

## Determinants Of Diarrhea Among Toddlers In Bram Itam Kiri Sub-District Bram Itam Barat Tanjung Jabung District

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### ABSTRACT

**Background :** Diarrhea is still the leading cause of morbidity and mortality in the world. According to data from the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) in 2013 diarrhea is the second leading cause of death in children under five. The purpose of the study was to determine the relationship between mother's education level, occupation, income, mother's knowledge, and latrine ownership with the incidence of diarrhea in children under five in Bram Itam Kiri Village.

**Methods :** Using a cross sectional approach with a population of 166 mothers, the number of samples was 68 respondents. The sampling technique was carried out using simple random sampling. Data were collected using a questionnaire sheet and analyzed univariate and bivariate using chi square analysis.

**Results :** The level of education in the low category is 48.5%, employment in the unemployed category is 58.9%, income in the low category is 70.6%, knowledge in the poor category is 83.8%, latrine ownership in the category does not meet terms of 61.8%. Bivariate results of education level (0.003), mother's occupation (1,000), family income (0.019), knowledge (0.028), and latrine ownership (0.002) with the incidence of diarrhea in children under five.

**Conclusion :** There is a relationship between the level of education, family income, knowledge, and ownership of latrines, and there is no relationship between the mother's occupation and the incidence of diarrhea in children under five.

**Keywords :** Mother's Education Level, Mother's Knowledge, Latrine Ownership, Diarrhea in Toddlers

### Introduction

Diarrheal diseases are the leading cause of morbidity and mortality in the world, including Indonesia. The incidence of diarrhea is generally more common in developing countries than in developed countries, where the mortality rate is 12,5 times higher. Diarrhea is the second leading cause of death for children under five in the world (16%) after pneumonia (17%). Globally, the incidence of diarrhea reaches 1,7 billion cases experienced by children under five each year, and diarrhea kills 525 thousand of children under 5 years old. This means that 1 in 5 children in the world dies every day due to diarrhea.<sup>1</sup>

In Europe, children who die less than 5 years of age due to diarrhea are more than 160.000 out of 4% of cases, and in low-income countries, children experience diarrhea three times a day in the age range under three years.<sup>2</sup> Whereas in Indonesia toddlers or children die from diarrhea as many as 140.000 each year.<sup>3</sup> Based on the data obtained in the Basic Health Research (Riskesdas) in 2013, the national prevalence of diarrhea was 4,5% and increased in 2018 by 8% and 12,3%, the prevalence of diarrhea experienced by children aged 1-4 years was 11,5% and 9% experienced at the age of 0-12 months.<sup>4</sup>

In 2018 diarrhea disease patients 7,157,483 and diarrhea sufferers in toddlers 4,003,786. Whereas in 2019 diarrhea sufferers were 7,265,013 and diarrhea in toddlers 3,979,790 diarrhea in toddlers decreased only slightly. However, the number of cases is still quite high. The diarrhea morbidity rate is 270 per 1000 population while in children under five the morbidity rate is 843 per 1000 population. Based on the prevalence of diarrhea according to the level of education, the highest number is 6,8% of people who did not complete elementary school.

In 2019 under-five deaths were caused by diarrhea, and the proportion of infants aged 29 days - 11 months was 12,1% 746 deaths. The proportion of deaths of children under five 12-59 months was 10,7% 314 child deaths.<sup>5</sup> There are several factors that cause diarrhea, namely food

allergies and poisoning, impaired absorption (malabsorption), deficiencies, and infections caused by bacteria, viruses, parasites, and the environment. The incidence of diarrhea is also caused by an unhealthy environment and contaminated by disease-causing bacteria and supported by unhealthy behavior by individuals and communities, for this reason, the most important effort in preventing diarrhea is the availability of sewage or feces disposal facilities and clean water.<sup>6</sup>

In Indonesia, in 2019 there were still 9,36% of the population practiced open defecation and nearly 25 million people in Indonesia did not use healthy latrines or toilets when defecating. The places that are usually used for defecation are rivers, forests, and other places that do not meet health standards, and this can cause diarrhea.<sup>7</sup> Diarrheal diseases are not only caused by environmental factors and human behavior but most of these diseases must be traced back to social, economic, environmental, and family behavior aspects.

Signs of diarrhea in toddlers are liquid, slimy, or bloody stools, feeling bloated, fever, nausea, vomiting, and bloating. Based on the results of research by Noor ms (2020)<sup>9</sup> there are 4 things that affect the incidence of diarrhea in toddlers including knowledge, attitudes, PHBS, and water sources. According to research conducted by Fathia (2015)<sup>10</sup> there is a relationship between the mother's education level and the incidence of diarrhea. According to research by Kasman (2020)<sup>11</sup> there is a relationship between latrine ownership and latrine conditions on the incidence of diarrhea in children. and according to research by Febrianti (2019)<sup>12</sup> socioeconomic factors also influence the incidence of diarrhea, which if you have a low economy will result in more diarrhea.

Based on the Jambi Province report according to Riskesdas in 2018<sup>13</sup>. In Jambi Province, the prevalence of diarrhea in toddlers according to the diagnosis of health workers is 7.71% and according to symptoms that have been experienced has a prevalence of 8,61%. The prevalence of diarrhea in toddlers was highest in Sungai Penuh City at 16,03% and in West Tanjab Regency at 13,23%. This is also supported by the fact that in West Tanjab District the coverage of people using healthy latrines is only 62,4%, which still has not reached the target of 75%, and for people, over 3 years old the proportion of people using latrines is 79,08%, which is the lowest among other districts after East Tanjab. In addition, the handling of toddler feces by mothers, especially, for feces disposed of in latrines only amounted to 14,44%, and toddler feces disposed of carelessly was the highest in West Tanjab District at 45,52%.

The incidence of diarrhea is still a health problem in West Tanjung Jabung Regency, based on data from the West Tanjab Regency Health Office in 2018 to 2019, diarrhea in toddlers has increased, from 1,459 (27,7%) cases to 2,422 (46,3%) cases. According to the West Tanjab Health Office data report from 16 health centers, which are spread across 13 sub-districts. The incidence of diarrhea is the 10th largest disease that has increased from 2018 with 5429 cases and 2019 with 7626 in 6th place. Sungai Saren Health Center was found with a total of 181 (72,1%) cases which increased from 2018 which was 126 (49,8%) cases<sup>14</sup> The working area of Sungai Saren Health Center, West Tanjab Regency consists of 10 villages. In 2019 diarrhea experienced by children in the Public health center working area occurred in every Kelurahan Village area.<sup>15</sup>

## Methods

This research is a quantitative study with descriptive-analytic research methods with a cross-sectional design or design. The sample is part of the population that can be taken through several techniques in order to represent the population. Meanwhile, to choose the size of the sample size is determined by the 1997 Lameshow formula. The sampling method in this study was Probability Sampling. The research instrument used a questionnaire sheet, then the data was processed through the stages of data editing, data coding, data entry, data cleaning, and data processing, then bivariate tests were carried out using the chi-square statistical test with a significant level of 95% to determine the relationship of each independent variable with the dependent variable and multivariate tests using multiple logistic regression with a significant level of 95%.

## Result

**Table 1. Frequency Distribution of Diarrhea Events in Bram Itam Kiri Village**

Education	Total	
	%	N
Diarrhea	79,4	54
No Diarrhea	20,6	14
Total	100	68

Table 1 shows that the percentage of respondents who had diarrhea in the last six months was 79,4%, 54 people.

**Table 2. Frequency Distribution of Latrine Ownership in Bram Itam Kiri Village**

Latrine	Total	
	%	n
Not eligible	60,3	41
Eligible	39,7	27
Total	100	68

Table 2 shows that the percentage of respondents with unqualified latrines was 60,3%, totaling 41 people.

**Table 3. Relationship between Mother's Education Level and Incidence of Diarrhea in Toddlers**

Education	Incidence of Diarrhea						P Value	Nilai PR	95% CI
	Diarrhea		No Diarrhea		Total				
	N	%	N	%	N	%			
Low	48	87,2	7	12,7	55	80,8	0,003	1,891	1,042-3,431
High	6	46,1	7	53,8	13	19,1			
Total	54	79,4	14	20,5	68	100			

Table 3 shows that the percentage of respondents who have more diarrhea incidence is found in respondents with low education, which is 87,2%, which has a greater proportion than respondents with higher education, which is 46,1%. The results of the chi-square statistical test obtained a value of  $p = 0,003$  ( $p < 0,05$ ), this means that there is a relationship between the mother's education level and the incidence of diarrhea in toddlers with a PR of 1,891 (95%CI = 1,042-3,431).

**Table 4. Relationship between mother's work and the incidence of diarrhea in toddlers in Bram Itam Kiri Village, Bram Itam Subdistrict, Tanjung Jabung Barat Regency in 2021.**

Working	Incidence of Diarrhea						P Value	Nilai PR	95% CI
	Diarrhea		No Diarrhea		Total				
	N	%	N	%	N	%			
Not work	50	92,6	13	92,9	63	92,6	1,000	0,992	0,629-1,565
Work	4	7,4	1	7,1	5	7,4			
Total	54	79.4	14	20,5	68	100			

Table 4. Shows that the percentage of respondents who have diarrhea incidence is more in respondents who do not work, which is 92,6% has a greater proportion than respondents who work, which is 7,4%. The results of the chi-square statistical test obtained a value of  $p = 1,000$  ( $p > 0,05$ ), this means that there is no relationship between maternal employment and the incidence of diarrhea in toddlers with a PR of 0,992 (95% CI = 0,629-1,565).

**Table 5. Relationship between family income and the incidence of diarrhea in toddlers in Bram Itam Kiri Village, Bram Itam Sub-district, Tanjung Jabung Barat Regency.**

Income	Incidence of Diarrhea						P Value	Nilai PR	95% CI
	Diarrhea		No Diarrhea		Total				
	N	%	N	%	N	%			
< 2.839.7281	42	77,7	6	42,8	48	70,5	0,019	1,458	1,004-2,119
> 2.839.7281	12	22,2	8	57,1	20	29,4			
Total	54	100	14	100	68	100			

Table 5. Shows that the percentage of respondents who have more diarrhea incidence is found in respondents whose income is less than the MSE, which is 77,7%, which has a greater proportion than respondents whose income is more than the MSE, which is 22,2%. The results of the chi-square statistical test obtained a value of  $p = 0,019$  ( $p < 0,05$ ), this means that there is a relationship between family income and the incidence of diarrhea in toddlers with a PR of 1,458 (95% CI = 1,004-2,119).

**Table 6. Relationship between maternal knowledge and the incidence of diarrhea in toddlers in Bram Itam Kiri Village, Bram Itam Subdistrict, Tanjung Jabung Barat Regency.**

Knowledge	Incidence of Diarrhea						P Value	Nilai PR	95% CI
	Diarrhea		No diarrhea		Total				
	N	%	N	%	N	%			
Not Good	38	70,3	5	35,7	43	63,2	0,028	1,381	1,009-1,889
Good	16	29,6	9	64,2	25	36,7			
Total	54	100	14	100	68	100			

Table 6. Shows that the percentage of respondents who have diarrhea incidence is more in respondents who have poor knowledge, which is 70,3% has a greater proportion than respondents who have good knowledge, which is 29,6%. The results of the chi-square statistical test obtained a value of  $p = 0,028$  ( $p < 0,05$ ), this means that there is a relationship between maternal knowledge and the incidence of diarrhea in toddlers with a PR of 1,381 (95% CI = 1,009-1,889).

**Table 7. The relationship between latrine ownership and the incidence of diarrhea in toddlers in Bram Itam Kiri Village, Bram Itam Subdistrict, Tanjung Jabung Barat Regency**

Latrine	Incidence of Diarrhea				Total		P Value	Nilai PR	95% CI
	Diarrhea		No diarrhea						
	N	%	N	%	N	%			
Not eligible	38	70,3	3	21,4	41	60,2	0,001	1,564	1,131-2,163
Eligible	16	29,6	11	78,5	27	39,7			
Total	54	100	14	100	68	100			

Table 7. Shows that the percentage of respondents who have more diarrhea incidence is found in respondents who have latrines that do not meet the requirements, which is 70,3% has a greater proportion than respondents who have qualified latrines at 29,6%. The results of the chi-square statistical test obtained a value of  $p = 0,001$  ( $p < 0.05$ ), this means that there is a relationship between ownership of latrines with the incidence of diarrhea in toddlers with a PR of 1,564 (95% CI = 1,131-2,163).

## Discussion

### The relationship between mother's education level and the incidence of diarrhea in toddlers

The results of research on the relationship between maternal education level and the incidence of diarrhea in toddlers in Bram Itam Kiri Village show that the p-value is 0,003 so based on the chi-square test statistics obtained  $p < 0,05$ , meaning that there is a relationship between maternal education level and the incidence of diarrhea in toddlers in Bram Itam Kiri Village.

The learning process is influenced by education, high individual education results in a person's ease and acceptance of information that comes from other people and mass media Education can increase knowledge so that there are changes in behavior that increase. The higher the individual's education, the better the way to prevent diarrhea.

Education is very important for population health, and its health benefits for individuals, communities, and the social and cultural environment Educated mothers to tend to be in the health care system, have better personal health behavior, and can understand better than mothers who are not educated.

### The relationship between occupation and the incidence of diarrhea in toddlers

The results of research on the relationship between maternal employment with the incidence of diarrhea in toddlers in Bram Itam Kiri Village show that the p-value of the results of this study is 1,000 therefore based on the chi-square test statistics obtained  $p > 0,05$  so that statistically there is no relationship between maternal employment with the incidence of diarrhea in toddlers in Bram Itam Kiri Village.

Based on the results of research that has been obtained in Bram Itam Kiri Village the majority of mothers do not work, namely only as housewives, the type of work is related to income and education level.

Based on research conducted in Bram Itam Kiri Village, there are 77,7% as many as 42 mothers whose children suffer from diarrhea, and the majority of respondents have an income of less than UMK, researchers assume that the greater the family income, the less likely the toddler has diarrhea and vice versa if the smaller the family income, the more likely the toddler has diarrhea. People living in poverty will have poor health. This is because the poor cannot obtain adequate health services.

### **The relationship between mother's knowledge and the incidence of diarrhea in toddlers**

Knowledge is the result of knowing that occurs after a person experiences an object. Most human knowledge is acquired through the senses of hearing and sight. The more information received, the more knowledge gained about diarrhea.

Knowledge is a very important field and needs to be mastered because by knowing something, it can apply and formulate guidelines for further action. Knowledge is a guide that shapes a person's actions and behavior. The existence of knowledge increases a person's awareness and in the end, is triggered to act in accordance with the knowledge they have.

The results of the study of the relationship between maternal knowledge and the incidence of diarrhea in children obtained a p-value of 0,028 so that based on the chi-square test statistics obtained  $P < 0,05$  so that statistically there is a relationship between knowledge and the incidence of diarrhea in toddlers in Bram Itam Kiri Village.

### **Relationship between latrine ownership and the incidence of diarrhea in toddlers**

Ownership of a latrine is defined as the latrine used by the family as a facility needed by humans for the containment of feces so that it is not disposed of in any place that meets the requirements of a healthy latrine. A proper latrine can improve health status as it allows people to dispose of feces appropriately. Unhealthy latrines and improper fecal management will increase the risk of diarrhea and other studies have also shown that sanitary fecal disposal is an effective mechanism for reducing child morbidity (Curtis et al., 2000).

From the observations made, the data obtained from respondents who did not have a latrine were 2 people (2,9%), 13 people (19,1%) who had a latrine without a lid, 49 people who used goosenecks, and 30 people who met the requirements of septic tanks and goosenecks. 37 people (54,4%) built latrines with floors that were not tight so that they could cause insects or disease-transmitting animals to enter. Unqualified latrines have a 1,769 times greater risk of diarrhea than people who have qualified latrines. And not having their own latrine puts children at 4,404 times greater risk of diarrhea than when they have their own latrine.

Therefore, the strategy is to advocate the government social service to provide assistance to people who do not have latrines to get healthy latrines through RT and other related government parties, and the health promotion section of the Public health center and in collaboration with environmental health to conduct counseling on the importance of using healthy latrines through cadres.

### **Conclusions**

The frequency distribution of the mother's education level in Bram Itam Kiri Village, the most recent education of the respondents was elementary school / equivalent at 48.5% as many as 33 people. The variable of mother's work is that the highest number of mothers who do not work is 58.9% as many as 63 people. The family income variable is known that the number of families whose income is less than the minimum wage is 70.6% as many as 48 people. The variable of mother's knowledge in the poor category is 83.8% or as many as 57 mothers whose knowledge is poor, the variable of latrine ownership is the number of latrines that do not meet the requirements of 61.8% as many as 42 people. As well as the frequency distribution of diarrhea incidence in toddlers in Bram Itam Kiri Village, the number of toddlers who experienced diarrhea in the last six months was 79.4% as many as 54 people. The results of this study can be used as information material and add input about factors that influence the incidence of diarrhea in toddlers such as good and proper latrines in Bram Itam Kiri Village so that people can make efforts to prevent diarrhea. The results of this study can be used as additional information and input to further improve the implementation of prevention of diarrhea in toddlers.

## **Bibliography**

- World Health Organization. Diarrhoeal disease [Internet]. WHO. 2017. Available from: <https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease>
- World Health Organization. Diarrhaelth Disease. WHO. 2013.
- Veska D. Memberikan Akses Air Minum dan Sanitasi Aman untuk Setiap Anak [Internet]. UNICEF. 2019. Available from: <https://www.unicef.org/indonesia/id/baznas-x-unicef>
- Kemenkes RI. Laporan\_Nasional\_RKD2018\_FINAL.pdf [Internet]. Badan Penelitian dan Pengembangan Kesehatan. 2018. p. 198. Available from: [http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan\\_Nasional\\_RKD2018\\_FINAL.pdf](http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf)
- Kementerian Kesehatan RI. Profil Kesehatan Indonesia Tahun 2019. Jakarta; 2020.
- Ariani AP. Diare Pencegahan & Pengobatannya. Yogyakarta: Nuha Medika; 2016. 125 p.
- Noorani. Air, Sanitasi dan Kebersihan (WASH) [Internet]. UNICEF. 2019. Available from: <https://www.unicef.org/indonesia/id/air-sanitasi-dan-kebersihan-wash>
- Sofwan R. Cara Tepat Atasi Diare pada Anak. Jakarta: Bhuana Ilmu Populer; 2010. 62 p.
- Noor MS, Indah MF. Balita di Wilayah Kerja Puskesmas Beruntung Bary Kabupaten Banjar Tahun 2020. 2020;
- Fathia H, Tejasari M, Trusda SAD. Hubungan Tingkat Pendidikan dan Pengetahuan Ibu tentang Diare dengan Frekuensi Kejadian Diare Balita di Wilayah Kerja Puskesmas Tamansari Bandung Oktober 2013–Maret 2014. Glob Med Heal Commun. 2015;3(1):13.
- Kasman K, Ishak NI. Faktor Risiko Kejadian Diare Pada Balita Di Kota Banjarmasin. Promot J Kesehat Masy. 2019;8(2):123–30.
- Febrianti A. Hubungan Faktor Sosial Ekonomi, Pengetahuan Ibu Tentang Lingkungan Sehat Dan Diare Dengan Kejadian Diare Pada Balita Usia 1-5 Tahun Di Puskesmas Pembina Palembang. J Midwifery Nurs [Internet]. 2019;1(3):18–23. Available from: <http://iocscience.org/ejournal/index.php/JMN/article/view/244>
- Riskesdas. Laporan Riskesdas Provinsi Jambi 2018 [Internet]. Jakarta: Badan Penelitian dan Pengembangan Kesehatan; 2019. p. 500. Available from: <http://anyflip.com/cjsr/qctv>
- Dinas Kesehatan Tanjab Barat. Profil Kesehatan Kabupaten Tanjab Barat. Tungal Ilir; 2019.
- Puskesmas Sungai Saren. Laporan Tahunan Puskesmas Sungai Saren. Bram Itam; 2019.