

## Scoping Review: Diarrhea in Toddlers and Causing Factors

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### ABSTRACT

Diarrhea is a disease caused by infection with microorganisms including bacteria, viruses, parasites, and protozoa, and its transmission is fecal-oral. Diarrhea is a condition where stool is excreted abnormally or not as usual, characterized by an increase in volume, dilution, and frequency of bowel movements more than 3 times a day and in neonates more than 4 times a day with or without blood mucus. Diarrheal disease is still a public health problem in developing countries such as Indonesia, with high morbidity and mortality. From the IDHS results, it was found that 13.7% of children under five experienced diarrhea in the two weeks before the survey, 3% higher than the IDHS findings. The highest prevalence of diarrhea is in children aged 12-23 months, followed by those aged 6-11 months and those aged 23-45 months. (Ministry of Health, 2011). Research objective: This study aims to analyze the factors that influence the incidence of diarrhea in toddlers, based on the results of previous studies. Method: This research was conducted using the scoping review method using several data-based electronic media: Pubmed, DOAJ, Scopus, Sinta, and limited database, namely the last 10 years starting 2012-2021. There were 20 articles used which discussed the causes of diarrhea in toddlers. Results: Factors causing diarrhea that were intensified include the mother's knowledge about hygiene and environmental hygiene, unsanitary water sources, latrines in the family, and health services that are difficult to reach, giving complementary foods too early, and germ infection factors, toddler nutrition factors low and mother's knowledge of diarrhea in toddlers, posyandu visits, non-exclusive breastfeeding and use of milk bottles and hygiene, number of family members and low economic status.

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### INTRODUCTION

Diarrhea is a condition where stool is excreted abnormally or not as usual, characterized by an increase in volume, dilution, and frequency of bowel movements more than 3 times a day and in neonates more than 4 times a day with or without bloody mucus. Diarrhea in children is a health problem with a high mortality rate, especially in children aged 1 year to 4 years, if proper and adequate management is not received. (Ministry of Health, 2011).

Diarrhea is a kind of infectious disease that occurs throughout the world. This disease is more common in infants than in older children because babies have weak immune systems, and this disease is almost the same for men and women. In Indonesia, diarrhea is more common in children aged 6-24 months, affecting growth, and consequently, children can experience malnutrition (Hashanah, 2021).

The prevalence of diarrhea in Indonesia in toddlers is at the age of 1-4 years which is the most common cause of death, namely 6.7% with the highest prevalence occurring in Aceh and the lowest in Yogyakarta. (Riskekdas, 2013). In 2019 the prevalence of diarrhea in Central Java which is the cause of death in toddlers is 39.0% (Central Java Provincial Health Office, 2019), and in 2020 the prevalence of diarrhea in toddlers in Central Java is 44.839% (Central Java Provincial Health Office., 2020).

In the group of children under five (12-59 toddlers) the most common cause of death is diarrhea. Diarrheal disease is an endemic disease that has the potential to cause extraordinary events (KLB) and is still a contributor to the death rate in Indonesia. In 2020 the coverage of services for diarrhea sufferers of all ages is 44.4% and for toddlers is 28.9% of the set target. The disparity between provinces for the coverage of services for diarrhea sufferers of all ages is between 4.9% (North Sulawesi) and West Nusa Tenggara (78.3%), while the disparity between provinces for the coverage of services for children with diarrhea under five is between 4.0% (North Sulawesi ) and West Nusa Tenggara (61.4%). In 2020 the coverage of services for diarrhea sufferers of all ages is 44.4% and for toddlers is 28.9% of the set target. (RI Ministry of Health, 2020)

Factors causing diarrhea due to additional feeding and also infection. Transmission of diarrheal diseases occurs for of-fecal, namely through food and drink contaminated with feces, through household tools, and direct contact with the feces of sufferers. (Hasanah, 2021)

Factors of diarrhea when viewed per age group Diarrhea is spread across all age groups with the highest prevalence detected in children under the age of five (1-4 years), according to gender the prevalence of male and female is almost the same, the prevalence of diarrhea is more in rural areas than in urban areas, diarrhea is higher in the low education group and work as farmers/fishermen and laborers (Ministry of Health, 2011)

In people with low incomes and low education, it usually begins with the introduction of MP-ASI because they do not pay attention to the age at which MP-ASI is given, the frequency of giving, the portion, the type of MP-ASI, and the method of administration in the early stages of giving MP-ASI, because if MP-ASI is given before the age of 6 months will be a factor of diarrhea because infection will occur (Hasanah, 2021).

Prevention of diarrhea can be done in a way where the infection process has not yet started, namely by conducting counseling in the form of communication, information, and education about babies who are given exclusive breastfeeding until the age of 6 months and after 6 months, giving breast milk accompanied by complementary foods that are textured like breast milk, giving Complementary food for breastfeeding is given when the baby is 6 months old because it can increase the risk factors for diarrhea in toddlers, use clean water for needs. After all, diarrhea can be transmitted orally, get used to washing hands with soap before and after activities (Hashanah, 2021).

LINTAS DIARE (Five Steps to Overcome Diarrhea) recommends that all diarrhea sufferers should receive ORS, so the target for using ORS is 100% of all cases of diarrhea receiving services at the puskesmas and cadres. In 2020 nationally the use of ORS for all ages has not reached the target of 88.3%. Giving ORS to toddlers is relatively higher at 90.8%. The target was not achieved because the service providers at the Puskesmas and cadres had not given ORS according to standard management, namely 6 packs/sufferer of diarrhea. In addition, people still do not know about the benefits of ORS as a liquid that must be given to every person with diarrhea to prevent dehydration. Besides ORS, Toddlers are also given zinc which is a micronutrient that functions to reduce the duration and severity of diarrhea, reduce the frequency of defecation, reduce stool volume, and prevent recurrent diarrhea in the following three months. The use of zinc for 10 consecutive days when toddlers have diarrhea is a therapy for toddler diarrhea. In 2020 the coverage of giving zinc to toddlers with diarrhea is 89.5%. (RI Ministry of Health, 2020)

Knowing the factors that cause diarrhea in toddlers is important because it can be an effort to do prevention. This study aims to analyze the factors that influence the incidence of diarrhea in toddlers, which is based on the results of previous studies. The literature review that is used is a scoping review where later the author will conduct a thorough review of the literature that the author obtained from various sources with different research methods and still has a connection with the subject of the study.

## RESEARCH METHOD

This research is a literature study using the Scoping Review method. The type of data used is secondary data, namely data obtained from scientific research with a range of 2012-2021. Sources of data were obtained through database electronic media such as Pubmed, DOAJ, Scopus, and Sinta with the keywords diarrhea in toddlers and the causes, and factors of diarrhea in toddlers.

Identification and screening were carried out through inclusion criteria with quantitative and qualitative research types. The results that met the inclusion criteria were 22 articles and the next step was to analyze them by describing the facts related to the causes of diarrhea in toddlers.

**Table 1. Results of a Literature Search Regarding the Factors That Cause Diarrhea in Toddlers**

Writer	Title	Objective Study	Results	Country
(Abdullah et al., 2012)	Risk Factors for Shigellosis Diarrhea in Toddlers	Knowing the risk factors for shigellosis diarrhea in children under five	Low nutrition of toddlers, non-exclusive breastfeeding, and low economic status of mothers are important risk factors for shigellosis diarrhea in toddlers	Indonesia
(Astuti & Syahreni, 2013)	Mother's Self-Efficacy in Preventing Diarrhea in Children Less than 5 Years Old	Describe preventive measures by mothers for diarrhea in children younger than 5 years	Mother's self-efficacy in preventing diarrhea is 63.6% in the low category and this is a risk factor for diarrhea in toddlers	Indonesia
(Merga & Alemayehu, 2015)	Knowledge, Perception, and Management Skills of Mothers with Under-five Children about Diarrhoeal	Knowing the relationship between Knowledge, Perception, and Management Skills of Mothers with diarrhea in toddlers	Lack of mother knowledge about diarrheal disease, its prevention, and treatment is a risk factor for diarrhea in toddlers	Ethiopia
(Manek & Suherman, 2015)	The Relationship between Sources of Drinking Water, Family Latrines, and Sewerage with Diarrhea in Pangkalan Kuras District, Pelalawan Regency	Knowing the relationship between Drinking Water Sources, Family Latrines, and Wastewater Sewerage with Diarrhea in Pangkalan Kuras District, Pelalawan Regency	River water management to become drinking water, well water management to become drinking water, and family latrine conditions are risk factors for the occurrence of diarrhea in Pangkalan Kuras	Indonesia
(Halimah, 2016)	The Relationship between Complementary Food for Mother's Milk (MP-ASI) and Diarrhea in Infants in the Working Area of the Rajawali Alloy Health Center, Meraksa Aji District, Tulang Bawang Regency	Knowing the relationship between Complementary Food for Mother's Milk (MP-ASI) and Diarrhea in Infants in the Working Area of the Rajawali Alloy Health Center, Meraksa Aji District, Tulang Bawang Regency	Giving MP ASI too early is a risk factor for diarrhea in the Rajawali Alloy Health Center, Meraksa Aji District, Tulang Bawang Regency	Indonesia
(Harris et al., 2017)	Correlation between Milk Bottle Hygiene and	Knowing the relationship between Milk Bottle Hygiene	Poor milk bottle hygiene is a 3.5 times greater risk	Indonesia

	Diarrhea in the Kelayan Timur Health Center, Banjarmasin	and the Incidence of Diarrhea in the East Kelayan Health Center, Banjarmasin	factor for diarrhea than good milk bottle hygiene in the Kelayan Timur Health Center, Banjarmasin	
<b>(Schilling et al., 2017)</b>	Factors Associated with the Duration of Moderate-to-Severe Diarrhea among Children in Rural Western Kenya Enrolled in the Global Enteric Multicenter Study, 2008–2012	Knowing the factors associated with moderate to severe diarrhea in Kenya	Using an inadequate source of drinking water is a risk factor for toddler diarrhea in Kenya	Kenya
<b>(Suraya, 2019)</b>	Relationship between Food Hygiene, Water Sources, and Personal Hygiene with Diarrhea in Children	Knowing the Relationship between Food Hygiene, Water Sources, and Personal Hygiene with the Incidence of Diarrhea in Children	The prevalence of diarrhea in children aged 6-59 months is 18.7% where the risk factors are the number of family members, posyandu visits, history of exclusive breastfeeding, how to seek help when a child has diarrhea, and washing hands with soap	Indonesia
<b>(Meliani &amp; Dewi, 2019)</b>	Maternal Behavior Associated with Diarrhea in Toddlers	Knowing Mother's Behavior Related to Diarrhea in Toddlers	Mother's behavior, breastfeeding, use of milk bottles, and poor hand-washing habits are risk factors for diarrhea in toddlers	Indonesia
<b>(Rothstein et al., 2019)</b>	Household Contamination of Baby Bottles and Opportunities to Improve Bottle Hygiene in Peri-Urban Lima, Peru	Knowing the relationship between contamination and bottle hygiene in Periurban Lima, Peru.	Cleanliness of milk bottles is a risk factor for diarrhea in toddlers in Periurban, Peru	Peruvian
<b>(Dhami et al., 2020)</b>	Infant feeding practices and diarrhea in sub-Saharan African countries with high diarrhea mortality	Knowing infant feeding against diarrhea is the highest cause of death	The introduction of complementary foods too early is a risk factor for diarrhea in toddlers in Africa	French
<b>(Soboksa et al., 2020)</b>	Association between microbial water quality, sanitation and hygiene practices,	Knowing the relationship between water quality, hygiene, and diarrhea	The main source of drinking water, washing hands before taking water from storage	Ethiopia

	and childhood diarrhea in Kersa and Omo Nada districts of Jimma Zone, Ethiopia	in children in Ethiopia	in containers, and using soap to wash hands are the most important factors for the prevention of diarrhea in children in Ethiopia.	
<b>(Ferede, 2020)</b>	Socio-demographic, environmental and behavioral risk factors of diarrhea among under-five children in rural Ethiopia: further analysis of the 2016 Ethiopian demographic and health survey	Knowing the sociodemographic, environmental, and behavioral risk factors for diarrhea among children under five in rural Ethiopia	Child age, region, birth order, shared toilet facilities with households and the interaction effect of the number of children under five with the current age of the mother were identified as risk factors for diarrhea in children under five in rural Ethiopia.	Ethiopian
<b>(Li et al., 2020)</b>	Diarrhea in Under Five-Year-old Children in Nepal: A Spatiotemporal Analysis Based on Demographic and Health Survey Data	Knowing Diarrhea in Toddlers in Nepal	Children under 12-24 months have a higher risk than girls as a risk factor for diarrhea in toddlers in Nepal	Nepal
<b>(Radhika, 2020)</b>	The Correlation between Washing Hands with Soap and Diarrhea in Toddlers in Rw Xi, Sidotopo Village, Semampir District, Surabaya City	Knowing the relationship between washing hands with soap and the incidence of diarrhea in toddlers in RW xi, Sidotopo Village, Sempir District, Surabaya City	The behavior of washing hands with soap is a risk factor for diarrhea in toddlers in RW XI, Sidotopo Village, Surabaya.	Indonesia
<b>(Troeger et al., 2020)</b>	Quantifying risks and interventions that have affected the burden of diarrhea among children younger than 5 years: an analysis of the Global Burden of Disease Study 2017	Knowing to Measure the risks and interventions that affect diarrhea among children under 5 years	Poor sanitation is a risk factor for diarrhea in toddlers	United States of America
<b>(Dhami et al., 2020)</b>	Regional Analysis of Associations between Infant and Young Child Feeding Practices and Diarrhoea in Indian Children	Know Infant Feeding Practices in Infants and Diarrhea in Indian Children	Babies who are introduced to complementary foods too early are a risk factor for diarrhea in toddlers	India
<b>(Tasya Citra Mulia, Henny Maria Ulfa &amp; School, 2020)</b>	Determinants of Diarrhea in Toddlers aged 6-59	Knowing the Determinants of Diarrhea in Toddlers	Number of family members, history of exclusive	Indonesia

	months in North Moyo District, Sumbawa Regency, NTB in 2019	aged 6-59 months in North Moyo District, Sumbawa Regency, NTB in 2019	breastfeeding, how to seek help when a child has diarrhea, and washing hands are risk factors for diarrhea in toddlers	
(Fagbamigbe et al., 2021)	Mind the gap: what explains the rural non-rural inequality in diarrhea among under-five children in low and medium-income countries? A decomposition analysis	Knowing explains rural-rural inequalities in diarrhea among children under five in low and middle-income countries	Environmental socio-economic status, household wealth status, type of toilet, maternal age, and education are risk factors for diarrhea in Nigeria	Nigeria
(Dos et al., 2021)	The Relationship Between the Process of Preparing MP ASI and the Incidence of Diarrhea in Infants Aged 7-24 Months	Knowing the Relationship Between the Process of MP ASI Preparation and the Incidence of Diarrhea in Infants Aged 7-24 Months	The process of preparing complementary foods for ASI aged 7-24 months is not associated with risk factors for diarrhea	Indonesia

Based on Table 1, the factors that can cause diarrhea are the mother's knowledge about hygiene and environmental hygiene, unsanitary water sources, family latrines, health services that are difficult to reach, giving complementary foods too early, and germ infection factors.

### 1. Hygiene factors and environmental cleanliness

Research conducted by (Astuti & Syahreni, 2013) And (Merga & Alemayehu, 2015) explained that 63.6% of diarrhea in toddlers was caused by maternal hygiene as a form of prevention of diarrhea in toddlers and hand washing activities, and research conducted by (Suraya, 2019) explained that 18.7% of diarrhea in toddlers was caused by maternal hygiene and hand washing activities, in line with research (Meliani & Dewi, 2019), (Soboksa et al., 2020), (Radhika, 2020), (Tasya Citra Mulia, Henny Maria Ulfa & School, 2020).

Daily habits related to personal hygiene in preventing diarrhea in toddlers are washing hands with soap and running water, especially after defecating, before feeding children, before preparing food, and after disposing of children's feces, which is one of the factors in the occurrence of diarrhea in toddlers. and family waste that must be managed so that it does not become a source of disease (Ministry of Health, 2011).

### 2. Unclean water sources

Research conducted by (Soboksa et al., 2020), (Schilling et al., 2017), (and Manek & Suherman, 2015) The factor that causes diarrhea in toddlers is water contaminated with waste used as a source of drinking water.

Germs that cause diarrhea can be transmitted through the mouth through drinks or food with unsanitary water sources or food and drink places that are washed using unclean water (Ministry of Health, 2011).

### 3. The factor of latrines in the family and health services that are difficult to reach

Research conducted by (Manek & Suherman, 2015), (Tasya Citra Mulia, Henny Maria Ulfa & School, 2020), explains that the factor for diarrhea in toddlers is the lack of use of latrines in the family and health services that are difficult to reach.

According to experience in several countries, the use of a latrine in every family member can reduce the risk of diarrhea, therefore family members who have not made a latrine are expected to build a latrine so that defecation is always in the latrine. (Ministry of Health, 2011).

### 4. The factor of giving complementary food is too early

Complementary food for ASI is given in stages, namely from a liquid texture which is given at the age of more than 6 months. Giving complementary food ASI must be considered when, what, and how to complementary food for ASI (Ministry of Health, 2011).



Research conducted by (Abdullah et al., 2012), (Halimah, 2016), (Dhami et al., 2020), (Dos et al., 2021) The factor that causes diarrhea in toddlers is breastfeeding too early, namely less than 6 months.

#### **5. Germ factor**

Germs that can be a factor in diarrhea in toddlers can be transmitted through the mouth through food, drink, or objects that are contaminated with feces (Ministry of Health, 2011).

Research conducted by (Abdullah et al., 2012) that one of the factors that cause diarrhea in toddlers is due to oral infection from shigellosis bacteria.

#### **6. Posyandu visit factor**

Giving measles immunization to infants less than 9 months can reduce diarrhea, because children with measles are usually accompanied by diarrhea, so giving measles immunization can prevent diarrhea (Ministry of Health, 2011)

Research conducted (Suraya, 2019) that one of the factors causing diarrhea in toddlers is irregular posyandu visits.

#### **7. Low nutritional factors for toddlers and mothers' lack of knowledge about diarrhea in toddlers**

Low nutritional status is suspected because of prolonged or chronic diarrhea which causes a decrease in nutritional status, usually because mothers do not know about the management of diarrhea in toddlers (Ministry of Health, 2011).

Research conducted by (Abdullah et al., 2012), (Merga & Alemayehu, 2015) that the factor that causes diarrhea in toddlers is late handling of diarrhea, causing a decrease in nutritional status in toddlers.

#### **8. Non-exclusive breastfeeding factors and the use of milk bottles and hygiene from milk bottles**

Breast milk is a source of energy for toddlers who are sterile when given without using a bottle and the same is the case with formula milk because if given using a bottle it will be contaminated with bacteria or organisms that are a factor in diarrhea (Ministry of Health, 2011). Washing milk bottles that are not clean, such as residual fat and protein, creates a medium for the development of microorganisms or bacteria in milk bottles which cause diarrhea in toddlers. (muhammad ardasir musawir, 2014).

Research conducted by (Harris et al., 2017), (Meliani & Dewi, 2019) that the factors that cause diarrhea are non-exclusive breastfeeding, use of milk bottles, and cleanliness of milk bottles.

#### **9. Factors number of family members and low economic status**

The number of family members that are more than 4 people in one house will affect the susceptibility to diarrhea because diarrhea is a disease that can be transmitted and if an adult has diarrhea, toddlers who live in the same house with adults are at risk of contracting diarrheal disease. Economic factors The family is a factor causing diarrhea because if the income of both parents is low they will not be able to bring their child to a health facility and will be treated with herbal medicines which will exacerbate the incidence of diarrhea (Ministry of Health, 2011).

Research conducted by (Tasya Citra Mulia, Henny Maria Ulfa & School, 2020), that density in a family of more than 4 people is a factor causing diarrhea in toddlers, and research conducted by (Fagbamigbe et al., 2021) one of the factors causing diarrheal disease in toddlers is low economic status.

## **CONCLUSION**

From the results of the scoping review analysis of 20 national and international articles, it was found that the factors that influence diarrhea in toddlers are the mother's knowledge about hygiene and environmental hygiene, unsanitary water sources, availability of latrines in the family and hard-to-reach health services, provision of complementary food for breastfeeding. too early, germ infection factors, low toddler nutrition and mothers' lack of knowledge about diarrhea in toddlers, posyandu visits, non-exclusive breastfeeding and use of milk bottles and hygiene from milk bottles, number of family members, and low economic status.

## **Suggestion**

Suggestions for further scoping reviews are expected to use more databases both from international articles and articles that are used more relevant and use articles that are less than the last 10 years so that the references used are updated.

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