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ASSOCIATIONS BETWEEN MATERNAL HYGIENE BEHAVIOUR AND AVAILABILITY OF CLEAN WATER SOURCES WITH THE INCIDENCE OF DIARRHOEA AMONG CHILDREN UNDER FIVE YEARS OF AGE

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ABSTRACT

Diarrhea disease is one of the major health problems in developing countries, and the cause of death, especially in children under five. Based on statistical data in 2021, the incidence of diarrhea in Lubuklinggau City is among the top 5 diseases suffered by the local community. Poor maternal hygiene behavior and lack of availability of clean water sources can be a factor in the incidence of diarrhea in toddlers. The study aims to determine the relationship between maternal hygiene behavior and the availability of clean water sources with the incidence of diarrhea in toddlers in the Megang Health Center Working Area, North District II, Lubuklinggau City. The research was quantitative using a cross sectional study approach. The sample used was 84 respondents, and was determined by purposive sampling. Data collection techniques using a questionnaire. Data were analyzed using the chi-square test. The results showed there was a relationship between mother's education (p-value = 0.037) mother's hygiene behavior (p-value = 0.000) with the incidence of diarrhea in toddlers, while mother's age (p-value = 0.908), mother's work (p-value = 0.408), and the availability of clean water sources (p-value = 0.244) had no relationship with the incidence of diarrhea in toddlers. It was concluded that the incidence of diarrhea in toddlers in the Megang Health Center Working Area, North Subdistrict II, Lubuklinggau City was influenced by the mother's education level and hygiene behavior. It is recommended that education about hand washing with soap and running water and the application of the 6 steps of hand washing.

Keywords : Hygiene Behavior, Clean Water Source, Diarrhea, Toddlers

Introduction

Diarrhea is a bowel movement with a frequency of 3 or more times per day with a liquid stool consistency. Diarrhea is a symptom of infection in the intestinal tract caused by various bacterial, viral and parasitic organisms. The spread of infection is through contaminated food or drinking water, and from person to person as a result of poor hygiene (Annisa, 2023). Diarrhea is more dominant in infants because the immune system of infants is still weak, which makes them vulnerable to the spread of diarrhea bacteria (Puspitaningrum, 2017). Based on data from the World Health Organization (WHO), there are 1.7 billion cases of diarrhea in children that occur every year in the world (WHO, 2013). According to the results of the 2018 Basic Health Research (Riskesdas), the prevalence of diarrhea was 8% for all age groups, 12.3% for toddlers and 10.6% for infants (Riskesdas, 2018).

Conditions in Indonesia also show that diarrhea is an endemic disease that can potentially cause outbreaks and is still a contributor to the death rate in Indonesia (Kesehatan, 2022). Extraordinary events of diarrhea often occur, especially in areas where control of risk factors is still low (Hartati, 2018). The incidence of diarrhea in Lubuklinggau City in 2021 was 1,770 cases. The highest incidence of diarrhea in Lubuklinggau City is located at Puskesmas Megang, North Subdistrict II, Lubuklinggau City with 805 cases (all ages). The high incidence of diarrhea is caused by poor maternal hygiene behavior, and the availability of clean water sources used daily.

According to Sumampouw, 2017), Factors affecting diarrheal disease are environmental, for example, decreased environmental quality can make it easier for disease agents to enter the human body. Environmental factors of diarrhea disease are influenced by the provision of clean water, drinking water supply, sewerage, and ownership of healthy latrines (Setyawan, 2021). Hygiene behavior can prevent germs from entering the human body (Vitriawati, 2019). Diarrheal disease in toddlers is caused by poor hygiene behavior.

Methods

This study used a Quantitative approach with Cross Sectional design. The purpose of this study was to determine the relationship between maternal hygiene behavior and the availability of clean water sources with the incidence of diarrhea in toddlers in the work area of the Megang Health Center, North District II, Lubuklinggau City. The sample in this study was 84 respondents who had toddlers aged 1-5 years. Data collection by distributing questionnaires and filling them out, to determine the relationship between the independent variable and the dependent variable.

Results

Table 1. Frequency Distribution of Diarrhea Events in Toddlers

Incidence of diarrhea in toddlers	Frequency(n)	Percentage (%)
Diarrhea	47	56
No Diarrhea	37	44
Total	**84**	**100**

A total of 47 respondents (56%) experienced diarrhea and 37 respondents (44%) did not experience diarrhea.

Table 2. Frequency Distribution of Maternal Characteristics

Variable	Category	(n)	(%)
Mother's age	20-29 years	38	45,2
	30-39 years	46	54,8
Mother's education	Low (not going to school, not finishing elementary school, SD, SMP)	45	53,6
	High (High School and College))	39	46,4
Mother's occupation	not working (housewife)	67	79,8
	Work	17	20,2

Most of the mothers were 30-39 years old as many as 46 respondents (54.8%), most respondents had low education as many as 45 respondents (53.6%), and most mothers did not work as many as 67 respondents (79.8%).

Table 3. Frequency Distribution of Maternal Hygiene Behavior

Question	Yes		No	
	n	(%)	n	(%)
Hand washing using running water and soap	80	95,2	4	4,8
Washing hands after activity/play/exercise	36	42,9	48	57,1
After washing my hands, I dry them with a tissue or cloth	41	48,8	43	51,2
Wash hands by rubbing the palms, between the fingers and the backs of both hands until the surface is lathered.	3	3,6	81	96,4
Before preparing food ingredients, mothers wash their hands with soap and running water	47	56	37	44
Before cooking, all food ingredients need to be washed using running water	84	100	0	0
Cleaning toddler feeding bottles with warm water	49	58,3	35	41,7
Cleaning toddler feeding bottles with soap and running water using a brush	49	58,3	35	41,7
Washing hands with soap and running water before feeding toddlers	66	78,6	18	21,4
Wash hands with soap and running water after defecation	56	66,7	28	33,3
Wash hands with soap and running water after disposing of toddler's feces	64	76,2	20	23,8
The right time to wash your hands with soap after defecation	59	70,2	25	29,8

Before cooking all food ingredients need to be washed using running water as many as 84 respondents (100%), washing hands using running water and soap as many as 80 respondents (95.2%), washing hands with running water and soap before feeding toddlers as many as 66 (78.6%).

Table 4. Frequency Distribution of Clean Water Source Availability with Incidence of diarrhea in toddlers

Question	Yes		No	
	n	(%)	n	(%)
Do you have clean water facilities	84	100	0	0
If yes, is the clean water you use privately owned	71	84,5	13	15,5
Water source distance with septic tank min 10m	59	70,2	25	29,8
Are water reservoirs clean and drained at least once a week	65	77,4	19	22,6
Is the drinking water storage area clean and washed at least once a week	77	91,7	7	8,3
Do you use clean water that smells	3	3,6	81	96,4
Does the clean water used taste	1	1,2	83	98,8
Whether the clean water used is colored	2	2,4	82	97,6
Is the clean water you use cloudy	12	14,3	72	85,7
Does the mother consume boiled drinking water	83	98,8	1	1,2
Does the mother filter the water before cooking	41	48,8	43	51,2
Do you settle the water to be cooked first?	47	56	37	44

Mothers have clean water facilities as many as 84 respondents (100%), mothers consume drinking water that has been cooked 83 respondents (98.8%), drinking water storage is clean and washed at least once a week 77 respondents (91.7%), and clean water used is cloudy as many as 12 respondents (14.3%).

Table 5. Relationship between Mother's Age and Incidence of Diarrhea in Toddlers

Mother's age	**Incidence of diarrhea in toddlers**						***P-value***	**PR**
	Diarrhea		**No Diarrhea**		**Total**			
	N	**%**	**n**	**%**	**N**	**%**		**95Cl**
20-29 years	21	21,3	17	16,7	38	100	0,908	0,978
30-39 years	26	25,7	20	20,3	46	100		(0,667-1,1433)

The proportion of maternal age 20-30 years with 30-39 years in toddlers experiencing diarrhea is 4.4%. Most toddlers experience diarrhea with maternal age 30-39 years with a proportion of 25.7%.

Table 6. The Relationship between Maternal Education and the Incidence of Diarrhea in Toddlers

Mother's education	**Incidence of diarrhea in toddlers**							
	Diarrhea		**No Diarrhea**		**Total**		***P-value***	**PR**
	n	**%**	**n**	**%**	**N**	**%**		**95Cl**
Low	31	26,3	16	20,7	47	100	0,037	1,525
High	16	20,7	21	16,3	37	100		(1,000-2,327)

The proportion of low maternal education with not low in toddlers experiencing diarrhea is 5.6%. Most toddlers experience diarrhea with low maternal education (not in school, not graduated from elementary school, elementary school, junior high school) with a proportion of 26.3%.

Tabel 7. Relationship between maternal occupation and the incidence of diarrhea in toddlers

Mother's occupation	Incidence of diarrhea in toddlers				Total		*P-value*	PR
	Diarrhea		No Diarrhea					
	N	%	n	%	N	%		95Cl
Not working	39	37,5	28	29,5	67	100	0,408	1,237
Working	8	9,5	9	7,5	17	100		(0,718-2.130)

The proportion of working and non-working mothers in toddlers experiencing diarrhea is 28%. Most of the toddlers had diarrhea with the mother's work not working (IRT) with a proportion of 37.5%.

Table 8. The Relationship between Maternal Hygiene Behavior and the Incidence of Diarrhea in Toddlers

Behavior maternal hygiene	Incidence of diarrhea in toddlers				Total		*P-value*	PR
	Diarrhea		No Diarrhea					
	n	%	n	%	N	%		95Cl
Bad	36	22,9	5	18,1	41	100	0,000	3,432
Good	11	24,1	32	18,9	43	100		(2,036-5,787)

The proportion of poor maternal hygiene behavior with good in toddlers experiencing diarrhea is 1,2%.Most toddlers experience diarrhea with poor maternal hygiene behavior with a proportion of 22,9%.

Table 9. The Relationship between the Availability of Clean Water Sources and the Incidence of Diarrhea in Toddlers

Availability of Clean Water Sources Availability of Clean Water Sources	Incidence of diarrhea in toddlers				Total		*P-value*	PR
	Diarrhea		No Diarrhea					
	n	%	n	%	N	%		95Cl
Bad	17	14,5	9	11,5	26	100	0,244	1,264
Good	30	32,5	28	25,5	58	100		(0,869-1,838)

The proportion of the availability of clean water sources is poor with poor and good in toddlers experiencing diarrhea by 18%. Most toddlers experience diarrhea with the availability of good clean water sources with a proportion of 32.5%.

Discussion

The results of research conducted in the Megang Health Center Working Area, North Subdistrict II Lubuklinggau City known toddlers who experience diarrhea by 56%. It is known that the age of respondents between 20-29 years is 45.2%. Based on the results of the chi-square test obtained that the age of the mother between 30-39 years was found to be 0.978 times compared to the age of the mother between 20-29 years. With a confidence degree of 95% in the respondent population age between 30-39 years can increase the risk of diarrhea disease by 0.667 times to 1.143 times compared to maternal age 20-29 years with a p-value of 0.908, there is no relationship between the variable age of the mother with the incidence of diarrhea in toddlers.

The results of research conducted in the Megang Health Center Working Area, North District II Lubuklinggau City, showed that 53.6% of respondents had low education. Based on the results of the chi-square test, it was obtained at 1.525 times, which means that there is a greater risk of experiencing diarrhea than those with a high education. With a 95% confidence degree in the population of respondents who have low education can increase the risk of developing diarrhea by 1,000 to 2,327 times compared to toddlers who have mothers with high education. With a p-value of 0.037, there is a relationship between maternal education and the incidence of diarrhea in toddlers.

The results of research conducted in the Megang Health Center Working Area, North Subdistrict II Lubuklinggau City, showed that 79.8% of respondents did not work (IRT). Based on the results of the chi-square test, respondents who worked were 1.237 times more at risk of experiencing diarrhea than respondents who did not work. The p-value was 0.408, there was no relationship between maternal employment and the incidence of diarrhea in toddlers.

The results of research conducted in the Megang Health Center Working Area, North District II Lubuklinggau City found that respondents with good hygiene behavior were 51.1%. Based on the results of the chi-square test, poor maternal hygiene behavior obtained 3.432 times more risk of experiencing diarrhea than good maternal hygiene behavior. The p-value is 0.000, meaning that there is a relationship between maternal hygiene behavior and the incidence of diarrhea in toddlers.

The results of research conducted in the Working Area of the Megang Health Center, North District II Lubuklinggau City are known from 84 houses studied. Most of the availability of clean water sources is good with the incidence of diarrhea at 32.5% while the availability of clean water sources is poor with the incidence of diarrhea at 14.5%. Based on the results of the chi-square test, it was found that the availability of poor clean water sources was 1.264 times more at risk of diarrhea in toddlers compared to the availability of good clean water sources. The p-value is 0.244, meaning that there is no relationship between the availability of clean water sources and the incidence of diarrhea in toddlers.

Conclusion

Frequency distribution of diarrhea incidence in toddlers as many as 47 (56%) respondents, and not the incidence of diarrhea in toddlers as many as 37 (44%) respondents. There is no relationship between maternal age and the incidence of diarrhea in toddlers in the Megang Health Center Working Area, North District II, Lubuklinggau City. Lubuklinggau (p-value 0.908). There is no relationship between maternal education and the incidence of diarrhea in toddlers in the toddlers in the Megang Health Center Working Area, North District II, Lubuklinggau City. Lubuklinggau (*p-value* 0,037). *There is no relationship between maternal occupation and the incidence of diarrhea in toddlers in the toddlers in the Megang Health Center Working Area, North District II, Lubuklinggau City. Lubuklinggau* (*p-value* 0,408). There is a relationship between maternal hygiene behavior and the incidence of diarrhea in toddlers toddlers in the Megang Health Center Working Area, North District II, Lubuklinggau City. Lubuklinggau (*p-value* 0,000). There is no relationship between the availability of clean water sources and incidence of diarrhea in toddlers in the Working Area of Puskesmas Megang District North II Lubuklinggau City (*p-value* 0,244.)

Reference

Annisa, D. 2023. *Studi Epidemiologi Penyakit Diare di Wilayah Kerja Puskesmas Jambi Kecil tahun 2021*. Kedokteran.

Hartati, S. N., Nurazila. 2018. Faktor yang mempengaruhi kejadian diare pada balita di wilayah kerja Puskesmas Rejosari Pekanbaru. *Jurnal Endurance: Kajian Ilmiah Problema Kesehatan,* 3**,** 400-407

Kesehatan, K. 2022. Profil Kesehatan Indonesia 2021, Jakarta, Kementerian Kesehatan Republik Indonesia

Puspitaningrum, E. M. 2017. Hubungan Personal Hygiene Ibu dengan Kejadian Diare pada Balita Umur 1-5 Tahun di Puskesmas Putri Ayu Kota Jambi. *Scientia Journal,* 6**,** 63-69.

Riskesdas, K. 2018. Hasil utama riset kesehata dasar (RISKESDAS). *Journal of Physics A: Mathematical and Theoretical,* 44**,** 1-200.

Setyawan, I. D. A. S., MPH & Setyaningsih, Wiwik SKM, M Kes. 2021. Studi Epidemiologi dengan Pendekatan Analisis Spasial Terhadap Faktor-Faktor Risiko Yang Berhubungan dengan Kejadian Diare pada Anak di Kecamatan Karangmalang Kabupaten Sragen. Penerbit Tahta Media Group.

Sumampouw, O. J. 2017. Pemberantasan Penyakit Menular, Deepublish.

Vitriawati, N. A., Dewi. 2019. Hubungan Pengetahuan Perilaku Personal Hygiene Ibu Dengan Kejadian Diare Pada Balita. *Avicenna: Journal of Health Research,* 2**,** 25-33.

WHO 2013. Diarrheal Disease USA:WHO.