mother and the initial treatment of diarrhea in toddlers in the work area of the North City Health CenterH\_1.

## DISCUSSION

### Mother's Level of Knowledge

Based on the results of the study on 34 respondents, it was found that 15 respondents (44.1%) had a sufficient level of knowledge, 14 respondents had a good level of knowledge (41.2%), and as many as 5 respondents (14.7%) had a lack level of knowledge. This shows that most of the mothers in the work area of the North City Health Center have a sufficient level of knowledge.

In the results of this study, although the category of knowledge is quite the largest, the difference in the number of respondents with the category of good knowledge is very small, namely only 1 respondent. This condition shows that the distribution of respondents' knowledge levels tends to be even and is at the boundary between the categories of sufficient and good. This shows that increasing knowledge is still needed for respondents to achieve a more optimal level of understanding.

The results of the questionnaire distribution showed that the mother had a basic understanding of the handling of diarrhea seen in several items with a percentage of correct answers ranging from 67.6% to 85.3% such as in the statement items regarding the recognition of danger signs and referral needs, nutritious feeding, and the use of medicines. This percentage shows that although most respondents have understood these aspects, their understanding is not even and is still limited at the basic level, especially when compared to items that have a higher

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level of correct answers such as oralit-making items.

The results of this study are strengthened by the theory put forward by Notoatmodjo (2010) in Squirrel et al. (2021) which states that knowledge is the result of the process of individual sensing of an object through the five senses which then produces a certain understanding. In the cognitive realm, knowledge has several levels ranging from knowing (knowing), understanding, applying, analyzing, to evaluating. This difference in level shows that the depth of a person's understanding of a material can vary.

This is in line with research conducted by Hariyani et al. Year 2023 which shows that most mothers have a level of knowledge about diarrheal diseases in children that are classified as Fair (53.02%). The knowledge that falls into the category is enough to reflect that the respondents have understood the basics of information about diarrhea. The results of this study are also supported by São Paulo et al. Year 2023 which states that knowledge about nutritious food is needed to maintain the nutritional status of children during diarrhea because diarrhea conditions can cause loss of fluids and nutrients that have an impact on the decline of children's health conditions. Understanding the use of medications is also important so that the mother can provide appropriate therapy (Cindo et al., 2023). In addition, the recognition of danger signs and the need for referrals are crucial aspects because diarrhea can cause serious complications such as dehydration that can lead to death if not treated immediately (Tanzil et al., 2025).

Understanding related to the manufacture and administration of oralit is an influential aspect in shaping mothers' knowledge about diarrhea in toddlers because oralite is the main step in handling diarrhea which functions to prevent dehydration (Tanzil et al., 2025). The high number of correct answers on the oralit making items contributes to the increase in the respondents' knowledge scores, as each correct answer adds to the total value. This shows that aspects that are easy to understand and often encountered in daily life such as making or administering oralite tend to be more mastered by respondents.

Knowledge of early treatment of diarrhea is very important for mothers. A mother's lack of knowledge can have an impact on inaccuracies in conducting early treatment at home and can increase the risk of dehydration in children, which is the most serious complication (Utami et al., 2022). Stuttgart Alfiah (2021), this knowledge can be influenced by several factors, one of which is age. The results of the univariate analysis of respondent characteristics showed that most respondents aged 21-30 years were 52.9%.

In the age range of 21-30 years, individuals generally have good cognitive abilities and are easier to receive and process information as well as experience and maturity in thinking that can affect the way a person understands health information so that they have the potential to have an adequate level of knowledge. On the other hand, mothers with younger ages generally still have limitations in experience and understanding so they have the potential to have a lower level of knowledge. Increasing age is related to the ability to understand and process health information (Iswandari & Handayani, 2023).

In addition to age, work is one of the factors that affect a person's level of knowledge. Based on the results of the respondents' characteristics, most of them have jobs as IRTs, which is as much as 58.8%. This condition shows that mothers have a major role in parenting children and more time to be directly involved in family health care, including in the treatment of diarrhea in toddlers. This hands-on engagement can provide practical experiences that support the improvement of maternal knowledge. But on the other hand, status as a housewife also has the potential to limit access to health information, especially if it is not supported by adequate information sources such as counseling or educational media. This can lead to knowledge being based only on personal experience and not necessarily in accordance with the correct handling principles. The type of work can affect the level of knowledge through access to information and a social environment where individuals with broader access to information tend to have better knowledge (M. Rahmawati, 2023).

In addition to age and occupation, education can also affect a person's knowledge. Based on the results of the characteristics of respondents, most of them are DIII/Bachelor educated as much as 50.0%. Higher levels of education generally have to do with better ability to receive, understand, and process information. This is in line with the results of this study which shows that most of the respondents have a level of knowledge that is in the sufficient category which reflects that the mother already has a basic understanding of the handling of diarrhea in toddlers. Mothers with higher education tend to have easier access to health information and have more critical thinking skills in understanding the information. The level of education can affect a person's knowledge where the higher the level of education, the better the knowledge possessed (M. Rahmawati, 2023).

This is in line with previous research by Deviazka & Setiyabudi in 2021 which shows that there is a significant relationship between the level of maternal education and the initial treatment of diarrhea in toddlers through increasing their knowledge. Higher levels of education allow mothers to have better ability to receive, understand, and process health information, including information about diarrhea management. This process causes mothers with higher education to tend to have better knowledge compared to mothers with lower levels of education. Adequate knowledge then plays an important role in shaping the mother's way of thinking and decision-making in dealing with diarrhea conditions in children so that the mother is able to determine the right actions such as providing fluids, nutrients, and other initial treatment steps. On the other hand, limited education can have an impact on the mother's lack of optimal understanding of health information, which can ultimately affect the accuracy of actions taken.

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Furthermore, in this study, 41.2% of respondents had good knowledge about early diarrhea management measures. This can be seen in several questionnaire items regarding the manufacture of oralit (97.1%), zinc administration, breastfeeding, and the use of drugs (91.2%). The results showed that most of the respondents had a good understanding of the basic aspects of handling diarrhea in toddlers, which indicated that mastery of these basic aspects was an important factor in shaping the overall level of knowledge of mothers.

The results of this research can be explained through the theory of knowledge put forward by Notoatmodjo (2010) in (Slap et al., 2021) which states that knowledge is the result of the sensory process that produces understanding at various levels ranging from knowing to evaluating. Items with a high percentage of correct answers such as oral manufacturing, breastfeeding, and duration of administration Zinc shows that the mother not only knows information but is also able to understand the meaning of the basic treatment of diarrhea. In addition, on some practical aspects such as the manufacture of oralite and the administration of zinc, respondents' knowledge also led to the level of application (Application) because the information can be directly applied in everyday life. This is also supported by research Nasrullah et al, Year 2024 which shows that the level of knowledge of mothers tends to be better in the basic and applicative aspects of handling diarrhea such as the use of oralitis and Zinc.

Mothers' understanding of the use of drugs in the treatment of diarrhea is still relatively low. As many as 20 respondents were not correct in understanding the use of drugs when children have diarrhea. This shows that some mothers still have limitations in understanding additional therapies for diarrhea, especially those that are not always the main focus in daily practice. Low maternal knowledge regarding the use of medications can have an impact on inaccuracies in diarrhea management practices in toddlers which can ultimately prolong the duration of the disease and increase the risk of complications (Nasrullah et al., 2024).

In addition to respondents with sufficient and good levels of knowledge, in this study it was also found that 14.7% of mothers with a relatively low level of knowledge were found. This low understanding can be seen in the statement about giving Zinc which was only answered correctly by 38.2% of respondents. The statement relates to the duration of the grant Zinc where Zinc should not be stopped even if the diarrhea has begun to decrease. This shows that most mothers do not understand exactly how to use it Zinc optimally in the treatment of diarrhea. In fact, the Zinc It should continue as recommended to help speed up healing and prevent recurrence. Lack of understanding regarding the duration of administration Zinc This can potentially affect the effectiveness of treating diarrhea in toddlers (Gambir et al., 2025). Meanwhile, as many as 91.18% answered correctly on the statement that Zinc need to be administered daily for 10–14 days to aid in the recovery of diarrhea indicating that although most respondents already know the basic rules of duration and frequency of administration Zinc, their understanding is not completely consistent in the sustainability aspect of therapy because there are still many who consider Zinc can be stopped when symptoms begin to improve even though administration should be continued for the recommended duration to ensure optimal recovery and prevent recurrence of diarrhea.

This is in line with research Düsseldorf et al., year 2025 which shows that there is a gap between knowledge and maternal behavior in handling diarrhea in toddlers, especially related to the administration of oralitis and Zinc. Although as many as 60-70% of respondents already have good knowledge of diarrhea therapy, not all of this knowledge is considered to be consistently applicable in practice, especially in terms of adherence to administration Zinc as recommended. This shows that the knowledge possessed does not fully guarantee an understanding of behavioral adherence so there is still a tendency to discontinue therapy before the recommended time.

This can be influenced by the age at which most of the respondents are in the age range of 21–30 years which is included in early adulthood which indicates that cognitive ability is at an optimal stage in receiving and processing information. According to the theory put forward by Notoatmodjo (2010), knowledge is the result of the sensory process involving individual cognitive abilities so that the more mature a person is, the better the ability to understand the information received. However, in this study, inconsistencies in understanding were still found in several aspects such as the duration of zinc administration which showed that maturity of age is not always followed by depth of understanding if it is not supported by adequate information exposure.

This can also be influenced by the age of the mother, where there are 44.1% of mothers aged 31–40 and 2.9% of mothers aged >40%. Notoatmodjo's theory (2010) states that experience does play a role in shaping knowledge, but without regular updates of information, this knowledge can become less accurate. Although older mothers generally have more parenting experience, they are not always followed by the latest health information updates so the knowledge they have is not necessarily in line with current health science developments. This is in line with research Theresia et al. Year 2025 which shows that the level of knowledge of mothers regarding the prevention of diarrhea still varies and is not entirely in the good category so that experience alone does not guarantee that the knowledge they have is correct.

In addition to age, education can also affect an individual's level of knowledge. In this study, there were respondents who had a high school/vocational education level of 44.1% and junior high school of 5.9. Individuals with lower levels of education tend to have limitations in understanding information in depth compared to individuals with higher education. This can be seen in the results of this study where there are still 14.7% of respondents who have a level of knowledge. This is in line with research Deviazka & Setiyabudi in 2021 which shows that there is a relationship between the level of maternal education and knowledge and action in the treatment

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of diarrhea in toddlers where mothers with higher education tend to have better knowledge.

Based on the results of the research and discussions that have been conducted, the researcher assumes that the level of knowledge of mothers about the initial treatment of diarrhea in toddlers is influenced by a combination of various factors, such as age, education, occupation, and exposure to health information received. Although most of the respondents are of adult age and have a sufficient to good level of education, this does not fully guarantee that all mothers have in-depth knowledge. This can be seen from the fact that there are still respondents with a lack of knowledge and inconsistency in understanding several important aspects such as the duration of zinc administration and the use of medications. Researchers assume that the knowledge that mothers have tends to be stronger in aspects that are practical and often obtained in daily life such as the administration of oralite. In addition, the possibility that other factors such as access to accurate and sustainable health information are also suspected to have the potential to influence the variation in the level of maternal knowledge in this study.

### **Early Treatment of Diarrhea in Toddlers**

Based on the results of the study on 34 respondents, it was found that most of the respondents had taken early action to treat diarrhea in toddlers in the good category, namely 29 people (85.3%) and there were 5 respondents (14.7%) who were included in the poor category. This shows that most mothers have been able to do good early treatment of diarrhea in toddlers.

In the results of this study, it can be seen that 85.3% carried out actions in the good category. This can be seen from the distribution of questionnaires which show that as many as 100% of mothers give food in small portions but more often when the child has diarrhea. Statements regarding breastfeeding when children have diarrhea as many as 97.1% answered that they continued to breastfeed when children had diarrhea, and as many as 94.1% admitted to continuing to provide nutrition when children have diarrhea and not allowing children to be treated only at home when the child looks very weak even though they can still drink a little.

The high percentage of correct answers on items such as feeding small but more frequent portions, continuing breastfeeding, as well as nutrition and warning signs suggest that these aspects are important components in shaping good diarrhea management measures. This is because this action is a basic principle in the management of diarrhea in toddlers that focuses on preventing dehydration and maintaining the nutritional status of children. Precision in implementing these measures can help speed up the recovery process and prevent more serious complications from occurring. This also reflects that the majority of mothers have the ability to apply basic and essential actions in daily life.

These results are reinforced by the theory Health Belief Model (HBM) which states that a person is more likely to take health measures if he or she considers them beneficial in preventing more serious conditions (Alyafei & Easton-Carr, 2024). In this study, these actions are basic efforts that play an important role in maintaining the condition of children during diarrhea and preventing complications such as dehydration. The high achievement of these items indicates that mothers have become accustomed to implementing actions that are considered important and relevant in child care.

The results of this study are in line with the research Deviazka & Setiyabudi in 2021 which shows that mothers who have good practices in handling diarrhea tend to take actions such as continuing to provide food and fluid intake and seeking help when the child's condition worsens. In addition, research by Cindo et al., Year 2023 It was also found that most mothers have been able to maintain nutrition and take appropriate initial action when the child has diarrhea. This shows that younger mothers tend to take basic diarrhea management measures because they are considered important in preventing more serious conditions.

The results of the distribution of this questionnaire were also found in the statement regarding the actions of mothers in bringing their children to health facilities when the child's condition appeared to be weak, showing that 88.2% of respondents had answered correctly, which indicated that most mothers had been able to recognize conditions that required further treatment. This statement is related to the mother's ability to identify the danger signs of diarrhea and make the right decision in seeking medical help. The high percentage of correct answers to this item indicates that the mother has not only taken basic care measures but also has an understanding in determining when the child's condition can no longer be treated at home. This is important because weakness in children can be an early indicator of dehydration that is at serious risk if not treated immediately.

The results of this study are also in line with the research Utami et al. Year 2022 which shows that mothers with good diarrhea management practices tend to be able to recognize danger signs and immediately seek help from health facilities so that they can prevent more severe complications in children. Diarrhea that is not treated quickly and appropriately can lead to dehydration that is at risk of life-threatening so immediate action is needed when symptoms worsen. Delays in handling diarrhea such as delays in seeking help can increase the degree of dehydration in toddlers so that mothers who are able to recognize weakness as a sign of danger tend to be quicker to make decisions to take their children to health facilities in order to prevent the worsening of the child's condition (Ain et al., 2024).

The results of the distribution of the questionnaire for the initial treatment of diarrhea in mothers show that there are still several aspects that have not been done thoroughly. It can be seen that only 58.8% of respondents stated that they immediately gave oralite when the child began to experience diarrhea. This percentage shows that

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the act of giving oralit as the first step in treating diarrhea has not been fully implemented by all mothers. In fact, oralite is the main therapy recommended in the treatment of diarrhea because it functions to replace lost fluids and electrolytes and prevent dehydration. This indicates that some mothers still do not make oralit a top priority in the early treatment of diarrhea which has the potential to cause delays in the administration of rehydration therapy. This condition is important to pay attention to because delays in administering oralite can increase the risk of dehydration which is the most serious complication in diarrhea in toddlers.

In the results of the questionnaire distribution, a statement was also obtained regarding the administration of oralit when the child experienced vomiting only 61.8% Respondents who answered correctly. These results show that there are still some mothers who do not understand that orality can still be given even if the child is vomiting, by giving it little by little but more often. This condition indicates a misconception that vomiting is a reason to stop giving fluids, even though in this condition the child still needs fluid intake to prevent dehydration. Inaccuracies in this action have the potential to cause faster fluid deprivation, especially if vomiting occurs repeatedly without being balanced with adequate fluid administration, so understanding of the proper technique of giving oralite in certain conditions such as vomiting is very important so that rehydration efforts can still be carried out optimally and the risk of complications can be minimized (Tanzil et al., 2025). Some of the items with a lower percentage of correct answers show that there are still some mothers who take action to handle diarrhea in the category of less than 14.7%.

According to the Health Belief Model (HBM) theory, a person will perform a health action if he or she has the right perception of the perceived benefits and understands the risks if the action is not taken (perceived severity). In this study, the presence of mothers who have not given oralite appropriately can show that the perception of benefits and understanding of the importance of rehydration has not been optimally formed in some respondents.

This is in line with research (Tanzil et al., 2025) which shows that the mother's knowledge and behavior in giving oralit is still influenced by inappropriate perceptions regarding the child's condition during diarrhea, including the assumption that vomiting is an obstacle to the administration of rehydration fluids. In addition, according to the behavioral theory of health Notoatmodjo (2014), a person's behavior is influenced by knowledge which then forms attitudes and ultimately produces actions. The inaccuracy of actions in some of the respondents in this study may reflect that technical knowledge related to the treatment of diarrhea, especially the use of oralite in certain conditions, is still not fully understood.

This is supported by research Düsseldorf et al. Year 2025 which shows that there are still mothers with enough to less knowledge related to the use of oralit and Zinc Although some already have good behavior in handling diarrhea. In research Nasrullah et al. Year 2024 also found that although the majority of mothers had good knowledge of the use of oralit and Zinc, continuous education is still needed so that the application in daily practice becomes more optimal.

This high proportion of good actions can be explained through the health behavioral theory of the Lawrence Green in models PRECEDE–PROCEED in Setyowati et al. (2024) which states that health behavior is influenced by predisposing factors such as age and education, supporting factors such as the availability of facilities and access to health services, and strengthening factors such as the support of health workers and the social environment so that the combination of these factors plays a role in shaping maternal behavior in dealing with diarrhea in toddlers.

Based on the characteristics of the respondents in this study, it was shown that the majority of mothers were between the ages of 21-30 years as many as 18 respondents (52.9%) who biologically and psychosocially tended to have cognitive abilities and more mature mental readiness to make decisions related to children's health. At this age range, mothers often have gained practical experience in parenting more than younger mothers, and are more likely to actively seek and understand health information through health workers and other educational resources. This is in line with research Tebeje et al. Year 2024 Which shows that maternal age is one of the determining factors in the behavior of seeking health services for diarrhea in toddlers where mothers aged 20–35 years are more likely to take appropriate health measures than younger mothers because they have stronger decision-making abilities and higher socioeconomic stability thus allowing them to be more proactive in managing their child's disease.

Mothers in the 21–30 age group also generally have a broader social network and experience of accessing health services, including an understanding of the warning signs of diarrhea, how to administer fluids appropriately, and when to consult with a health care provider. With this experience, mothers of early adulthood tend to be able to consistently implement good early management measures when toddlers have diarrhea that can reduce the risk of dehydration and other serious complications. This is in accordance with research Acidify et al. Year 2022 which shows that Variations in maternal age affect the way of parenting and response to children's diseases such as diarrhea so that mothers in the early adult productive age range can show better practices in the early treatment of diarrhea.

Based on the results of the respondents' work characteristics research, the majority have a job as a housewife as much as 58.8%. This is in line with research Ernawati et al. Year 2023 which states that the mother's employment status includes variables related to the incidence of toddler diarrhea where the parenting pattern of

mothers who do not work outside the home contributes to child care practices at the household level. Housewives generally act as the primary caregiver and first decision-maker in the context of child health at home so that they have more time to monitor toddlers' condition directly, recognize changes in symptoms early, and immediately take early action when diarrhea occurs without having to be divided by the demands of work outside the home.

In this study, it was also found that respondents with the characteristics of civil servant work as much as 26.5%. This can be associated with family health parenting patterns and behaviors that have the potential to support better early management practices of diarrhea in toddlers because formal employment status such as civil servants is often related to economic stability, easier access to health information, and the possibility of getting more regular leave or working hours so that it does not hinder the mother's involvement in childcare at home. This condition allows mothers not only to monitor the health condition of toddlers more intensively but also to implement handling measures from the moment diarrhea symptoms appear without being divided by job demands that are unclear when or where they are located (Puspa Sari et al., 2024).

Based on the results of the research on the educational characteristics of the respondents, it was found that the majority of respondents were educated in DIII/Bachelor as much as 50.0%. This is in line with the results of the research Radjabaycolle et al. Year 2019 which shows mothers with higher education have a tendency to apply more appropriate precautions and care because the knowledge they have is more in-depth and easy to apply in everyday situations. Higher formal education tends to improve the mother's ability to understand health information, make informed decisions, and implement home care practices when toddlers have diarrhea.

Mothers who are more educated usually have better critical thinking skills and access to wider information so that they can integrate this knowledge into real actions in responding to their children's health conditions. This is in line with research Masruroh et al. Year 2025 which shows that maternal education is related to the incidence of diarrhea in toddlers through its influence on self-efficacy which then has an impact on the mother's ability to carry out health measures including effective early treatment of diarrhea at home.

Based on the results of this study, the researcher assumes that the high level of early diarrhea management actions in the good category is influenced by the characteristics of the respondents, the majority of whom are in early adulthood, have DIII/Bachelor's education, and have a strong parenting role both as housewives and civil servants so as to support the ability to understand health information and make the right decisions when toddlers experience diarrhea. Meanwhile, there are still a small number of respondents with the less important category, showing the need to strengthen education so that these abilities are evenly distributed to all mothers.

### **The Relationship between Maternal Knowledge Level and Early Treatment of Diarrhea in Toddlers**

Based on the results of bivariate analysis using the Chi-Square Test, a significance value of  $p$  value = 0.000 was obtained at a significance level of 0.05 or  $p$  value < 0.05 which means that there is a significant relationship between the level of knowledge of the mother and the initial treatment of diarrhea in toddlers in the work area of the North City Health Center. This shows that the better the mother's level of knowledge, the better the actions taken in the initial treatment of diarrhea in toddlers.

In the group of mothers with a good level of knowledge, all respondents as many as 41.2% also showed actions to treat diarrhea early in the good category. No respondents with good knowledge were found who had less action. This shows that there is consistency between knowledge and action, where good understanding can be translated directly into proper practice. This is in accordance with the health behavioral theory Notoatmodjo (2010) which states that knowledge is the main predisposing factor in the formation of behavior, because individuals who understand information well will be better able to make the right decisions in health actions. In addition, from the perspective of the Health Belief Model (HBM), mothers with good knowledge tend to have a high perception of perceived benefits for actions such as the administration of oralite, zinc, and nutrition, as well as understanding the severity of diarrhea (perceived severity) so as to encourage them to take appropriate and consistent actions. These results are in line with the research of Anastasiani et al. (2023) and Danuarti et al. (2025) which shows that mothers with high knowledge tend to have more appropriate diarrhea management practices, especially in the administration of rehydration fluids and the recognition of red flags.

In the group of mothers with sufficient level of knowledge, all respondents 44.1% also showed actions in the good category. These findings show that even though knowledge is not in the optimal category, mothers are still able to take appropriate actions. This indicates that knowledge at a sufficient level already covers basic aspects that are essential and applicable in the management of diarrhea, such as breastfeeding, food, and seeking help when the condition worsens, but if analyzed in more detail based on the distribution of items, it is found that there is a gap between knowledge and action in several specific aspects. For example, knowledge about the manufacture of oralit is very high (97.1%), but the act of giving oralit at the beginning of diarrhea is only 58.8% and when the child vomits is 61.8%. In terms of knowledge about zinc it was 91.2%, but the action of giving zinc for 10–14 days was only 55.9%, which indicates that the mother knew but did not always act according to the standard. This condition shows that knowledge at a sufficient level has not fully reached the stage of application and consistency of behavior.

The results of the research can be explained through the theory of Notoatmodjo (2010) that knowledge has several levels and not all knowledge reaches the application stage. In the Health Belief Model, this condition is influenced by perceived barriers such as the assumption that the child cannot drink when vomiting or the habit

of stopping zinc when diarrhea improves, which means that the barriers to perception and habits are more dominant than the knowledge they have. This is reinforced by the research of Tanzil et al. (2025) which shows that mothers often do not give oralite when the child vomits due to misperception as well as research by Nasrullah et al. (2024) which found that compliance with zinc administration is still low even though mother's knowledge is relatively good. This indicates that in sufficient knowledge groups, the good actions that appear are more driven by habits in basic aspects such as continuing to breastfeed when the child has diarrhea, giving small but more frequent portions of food, and taking the child to a health facility when he looks weak but these actions are not fully consistent in technical and specific aspects such as the timeliness of giving oralite from the beginning of diarrhea. Giving Oralit when the child is vomiting with a small but frequent technique, as well as adherence to zinc administration for 10–14 days as recommended.

In the group of mothers with a low level of knowledge, all 14.7% of respondents showed action in the low category. Low knowledge causes mothers to be unable to properly understand the basic concepts of diarrhea management, such as the importance of oralite, the duration of zinc administration, and the priority of rehydration therapy over medications. This can be seen from the high level of misconceptions in questionnaire items such as the assumption that antibiotics are always needed and zinc can be stopped when diarrhea improves. This condition has a direct impact on improper actions such as not prioritizing fluid administration or not continuing therapy as recommended.

According to the health behavioral theory Notoatmodjo (2014), limited knowledge will hinder the process of forming attitudes and actions because individuals do not have a sufficient information base to make decisions. In other theories such as the Health Belief Model, mothers with low knowledge tend to have low benefit perceptions and high barriers so they are not motivated to do the right actions. This is in line with the research of Dewi et al. (2023) which shows that mothers with low knowledge tend to have improper diarrhea management practices and are at risk of increasing the incidence of dehydration in toddlers.

Based on the results of this study, the researcher assumes that the significant relationship between the level of maternal knowledge and the initial treatment of diarrhea in toddlers not only shows a statistical relationship but also illustrates that knowledge plays an important role in shaping maternal health behaviors, although it is not always automatically a consistent action. The researchers saw that in basic aspects such as oralite, zinc, breast milk, and warning sign recognition, mothers with a better level of knowledge tended to have more appropriate actions, but there were still gaps in certain applications such as the consistency of oral administration during vomiting conditions and compliance with zinc administration according to the duration, which is influenced by habit factors, perception of obstacles, and misconceptions that some respondents still have. The researcher assumes that increasing knowledge alone is not enough to produce optimal actions, so it is necessary to strengthen education that is more applicable and focuses on changing perceptions and habituating diarrhea management practices that are in accordance with standards so that the knowledge possessed by mothers can be truly implemented consistently in daily life.

## CONCLUSION

Based on the results of the study on the relationship between the level of knowledge of mothers and the initial treatment of diarrhea in toddlers in the work area of the North City Health Center, the following conclusions were obtained:

The level of knowledge of mothers in the sufficient category was 15 respondents (44.1%), the good category was 14 respondents (41.2%), and the poor category was 5 respondents (14.7%).

The initial treatment of maternal diarrhea in toddlers was in the good category as many as 29 respondents (85.3%) and the less category as many as 5 respondents (14.7%).

There is a relationship between the level of knowledge of the mother and the initial treatment of diarrhea in toddlers in the work area of the North City Health Center, based on the Chi-Square test, the  $p$  value =  $0.000 < \alpha = 0.05$  was obtained.

## ADVICE

### For educational institutions

This research can be used as an enrichment material in the learning process. In addition, institutions can encourage the strengthening of student competence in family health education through promotive and preventive approaches related to the handling of diarrhea in toddlers.

### For health centers

The results of this study are expected to be additional information and be considered for additional programs from health centers that can educate the public regarding early treatment of diarrhea in toddlers.

### For the community

The researcher suggested that the public, especially parents or mothers, can increase knowledge and awareness about the importance of early treatment of diarrhea appropriately and quickly. Active participation in

health counseling activities and optimal use of health service facilities is expected to support efforts to prevent complications due to diarrhea in toddlers.

#### For the next researcher

Researchers are then advised to develop research with a wider scope of area and sample size so that the results of the study have a higher generalization power. In addition, further research can consider other variables that have the potential to influence early diarrhea management actions, such as attitudes, family support, and sociocultural factors, and use a research design that allows for a more in-depth analysis of causal relationships.

#### REFERENCES

- Asilah, S., Astutik, E., & Khan, R. (2022). Factors Associated with Diarrhea Management in Children Under Five Years in Indonesia. *Epidemiology Periodical*, 10(2), 130–139.
- Ahzani, Y., Erika, K. A., Arbianingsih, Rokhayah, Y., Gantini, D., & Sari, P. P. (2024). *Children's Growth and Development Textbooks. The Nuances of Brilliant Dawn*. Jakarta.
- Ain, A., Layun, M. K., Abiyoga, A., & Aritonan, R. (2024). The Relationship of Mother's Knowledge About Diarrhea Management with the Degree of Dehydration of Toddlers at Abdul Rivai Berau Hospital. *Wiyata Journal of Nursing*, 5(2), 46–54. <https://doi.org/https://doi.org/10.35728/jkw.v5i2.1459>
- Alfiah. (2021). *The Relationship between Knowledge and Attitudes to Community Behavior in Preventing the Spread of COVID-19 in Jagir Village, Surabaya*. Thesis. Hang Tuah College of Health Sciences Surabaya. Surabaya.
- Alyafei, A., & Easton-Carr, R. (2024). *The Health Belief Model of Behavior Change*. StatPearls. Florida.
- Amelia Prameswari Pitaloka. (2022). Literature Review: Factors Affecting Burnout Syndrome in Nurses Who Handle Covid-19 Patients. *Professional Health Journal*, 4(1), 51–61. <https://doi.org/10.54832/phj.v4i1.283>
- Anastasiani, C., Ningsih, F., & Ovany, R. (2023). The Relationship between Maternal Knowledge and the Handling of Diarrhea in Toddlers in the Working Area of the Pahandut Health Center. *Journal of Medical Radiation*, 9(1), 104–111. <https://doi.org/10.33084/jsm.v9i1.5156>
- Anggraini, D., & Kumala, O. (2022). diarrhea in children. *Scientific Journal*, 1(4), 309–317. <https://doi.org/10.56260/scienc.v1i4.60>
- Ariningtyas, N. (2023). Education on diarrhea and how to handle it in groups of mothers in Padukuhan Iroyudan Guwosari Village, Pajangan Bantul DIY. *Journal of Community Service Mulia Madani Yogyakarta*, 1(2), 1–9. <https://doi.org/10.29853/jpmy.v1i2.86>
- Arviyanda, R., Fernandito, E., & Landung, P. (2023). Secondary Data. *Journal of Harmoni Nusa Bangsa*, 1(1), 67. <http://stipram.co.id/>
- Asria, M. (2020). *Characteristics of Diarrhea in Toddlers at the Sudiang Health Center, Biringkanaya District for the January-December 2018 Period*. Thesis. Hasanuddin University.
- Asrulla, Risnita, Jailani, M. S., & Jeka, F. (2023). Population and Sampling (Quantitative), and Selection of Key Informants (Qualitative) in a Practical Approach. *Journal of Tambusai Education*, 7(3), 26320–26332. <https://doi.org/10.31004/jptam.v7i3.10836>
- Cahyaningrum, W., Speech Therapy, J., & Health Ministry of Health Surakarta, P. (2023). The Relationship Between the Intensity of Gadget Use and Early Literacy Development in Preschool Children Aged 4-6 Years at Aisyiyah Kedungharjo Mantingan Kindergarten. *Journal of Speech and Language Therapy*, 1, 228–239. <https://doi.org/10.59686/jtwb.v1i2.60>
- Cankaya, O., Rohatyn-martin, N., Leach, J., & Taylor, K. (2023). Preschool Children's Loose Parts Play and the Relationship to Cognitive Development: A Review of the Literature. *Journal Intelligence*, 11, 1–19. <https://doi.org/https://doi.org/10.3390/jintelligence11080151>
- Cindo, P. A., Sari, R. I. P., Salamet, S., & Ikhsan. (2023). Mother's Level of Knowledge about Self-Medication for Diarrhea in Children in Lempuing Village, Bengkulu City. *Bencoolen Journal of Pharmacy*, 3(2), 30–34. <https://doi.org/https://doi.org/10.33369/bjp.v3i2.30004>
- Cruz, A. F. L. D., Downing, K. L., Sciberras, E., & Hesketh, K. D. (2024). Are Physical Activity and Sleep Associated with Emotional Self-Regulation in Toddlers ? A Cross-Sectional Study. *BMC Public Health*, 24(61), 1–8. <https://doi.org/https://doi.org/10.1186/s12889-023-17588-2>
- Danuarti, I. S., Soelistyoningsih, D., & Rahmawati, W. (2025). The Relationship of Knowledge with Maternal Behavior on the Administration of Oralit and Zinc in Diarrheal Toddlers at the Permata Hati Kedungkandang Posyandu, Malang City. *Tambusai Health Journal*, 6(3), 1268–1274. <https://doi.org/10.31004/jkt.v6i3.49176>
- Dekanawati, V., Astriawati, N., Setiyantara, Y., Subekti, J., & Kirana, A. F. (2023). Analysis of the Influence of Customs Training Service Quality on Trainee Satisfaction. *Journal of Maritime Science and Technology*, 23(2), 159–176. <https://doi.org/10.33556/jstm.v23i2.344>
- Ministry of Health of the Republic of Indonesia. (2011). *Health Worker Pocket Book: Crossing Diarrhea (Five Steps to Complete Diarrhea)*. Directorate General of Disease Control and Environmental Health, Ministry of Health of the Republic of Indonesia. Central Jakarta.

- Dewi, N. L. P. M. L., Wati, K. D. K., Nesa, N. N. M., Cempaka, P. M. V. P., & Karyana, I. P. G. (2023). The Relationship between Mother's Knowledge and Attitudes and Actions to Handle Diarrhea in Preventing Dehydration in Toddlers at Sanjiwani Hospital, Gianyar, Bali. *Udayana Medical Journal*, 12(9), 40–46. <https://doi.org/10.24843/mu.2023.v12.i09.p08>
- Ernawati, W., Dhamayanti, R., & Widiastini, P. M. F. (2023). The Relationship between Mother's Education and Employment Level on the Incidence of Diarrhea in Toddlers. *Journal of Applied Health*, 10(2), 145–152. <https://doi.org/10.54816/jk.v10i2.762>
- Gambir, J., Julia, M., & Juffrie, M. (2025). Effect of Zinc (Zn) Supplementation on Diarrhea in Patients Aged 6-36 Months who are treated at Dr. Soedarso Pontianak Hospital, West Kalimantan. *Indonesian Journal of Clinical Nutrition*, 1(3), 113–118. <https://doi.org/https://doi.org/10.22146/ijcn.17427>
- Guterres, C. R., Astutik, R. Y., Kumalasari, E. P., & True, P. E. (2024). The Relationship of Mother's Knowledge and Employment Status with the Provision of PCV Immunization to Babies at the Lembur Health Center, Alor District. *Journal of Quality in Public Health*, 8(1), 60–63. <https://doi.org/10.30994/jqph.v8i1.513>
- Hariyani, Fajar, M., & Nurrochim, D. (2023). The Relationship of Mother's Level of Knowledge to Self-Medication of Diarrheal Diseases in Children in Sawo Village, Dukun District, Gresik Regency. *Journal of Pharmacy Ma CHung: Technological Science and Community Clinic*, 1(1), 13–17. [https://doi.org/https://doi.org/10.33479/jfmc.v1i1\(1\).3](https://doi.org/https://doi.org/10.33479/jfmc.v1i1(1).3)
- Hendriani, D. P., & Ernawati. (2023). Mother's Level of Knowledge about Diarrhea with the Incidence of Diarrhea in Toddlers. *Tambusai Health Journal*, 4(4), 6511–6515. <https://doi.org/10.31004/jkt.v4i4.22264>
- Iqbal, A. F., Setyawati, T., Towidjojo, V. D., & Agni, F. (2022). The Effect of Clean and Healthy Living Behavior on the Incidence of Diarrhea in School Children. *Journal of the Medical Profession (MedPro)*, 4(3), 271–279. <https://doi.org/10.5320/jmp.v2i3.5>
- Iswandari, N. N., & Handayani, T. S. (2023). The Relationship between Age and Education Level and Mother's Knowledge of Sexuality in Pregnancy in the Working Area of the Talang Rimbo Lama Health Center, Rejang Lebong Regency in 2023. *Journal of Multi-Disciplinary Dehasen (Mude)*, 2(4), 743–752. <https://doi.org/https://doi.org/10.37676/mude.v2i4.4836>
- Jagadeesh, K. V., Narasannavar, A., Kamble, M., Prakasha, S., & Yeswanth Raja, B. (2024). Attitude and Practice of Mothers in the Management of Diarrhoea among Under-five Children in a Rural area of India. *Ethiopia J Health Sci*, 34(2), 321. <https://doi.org/10.4314/ejhs.v34i4.8>
- Ministry of Health of the Republic of Indonesia. (2025). Indonesia's Health Profile 2024.
- Kusmayanti, E., & Sibualamu, K. Z. (2023). Fluid Management in Children with Diarrhea: A Scoping Review. *Scientific Journal of Health Diagnosis*, 18(2), 64–72.
- Lactona, I. D., & Cahyono, E. A. (2024). The Concept of Knowledge: A Revision of Bloom's Taxonomy. *Journal of Nursing Science*, 2(4), 241–257. <https://doi.org/https://doi.org/10.56586/ec.v2i4.64>
- Mariyam, M., Arief, Y. S., Makhfudli, M., & Krisnana, I. (2025). Mother's Practice on Home-Based Management of Diarrhea in Age Under-Five Children: A Systematic Review. *Journal of the Liaquat University of Medical and Health Sciences*, January 20(SSPECIAL ISSUE The15th Int. Nurs. Conf. Indonesia), 09–14. <https://doi.org/10.22442/JLUMHS.2025.01251>
- Masruroh, D. L., Ro'isah, & Salam, A. Y. (2025). The Relationship between Education and Maternal Self-Efficacy with the Incidence of Diarrhea in Toddlers in the Working Area of the Mlandingan Situbondo Health Center. *Journal of Health Sciences*, 4(9), 322–336. <https://doi.org/10.70570/jikmc.v4i9.1918>
- Munarsih, E., Rikmasari, Y., & Aisyah, T. (2023). The use of the Chi-Square method to determine the relationship between self-care and blood glucose control in patients with type 2 diabetes mellitus. *Journal of Science Research*, 25(2), 120. <https://doi.org/10.56064/jps.v25i2.779>
- Nasrullah, Sahrianti, N., & Muhani, N. (2024). Mother's Level of Knowledge on the Use of Oralit and Zinc in the Treatment of Diarrhea in Children Aged 1-5 Years. *Scientific Journal of Promoting Health*, 9(1), 1–5. <https://doi.org/https://doi.org/10.56437/jikp.v9i1.248>
- Nemeth, V., & Pflleghaar, N. (2025). Diarrhea. *StatPearls*. Florida.
- Ningsih, R., Priana, A. W., Tambunan, E. S., Supartini, Y., & Sulastris, T. (2023). Maternal Behavior and Nutritional Fulfillment in Toddlers Aged 3-5 Years. *Jkep*, 8(1), 67–83. <https://doi.org/10.32668/jkep.v8i1.1188>
- Nursalam. (2020). *Nursing Science Research Methodology: A Practical Approach* (P. P. Lestari (ed.); Edition 5). Medical Salon.
- Octaviana, D. R., & Ramdhani, R. A. (2021). HUMAN NATURE: Knowledge, Science, Philosophy and Religion. *Journal of Tawadhu*, 5(1), 143–159. <https://doi.org/10.52802/twd.v5i2.227>
- Organization, W. H. (2024). Diarrhoeal disease. WHO. <https://www.who.int/news-room/factsheets/detail/diarrhoeal-disease>
- Pakpahan, M., Siregar, D., Susilawaty, A., Tasnim, Mustar, Ramdany, R., Manurung, E. I., Sianturi, E., Tompunu, M. R. G., Sitanggang, Y. F., & M., M. (2021). *Health Promotion & Health Behavior*. Our Writing Foundation.
- Pitun, R. S., & Budiayati, G. A. (2020). Nurses' Caring Behavior to Hospitalization Anxiety in Preschool-Aged Children (2-6 Years). *Journal of Health*, 13(2), 144–151. <https://doi.org/10.23917/jk.v13i2.11264>

- Puspa Sari, R., Hidayat, R., Ayu Kade, I. S., Medicine, F., & Mulawarman Abstract, U. (2024). The Relationship between Maternal Knowledge Level and Handling of Diarrhea at Home in Toddlers in the Working Area of the Segiri Health Center, Samarinda City. *Journal of Nursing Innovation (JNI)*, 3(2), 46–54. <https://doi.org/10.61923/jni.v3i2.36>
- Radjabaycolle, I. F., Kandou, G. D., & Malonda, N. S. H. (2019). The Relationship between Mother's Education Level and Knowledge with Diarrhea Prevention Measures in Toddlers in the Working Area of the Tikala Baru Health Center, Manado City. *Journal of Public Health*, 8(7), 6–10. <https://doi.org/10.38651/JKM.v8i7.20>
- Rahmah, N., Azmi, F., Hidayati, D. S., & Prajitno, S. (2024). The relationship between the level of knowledge, attitude, and behavior of mothers or guardians related to the prevention of diarrhea and the incidence of diarrhea in toddlers in the working area of the Pagesangan Health Center. *Scientific Journal of Educational Vehicles*, 10(19), 716–724. <https://doi.org/10.5281/zenodo.14435067>
- Rahmawati, I., & Ratna Kholidati. (2016). Growth and Development of Children Under Five. In I. Rahmawati & R. Kholidati (Eds.), *Sustainability (Switzerland)* (Vol. 11, Issue 1). Puruhita Husada Foundation.
- Rahmawati, M. (2023). The Relationship of Age, Knowledge, Education Level with Compliance with Health Protocols. *Journal of Public Health*, 14(1), 1–13. <https://doi.org/https://doi.org/10.22487/preventif.v14i1.335>
- Saputri, T. R., Uminandea, S., Adzim, M. R. S., & Putri, Hedian, F. W. (2025). Health Students' Knowledge Level on Improving Maternal and Child Health. *Journal of Medika Nusantara*, 3(1), 01–09. <https://doi.org/https://doi.org/10.59680/medika.v3i1.1615>
- Sari, D. R., Andoko, & Setiawati. (2023). The Relationship between Maternal Knowledge and Emergency Management in Children Under Five with Diarrhea. *MJ (Midwifery Journal)*, 3(1), 5–12. <https://doi.org/10.27467/mjrl.v3i1.6>
- Schneider, N., Greenstreet, E., & Deoni, S. C. L. (2022). Connecting Inside Out : Development of the Social Brain in Infants and Toddlers with a Focus on Myelination as a Marker of Brain Maturation. *Child Development*, 93(2), 359–371. <https://doi.org/10.1111/cdev.13649>
- Setyowati, D., Nurrahmania, A. P., Ummah, N. I., Prasasti, A. R., Aditya, C., Rahmi, Z. A., Apriliani, R. R., Hemadi, A. S., Kamila, N. N., & Ulhaq, A. D. (2024). Behavior of Pregnant Women to Improve Oral Health Knowledge During Pregnancy According to Lawrence Green Theory in Public Health Service Area. *Indonesian Journal of Dental Medicine*, 7(1), 20–24. <https://doi.org/10.20473/ijdm.v7i1.2024.20-24>
- Simanjutak, G., & Arista, A. (2021). Expert system for detecting breakdowns of multi-storey building fire electric main pumps web-based. *Journal of Comasie Journal*, 6(2), 40–51.
- Sitanggang, A. T., Sinabariba, M., Siallagan, E. A., & Sitepu, A. (2023). Overview of Mother's Knowledge about Handling Diarrhea in Toddlers at the Sartika Manurung Clinic on Jl. Parang II in 2023. *Journal of Social and Science*, 3(10), 1061–1071. <https://doi.org/https://doi.org/10.59188/jurnalsosains.v3i10.105>
- Sofwatillah, Risnita, Jailani, M. S., & Saksitha, D. A. (2024). Quantitative and Qualitative Data Analysis Techniques in Scientific Research. *Journal of Honorable Mention*, 15(2), 79–91. <http://ejournal.upbatam.ac.id/index.php/comasiejournal>
- Solicha, I., & Na'imah. (2020). Factors Affecting Early Childhood Development. *Journal of Early Childhood Research*, 4(2), 197–207. <https://doi.org/10.33222/pelitapaud.v4i2.968>
- Sukma Senjaya, Aat Sriati, Indra Maulana, & Kurniawan, K. (2022). Family support for Odha who has an open status in Garut Regency. *Journal of Scientific Horizons*, 2(3), 1003–1010. <https://doi.org/10.53625/jcijurnalcakrawalailmiah.v2i3.4037>
- Sulung, U., & Muspawi, M. (2024). Understanding Research Data Sources: Primary, Secondary, and Tertiary. *Journal of Edu Research*, 5(3), 110–116. <https://doi.org/10.47827/jer.v5i3.238>
- Susilawati, D. (2022). The Effect of Health Education on the Level of Knowledge of Adolescent Girls Regarding Dysminorrhoe in Class XI of SMAN 2 Banguntapan. *Indonesian Journal of Society*, 3(2), 37–54. <https://doi.org/10.54209/jumas.v4i03.338>
- Tanjung, M. F. A. (2023). The Relationship Between Mother's Knowledge And Handling of Diarrhea in Toddlers in Tanjung Balai City. *Journal of Pearl Ners*, 6(1), 10–16. <https://doi.org/https://doi.org/10.51544/jmn.v6i1.3382>
- Duncan, N. M. M. (2021). Overview of Parental Knowledge in the First Treatment of Diarrhea in Toddlers in the Working Area of Puskesmas I West Denpasar. Thesis. Bali Institute of Technology and Health Denpasar.
- Tebeje, T. M., Tesfaye, S. H., Abebe, M., Seboka, B. T., Tesfa, G. A., Seifu, B. L., Mare, K. U., & Aragaw, F. M. (2024). Healthcare-Seeking Behavior for Diarrhea in Under-Five Children and Associated Factors in Sub-Saharan Africa: A Multilevel Robust Poisson Regression Model. *Frontiers Public Health*, 12(October), 1–12. <https://doi.org/10.3389/fpubh.2024.1441360>
- Theresia, R., Pasaribu, J., Esthernita, N., & Dewanto, F. (2025). The Level of Knowledge of Mothers in the Prevention of Diarrhea in the Malanu Health Center Area, Sorong City. *Tarumanagara Medical Journal*, 7(2), 332–340. <https://doi.org/https://doi.org/10.24912/tmj.v7i2.34520>
- Utami, R. P., Wurjanto, M. A., & Martini, M. (2022). The Relationship between Maternal Knowledge Level and

- Diarrhea Management Practices in Toddlers. *Journal of Public Health Research*, 2(4), 147–152. <https://doi.org/10.14710/jrkm.2022.16479>
- Utami, Y., Ratnawati, R., & Suhartiningsih, S. (2023). The Important Role of Posyandu Toddlers in Improving the Nutritional Status of Mothers and Children in Kerik Village. *SWARNA: Journal of Community Service*, 2(7), 779–783. <https://doi.org/10.55681/swarna.v2i7.756>
- Veranda, M. Y., Jutomo, L., Boeky, D. L. A., & Yuniarsi Veranda, M. (2022). Study of Growth and Infectious Diseases in Children Under Five in the Work Area of Sikumana Health Center, Kupang City. *Public Health Media*, 4(1), 29–39. <https://doi.org/10.35508/mkmhttps://ejurnal.undana.ac.id/MKM>
- Wahyuni, R., Sari, F., Subroto, E., Zega, P. D., Nuraisyah, S., Efitasari, Y., & Hutabarat, Y. A. (2025). Analysis of Factors Affecting Mothers' Behavior in The Cross Diarrhea Program in Bangun Rejo Village. *Journal of Public Health Science*, 2(2), 327–330. <https://doi.org/https://doi.org/10.33479/jfmc.v1i1.3>
- Widodo, S., Festy, L., & Ode, A. La. (2023). *Research Methodology Textbook*. CV. SCIENCE TECHNO DIRECT. Pangkalpinang.
- Yulizawati, & Afrah, R. (2022). *Growth and Development of Infants and Toddlers*. University of Muhammadiyah Semarang. Indonesia Pustaka. Semarang.