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Prevalence of Diarrhea in the Community in Bagan Dalam Village, Tanjung Tiram District

Anggun Sheillawany[1], Daffa Diba Oesraini[2], Devi Herdini Saragih[3], Nabila Wulandari[4], Angga Dwi Prasetyo[5], Tri Niswati Utami[6*]
[1,2,3,4,5,6] Universitas Islam Negeri Sumatera Utara, Medan
Email: sellawany08@gmail.com; deviherdini0212@gmail.com; dibaoesraini@gmail.com; nabilawulandari145@gmail.com; anggaaa11122@gmail.com; triniswatiutami@uinsu.ac.id

ABSTRACT

Diarrhea is one of the most prevalent health problems in Indonesia, especially in areas with limited access to clean water and adequate sanitation facilities. In addition, diarrhea is one of the leading causes of death in the world, especially in children under 5 years of age, with approximately 2.2 million deaths each year. The purpose of this study was to increase community knowledge about diarrhea in Bagan Dalam Village, Tanjung Tiram Sub-District, Batu Bara Regency to prevent diarrhea. The research method used is quantitative with a pre-experimental approach designed in the form of one-group pre-test and post-test. Sampling using the accidental sampling formula obtained 30 samples in this study. This research instrument uses a questionnaire with data analysis techniques using paired simple t-test. Based on the results of the pre-test and post-test tests, there was no significant difference in knowledge between before and after counseling, with an average value of 0.833. This is because the education was only conducted once, so the impact on changes in the level of knowledge of the community who became the research sample was not large.

Keywords: diarrhea, education, prevention

INTRODUCTION

Diarrhea remains one of the leading causes of global death, with a death toll of 5-10 million people each year. WHO estimates that there are around 4 billion cases of diarrhea each year worldwide, causing 2.2 million deaths, and the majority in children under 5 years. In 2016, 5.7 million children died before the age of 5, with one in four deaths caused by diarrhea. Diarrhea is a condition of increased frequency of bowel movements due to infection, where a child is considered to have diarrhea if the volume of bowel movements exceeds 10 ml per kilogram of body weight day (Siahaan et al., 2020).

Diarrhea remains a serious health problem in Indonesia, especially related to its causes and treatment solutions. According to the study on clean and healthy living behavior (PHBS) and its relationship to diarrhea incidence in school children at SDN Total Persada in 2023, diarrhea is commonly caused by irregular PHBS practices, including inconsistent handwashing and poor food hygiene (Saputri et al., 2023). The findings indicate that diarrhea is characterized by changes in stool consistency and increased frequency of bowel movements, often exceeding three times a day,

due to contaminated hands or food serving as vectors for infection (Saputri et al., 2023). Rapid treatment is essential to prevent dehydration which can be fatal. Based on UNICEF data (The United Nations Children's Fund) and WHO (World Health Organization) in 2019 in developing countries, diarrhea is the second cause of death in children under five (Ernawati et al., 2024).

Each year, about 525,000 children under 5 years old die from diarrhea, which can last for days and cause severe dehydration. In the past, dehydration was the leading cause of death, but septic bacterial infections are now also a cause of increasing diarrheal deaths. Children who are malnourished or have low immunity, including those with HIV, are at high risk of developing deadly diarrhea (Tuang, 2021).

According to the CDC, diarrhea can be fatal due to severe dehydration due to loss of body fluids, and can inhibit a child's growth and cognitive development. (Lilik & Budiono, 2021) research shows that diarrhea increases the risk of stunting. Other factors such as income, maternal education, and exclusive breastfeeding also affect the risk. Common symptoms of diarrhea include dehydration, fever, nausea, vomiting, decreased appetite, weakness, paleness, and decreased urine production (Siahaan et al., 2020).

Diarrhea that not treated immediately can cause hypoglycemia and even death. children with diarrhea must get immediate treatment by bringing them to the nearest health servicethe nearest health service (Lestari et al., 2020). Diarrhea remains a global public health challenge, particularly in developing countries, where it significantly contributes to morbidity and mortality rates among children under five years of age. World Health Organization (WHO) estimates millions of annual cases worldwide, with a large proportion resulting in preventable deaths. This condition is often exacerbated by inadequate sanitation, poor hygiene practices, and unsafe drinking water. Diarrhea is typically classified into acute, persistent, and chronic types based on its duration and etiology, with acute cases being the most common and frequently caused by viral or bacterial infections. Persistent cases, often lasting over 14 days, can result in severe dehydration and electrolyte imbalance, especially among vulnerable populations (Anggraini & Kumala, 2022).

Previous studies highlight the multifaceted nature of diarrhea's prevalence. Socio-cultural factors, including education level, household practices, and local hygiene habits, have been shown to play a pivotal role in its transmission. For instance, a study by Anggraini and Kumala (2022) found a strong association between caregiver education and diarrhea incidence, indicating that improving public awareness could significantly mitigate the disease's spread. Furthermore, research underscores the importance of implementing clean and healthy living behaviors (PHBS) to address

this issue, particularly among school-age children, who are often exposed to unhygienic environments (Saputri et al., 2023).

Some diarrhea medications, such as racecadotril and loperamide, have dangerous side effects in children, so it is important to understand which medications are safe. Probiotics and zinc have been shown to reduce the severity and duration of acute diarrhea (Mildawati et al., 2023).

There are many factors that can directly or indirectly be a driving factor in the occurrence of diarrhea. According to Fatmawati Indirect causes or factors that facilitate or accelerate the occurrence of diarrhea such as: nutritional status, exclusive breastfeeding, environment, clean and healthy living behavior (PHBS), hand washing habits, eating behavior, immunization and socioeconomics (Oktavianisya et al., 2023). The three dominant factors are clean water facilities, fecal disposal, and waste. These three factors will interact together with bad human behavior. Diarrhea can be caused by clean water facilities, where water is needed in daily life such as bathing, washing, latrines, and for consumption. Clean water facilities must meet the requirements so that water is not contaminated. Clean water facilities that meet the requirements are protected water sources which include PDAM, pump wells, dug wells, and protected springs. Things that can adversely affect health are also related to open defecation behavior and uneven use of defecation facilities, waste management in achieving a clean environment and achieving community sanitation (Syamsiah & Agusman, 2022).

The neighborhood is one of the most densely populated in Ampenan with poor sanitation and hygiene, which can affect the onset of diarrhea. Many mothers do not understand the importance of rehydration fluids and how to make oral rehydration solution (ORS) to prevent dehydration and reduce mortality from diarrhea. Public perceptions that are wrong or do not match the perceptions of health workers can be minimized through intervention efforts such as counseling, lighting through mass media and others. Thus it will be seen that the correct public perception of diarrhea, especially regarding its definition, development and handling, plays an important role in the selection of types of treatment measures, therefore the correct public perception will lead to the formation of attitudes in accordance with those outlined (Syamsiah & Agusman, 2022).

The main danger of diarrhea is the risk of death caused by the loss of large amounts of water and salt from the body, known as dehydration. Children with poor nutritional status are more susceptible to death, because inadequate nutrition can cause them to not feel hungry, so parents may not immediately provide food that can replace lost body fluids. Poor nutritional conditions can also prolong the duration of diarrhea and increase the risk of complications. Children with

calorie and protein deficiencies tend to experience electrolyte imbalances, and diarrhea can accelerate the occurrence of this condition. Breastfeeding has been shown to be effective in increasing children's resistance to diarrhea. The graatest risk of diarrhea is dehydration, especially in malnourished children. Breastfeeding has been shown to increase children's resistance to diarrhea. Treatment of diarrhea can be done through rehydration, zinc administration, adequate nutrition, use of antibiotics, and education for parents. The main goal of diarrhea treatment is to replace fluids and electrolytes lost due to diarrhea and vomiting. Rehydration can be started by giving oralit in the early stages of diarrhea. Oral rehydration solution (ORS) is a mixture of electrolytes such as sodium chloride (NaCl), potassium chloride (KCl), trisodium citrate hydrate, and anhydrous glucose, which can be given orally to replace lost body fluids. Research shows that giving ORS is effective in treating mild to moderate dehydration in acute diarrhea (Setyawan & Setyaningsih, 2021).

Rehydration with oral rehydration solution (ORS) is an effective method to overcome dehydration. ORS contains sodium, potassium, trisodium citrate, and glucose which help replace lost body fluids. Research shows that oral rehydration solution (ORS) is effective for acute diarrhea with mild to moderate dehydration. Giving oral rehydration solution (ORS) to toddlers who have diarrhea helps reduce the frequency of bowel movements and improves stool consistency. Giving honey and oralit to toddlers who have diarrhea can have a positive effect on reducing the frequency of diarrhea. Consumed honey contains probiotics that help reduce bacteria that cause diarrhea, while oralit plays a role in replacing lost body fluids, preventing dehydration, and improving stool consistency in the intestines (Purnamiasih & Putriyanti, 2022).

The study by Wahida (2023) showed that administering oral rehydration solution (ORS) with low osmolality is effective in reducing dehydration and accelerating recovery in toddlers with diarrhea. The findings revealed that the group receiving ORS within the first 3 hours had a shorter average treatment duration (2.67 days, standard deviation 1.175) compared to the control group that received IV fluids directly (3.67 days, standard deviation 1.496). The effectiveness of ORS is attributed to its low-osmolality content of sodium and glucose (245 mOsm/L), which accelerates fluid absorption, restores electrolyte balance, reduces water content in the intestinal lumen, improves stool consistency, and decreases the frequency of bowel movements.

The novelty of this study lies in its focus on analyzing the impact of low-osmolality ORS on bowel movement frequency and diarrhea recovery in toddlers, providing more specific evidence of the benefits of this ORS formulation.

METHODS

Study Design and Setting

This study uses a quantitative method with a pre-experimental research design designed in the form of a one-group pre-test and post-test where the data is done by pre-test or before the prevalence and post-test or after the prevalence. Prevalence was conducted by delivering materials related to prevention, symptoms, complications, and treatment of diarrhea in accordance with the research context. This study was conducted at the same time and only assessed once.

Samples

The population used is the community of Bagan Dalam Village Hall, Tanjung Tiram District, Batu Bara Regency. Sampling was carried out using the accidental sampling formula with non-probability sampling techniques where samples were taken from the population according to the objectives and in accordance with the research criteria obtained 30 people who would be sampled in this study.

Instrumen

The research instrument used a questionnaire, according to Sugiyono (2016) in his book Quantitative, Qualitative and R&D Research Methods, a questionnaire is a data collection technique in which respondents are given a series of questions or written statements to answer (Rinawati & Darisman, 2020). This technique is used to collect information directly from respondents regarding the variables under study. Questions from the questionnaire are in the form of questions about how to prevent, symptoms, complications, and treatment of diarrhea in accordance with the context. The questionnaire used has been tested for validity and reliability the results of the reliability test on the diarrhea incidence questionnaire were obtained worth 0.769 while the validity test on the diarrhea questionnaire obtained the highest value of 0.775 and the lowest value of 0.384.because this questionnaire has previously been carried out in previous studies.

Data Collection

Data were collected twice to determine the pre-test or community knowledge about prevention, symptoms, complications, and treatment of diarrhea before prevalence and post-test or community knowledge about prevention, symptoms, complications, and treatment of diarrhea after prevalence.

Data Analysis

The search results obtained will be analyzed using computer software such as SPSS 20.0. This research will apply univariate analysis and t test to analyze the data. Data analysis was carried out by univariate analysis which was to see the frequency of respondent characteristics and bivariate analysis was carried out to see the value of the difference between before the prevalence or pre-test and after the prevalence or post-test. The data analysis technique uses a paired simple t-test which if the P-value <0.05 indicates a difference value or an increase in public knowledge about how to prevent, symptoms, complications, and treatment of diarrhea and if the P-Value> 0.05 indicates no difference value or no increase in public knowledge about how to prevent, symptoms, complications, and treatment of diarrhea.

Ethical Consideration

This research has received approval from the Village Head with letter number (470/338/BD/2024). In its implementation, informed consent has been provided in the questionnaire link. If the respondent agreed to participate in this study, the informed consent was considered accepted, and the respondent could continue to fill out the questionnaire. Conversely, if the respondent is unwilling, then the informed consent is considered rejected, and the questionnaire link cannot be accessed.

This study applied four ethical principles, namely: 1) respect for human dignity, 2) confidentiality, 3) fairness, and 4) benefits. In the principles of confidentiality and anonymity, the researcher did not put the respondent's name on the questionnaire so that the respondent did not need to write his identity. Furthermore, the results of this study will only be accessed by researchers and kept confidential.

RESULTS

Education and intervention for diarrhea disease in Bagan Dalam Village, Tanjung Tiram District, Batu Bara Regency involving 30 respondents. This activity aims to increase understanding of the causes, symptoms and prevention of diarrhea through education about diarrhea. Intervention includes distribution of ORS and simulation of its use. It is hoped that people can prevent diarrhea and treat the symptoms appropriately.

Table 1. Characteristics of Respondents

Variable	N	Percentage (%)
Gender		
Male	5	16,7
Female	25	83,3
Age		
Elderly	17	56,7
Late Adulthood	7	23,3
Early Adulthood	6	20,0
Work		
Not Work	1	3,3
Housewife	15	50,0
Merchant	4	13,3
Fisherman	3	10,0
Village Head	7	23,3
Education		
No School	1	3,3
Elementary School	10	33,3
Junior High School	6	20,0
Senior High School	13	43,3

Table 1 characteristics of respondents show that most respondents in this study were female, namely 25 people (83.3%). The age category of respondents who were most were elderly, namely 17 people (56.7%). Some respondents were housewives, namely 15 people (50%). The last education of the respondents who were most was high school education, namely 13 people (43.3%).

Before the counseling was conducted, a pretest was conducted to the community who would attend the counseling event at the village hall to determine their initial abilities related to knowledge of diarrhea. The results of the pretest on knowledge of diarrhea are as in the table below:

Table 2. Diarrhea Knowledge Pre-Post Test Results Data

	N	Min	Max	Mean	Std.D
Pretest	30	6	15	10.87	2.330
Posttest	30	8	15	11.70	2.087

Table 2 shows that the average pretest result of knowledge about diarrhea in the Bagan Dalam Village community is 10.87, with a standard deviation of 2.330. The highest value achieved is 15, while the lowest value is 6.

The results of the posttest on knowledge about diarrhea were obtained after the community received educational material about diarrhea. The average posttest result of knowledge about diarrhea in the Bagan Dalam Village community was 11.70 with a standard deviation of 2.087.

The maximum value achieved is 15, while the minimum value is 8.

Table 3. Normality Test Results For Pre-Test And Post-Test Data On Diarrhea Knowledge Results Skewness

	Statistic	Df	Sig.
Pretest	-0.213	0.427	-0.498
Posttest	-0.376	0.427	-0.880

Based on the table above, the results of the normality test using Skewness show that the significance value of knowledge about diarrhea in the Bagan Dalam Village community for the pretest is -0.498, which means that the pretest data is normally distributed. Meanwhile, the posttest results have a value of -0.880, so the significance values of the pretest and posttest are greater than 0.05 (-0.498> 0.05 and -0.880> 0.05). This shows that the data on knowledge about diarrhea is normally distributed.

Table 4. Average Pre-Test and Post-Test Results for Knowledge about Diarrhea

	Mean	N	Std.D	Std. Error Mean
Pretest	10.87	30	2.330	0.425
Posttes	11.70	30	2.087	0.381

The results of the t-test above show that the average pretest score is 10.87, while the average posttest score is 11.70. Thus, the average score after diarrhea education is higher than before education. This indicates an increase in knowledge about diarrhea after education.

Table 5. Correlation of Pre-Test and Post-Test Results on Knowledge about Diarrhea

	N	Correlation	Sig.
Pretest-Postest	30	0.424	0.020

The results of the paired sample correlations test showed a significance value of 0.020, where the sig value <0.05. This means that there is a significant relationship between the pretest and posttest results.

Table 6. Differences in Pre-Test and Post-Test Results for Knowledge about Diarrhea

	Mean	Std. D	Std. error Mean	95% Confidence Interval of The Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pretest-Posttest	-0.833	2.379	0,434	-1.722	0.055	-1.918	29	0.065

The results of the t-test on the Paired Sample Test showed a significance value of 0.065 which

means >0.05. This shows that the results before and after education about diarrhea are not different. Thus it can be concluded that there is no significant difference in knowledge about diarrhea before and after education.

DISCUSSION

In this study, the respondents were drawn from the community of Bagan Dalam Village, Tanjung Tiram District, Batu Bara, which comprises ten hamlets. A total of thirty respondents participated in this activity, with each representing one hamlet. The characteristics of the respondents include gender, age, educational background, and occupation. The majority of respondents were women, elderly individuals, housewives, and high school graduates.

The level of community knowledge regarding diarrhea was assessed through questionnaires administered before and after the counseling sessions. The results indicated an improvement in understanding following the counseling that utilized projection and poster media. Research by Farizka et al. (2022) suggests that a person's mindset and comprehension are influenced by age; in this study, most respondents were elderly. Furthermore, a good education has the potential to enhance knowledge and mindset (Dolang & Kiriwenno, 2020).

The occupational characteristics of the respondents revealed that most were housewives, followed by village heads and traders. The higher presence of housewives can be attributed to their availability at home, while men, primarily employed as fishermen, were unable to attend.

Despite the observed increase in knowledge after the counseling sessions, the analysis indicated no significant difference in knowledge levels before and after the intervention. This lack of significant change may be due to the educational session being conducted only once. This finding contrasts with research by (Talango & Kusdhiarningsih, 2024), which reported a significant difference following similar counseling efforts. Therefore, continuous education programs are essential for enhancing awareness and preventive measures against diarrhea.

Health education serves as a strategic effort to disseminate information and build awareness so that individuals understand and are willing to implement recommendations aimed at improving health and preventing disease. During the counseling sessions, it was emphasized that one effective method for treating diarrhea is through the administration of Oral Rehydration Solution (ORS). ORS is a preparation in the form of salt powder that is dissolved to replace fluids and minerals lost due to vomiting or diarrhea. This solution typically consists of a mixture of salt, sugar, and sodium bicarbonate.

Child mortality due to diarrhea often results from dehydration and inadequate treatment. The World Health Organization (WHO) and UNICEF have introduced a new low-osmolarity formulation that is safer and more effective for all types of non-cholera diarrhea associated with dehydration (Hutagaol et al., 2022). One approach to preventing diarrhea among specific age groups involves implementing diarrhea prevention programs that require collaboration across various sectors as well as active community participation to reduce the incidence of diarrhea cases.

Additionally, the diarrhea program actively seeks out and treats individuals suffering from diarrhea across all age groups, including promoting household rehydration practices while emphasizing responses to Extraordinary Events (KLB) (Setyawan & Setyaningsih, 2021). Thus, collaborative efforts and ongoing education are crucial for reducing the prevalence of diarrhea within communities.

CONCLUSION

Research on the prevalence of diarrhea in Bagan Dalam Village, Tanjung Tiram Sub-district, showed that although there was an increase in community knowledge about diarrhea after counseling, the change was not statistically significant. The average knowledge score before counseling was 10.87, while after counseling it increased to 11.70. However, the t-test results showed a significance value of 0.065, meaning there was no significant difference between knowledge before and after counseling. This increase in knowledge may be influenced by the fact that counseling was only conducted once, so the impact on changes in community knowledge was not large enough. Therefore, to achieve more meaningful changes, a continuous and intensive education program is needed. This study also emphasizes the importance of community knowledge in the prevention and management of diarrhea, as well as the need for collaboration and active participation from various sectors to reduce the prevalence of diarrhea in the community.

LIMITATION

This study faces several limitations that need to be noted. First, the frequency of education carried out only once may not be enough to produce significant changes in knowledge in society. Continuing education or several additional sessions may be necessary to increase the effectiveness of the intervention. In addition, the sample size of only 30 participants may be problematic, as it may not be representative of the entire population in Bagan Dalam Village, which may affect the external validity of the research results.

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