

ACUTE DIARRHEA DURATION BETWEEN CHILDREN WITH PROBIOTIC THERAPY AND WITHOUT PROBIOTIC THERAPY AT GOTONG ROYONG HOSPITAL

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ABSTRACT

Introduction: Diarrhea is one of the leading causes of mortality and morbidity in children throughout the world. Based on Basic Health Research data (Riskesdas), the highest diarrhea prevalence occurs in children aged 1-4. One of the supportive therapies given to children who have acute diarrhea is probiotic therapy. Probiotic therapy in children with acute diarrhea can reduce the frequency and duration of diarrhea.

Purpose: To analyze the differences in acute diarrhea duration between children with probiotic therapy and without probiotic therapy, a case study in Gotong Royong Hospital.

Method: An experimental study with Cohort approach. The sampling technique used in this research was consecutive sampling. The procedure of this research was carried out by collecting primary data, recording probiotic therapy given to the acute diarrhea children who come to Gotong Royong Hospital at Surabaya and doing outpatient care, then continued with monitoring to the patient's parents everyday to find out the duration of acute diarrhea in the children after probiotic therapy. This research used the Mann Whitney analysis test.

Results: We found that there were significant differences between the duration of acute diarrhea in the children with probiotic therapy and the children without probiotic therapy with a value of $p < 0,001$ ($p < 0.05$). The average duration of acute diarrhea in children without probiotic therapy is 3.25 days. Meanwhile, the average duration of acute diarrhea in children with probiotic therapy is 1.25 days. The average difference between children with and without probiotic therapy was two days.

Conclusion: There is a difference in the duration of acute diarrhea in the children with probiotic therapy and the children without probiotic therapy at Gotong Royong Hospital in Surabaya.

Keywords : Acute diarrhea, children, probiotic.

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INTRODUCTION

One of the diseases that cause high morbidity and mortality rates in children worldwide is diarrhea. Based on data from the World Health Organization (WHO), diarrhea is the second leading cause of death for children aged <5 years old. Diarrhea is frequently defecating, at least three times in 24 hours, with stool consistency that is thinner than usual.^{1,2} Commonly, diarrhea is acute. The definition of acute diarrhea is diarrhea that occurs for <14 days.³ The primary transmission mechanism of pathogenic diarrhea is through the feces-mouth. Most of the events are also transmitted through the food and water as a conduit.⁴

According to the Indonesian Pediatrician Association (IDAI), treatment for diarrhea are ORS, zinc tablets, and antibiotics if necessary.⁵ Zinc is a micronutrient important for child development and health. During diarrhea, zinc will drop in large amounts due to the frequency of defecation. Hence, zinc administration therapy is needed to keep the child healthy and help the child recovery.⁶ Besides using Oral Rehydration Salts (ORS) and zinc tablets to treat diarrhea, supportive therapy can also positively impact the healing process. One of the supportive therapies that can be given to children who have acute diarrhea is Probiotics.

Probiotics are living microorganisms that have a good effect on human health if given in adequate quantities.⁷ The positive impact of using probiotics in reducing the frequency and duration of diarrhea is mediated by increasing the immune response, inhibiting the growth of pathogens that can cause diarrhea, and increasing antimicrobial substance production. Probiotics that are effective in reducing the frequency and duration of diarrhea are probiotics with positive strains.⁸ In recent years, several trials have already been conducted on probiotics to support oral rehydration therapy. The results of these trials prove that the use of probiotics can reduce the duration of the disease.⁹ Based on the previous explanation, the writers are interested in conducting a study to determine the relationship between the administrations of probiotics and the duration of acute diarrhea in the children at the Gotong Royong Hospital in Surabaya.

METHOD

This study was conducted by using an experimental study with a cohort approach. The study population was all children aged 1-5 years old who experienced acute diarrhea in the children's clinic Gotong Royong Hospital, Surabaya. This study's sample was

children aged 1-5 years old who experience acute diarrhea in the children's clinic Gotong Royong Hospital Surabaya and fulfill the inclusion and exclusion criteria.

We used the consecutive sampling technique. The definition of consecutive sampling is selecting samples with all patients who are considered to fulfill the criteria, and it will be included in the study until a predetermined period. The determination of samples that only get primary therapy for diarrhea or additional probiotics would be conducted randomly and alternately.

This study's inclusion criteria were: willing to become study respondents by signing informed consent, children aged 1-5 years old, outpatients with acute diarrhea, and regular nutritional status. this study's exclusion criteria were: slimy or bloody defecation, diarrhea with severe dehydration, getting antibiotic therapy, getting antidiarrheal therapy, if during observation the samples required inpatient care, and if during observation the samples were given antibiotics.

Data collection procedures in this study used primary data, namely the provision of probiotics in the children who come to the children's clinic in Surabaya Gotong Royong Hospital and experience acute diarrhea and do outpatient care and followed by follow-up that is conducted to

the patients' parents everyday to find out the duration of acute diarrhea in the children.

RESULTS

respondents' characteristics in the form of gender, respondent age, and mother's age are as follows.

Table 1. Basic characteristics of respondents

Variable	Frequency (n)	Percentage (%)
Age		
1 Years old	12	25%
2 Years old	16	33%
3 Years old	11	23%
4 Years old	5	10%
5 Years old	4	8%
Gender		
Male	26	54%
Female	22	46%
Mothers' age		
13 - 20 Years old	13	27,1%
20 - 30 Years old	30	62,5%
30 - 40 Years old	4	8,3%
40 - 50 Years old	1	2,1%
50 - 60 Years old		

Based on the data in the table above, we found that the highest number of respondents was at the age of 2 years old, 16 people (33%). According to the distribution based on gender, it was found that the number of male respondents was

26 people (54%), while the number of female respondents was 22 people (46%). Most mothers' age was found in the range aged 31-40, 30 people (62.5%).

Table 2. Results of the average difference of diarrhea duration

Group	N	Mean ± SD	Median	Mode	Mean difference	Sig.
Diarrhea duration	Without probiotics	3,2 2 5 ± 4 1,0 73	5	1	2	0,000
	With probiotics	1,2 2 5 ± 4 0,5 32	3	1		

The average difference in diarrhea duration in the children who were given probiotics and those who were not given probiotics was two days. The analysis test result of diarrhea duration difference performed by using Mann Whitney was $p < 0.001$ ($p < 0.05$). These results indicated a significant difference between the diarrhea duration in the children given probiotics and those who were not given probiotics.

DISCUSSION

It was found that the more dominant respondents in this study were male. It was found that the number of male respondents was 26 people (54%). This study's results were in accordance with the

results of the study conducted by Sabella Gustika, Maya Savira, and Dewi Anggaraini in 2015 at the Pekanbaru Inpatient Health Center. This study revealed that the incidence of diarrhea in males under five years old was higher at 59.5%. This was expected to occurred due to boys' tendency to play and do activities outside the home more actively than girls; thus, boys are more easily exposed to pathogens that cause diarrhea.¹⁰

Most respondents in this study were two years old, which is 16 people (33%). This study's results were following WHO data that stated that diarrhea is the second leading cause of death in children aged <5 years old.¹¹ Based on Basic Health Research, the highest incidence data of diarrhea is in children under five years old, especially aged one year old to four years old.¹² These results were also consistent with WHO data, which stated that patients with acute diarrhea, as much as 80%, are children under two years old. This can be because children under two years old are more likely to have an infection caused by the body's natural immune system that is not perfect yet. Besides that, weaning and supplemental feeding begun at the age of 1-2 years old.. The process of cleaning milk bottles, clean boiled water, and mixed food is given to children can also cause contamination, which can cause diarrhea.¹³

In this study, it was found that the highest number of mothers' ages was in the range of 31-40 years old, 20 people (62.5%). This study's results were in line with the study conducted by Sinthamurniawaty in 2006 in Semarang District. This study examined that mothers whose children had more diarrhea are at ages >30 years old compared to 20-30 years old.¹⁴ This was caused by the mother's age, who is >30 years old, a productive age. mothers included in the productive age are more likely to work and do activities outside the home. Hence, they are less attentive to the health and condition of their children at home. Moreover, it is also possible because the mother who is active outside the home would let their children be cared for by others.¹⁵

Data analysis performed using the Mann Whitney test revealed that $p < 0.001$ ($p < 0.005$) indicated a significant difference between the duration of acute diarrhea in children given probiotics and those who were not given probiotics. The results showed that the average diarrhea duration in the children who did not get probiotics was 3.25 days. In contrast, the average difference of diarrhea duration in the children who received probiotics was 1.25 days. Hence, the difference in diarrhea duration in the two groups was two days.

This study's results follow the theory that the administration of probiotics could reduce the frequency and duration of diarrhea.⁸ The administration of probiotics is beneficial because probiotics can improve the balance between pathogens and existing bacteria. Probiotics can form aggregates to prevent pathogenic bacteria from colonizing in the epithelium.¹⁶ Provision of probiotics can improve the consistency of feces by improving impaired water absorption.¹⁷ Therefore, the study results on probiotics can accelerate the healing of acute diarrhea in children.

CONCLUSION

Based on the study results, it can be concluded that diarrhea duration in the children who were given probiotic therapy was shorter than children who were not given probiotics.

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