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The Association Between Feeding Practices and History of Diarrhea with Nutritional Status of Toddlers

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Abstract

The age of 0-59 months is a phase of basic life formation that is vulnerable to nutritional problems—causes such as infectious diseases and parenting. TThis research aimsto analyze the relationship between feeding practices and a history of diarrhea with the nutritional status of children under five. This study used a cross-sectional design. Samples were taken by purposive sampling of as many as 96 toddlers. Data were collected by direct measurement of weight scales, stature meters, and interviews using the main questionnaire and the modified CFQ questionnaire. The statistical tests used were the chi-square test and fisher's exact test. A total of 28.1% of respondents practice inappropriate feeding and 47.9% of children under five have a history of diarrhea. There is a relationship between feeding practices and underweight ($p<0.001$), stunting ($p<0.001$), and wasting ($p<0.001$). There was a relationship between a history of diarrhea and being underweight ($p=0.043$), but there was no relationship between stunting ($p=0.073$) and wasting ($p=0.063$).
Keywords: diarrhea, feeding, nutritional status, toddlers

Abstrak

Usia 0-59 bulan merupakan fase pembentukan dasar kehidupan yang rentan terhadap masalah gizi. Penyebabnya seperti penyakit infeksi dan pola asuh. Tujuan penelitian ini untuk menganalisis hubungan praktik pemberian makan dan riwayat diare dengan status gizi balita. Penelitian ini menggunakan desain cross-sectional. Sampel diambil secara purposive sampling sebanyak 96 balita. Pengambilan data dilakukan dengan pengukuran langsung timbangan berat badan, stature meter, dan wawancara menggunakan kuesioner kuesioner utama dan modifikasi CFQ. Uji statistik yang digunakan yaitu uji chi-square dan uji fisher's exact. Sebanyak 28,1% responden melakukan praktik pemberian makan yang tidak tepat dan 47,9% balita memiliki riwayat diare. Terdapat hubungan praktik pemberian makan dengan underweight (p=0,000), stunting (p=0,000), dan wasting (p=0,000). Terdapat hubungan riwayat diare dengan underweight (p=0,043), tetapi tidak terdapat hubungan dengan stunting (p=0,073) dan wasting (p=0,063).

Keywords: balita, diare, pemberian makan, status gizi

Introduction

The age of 0-59 months is a phase of basic life formation that is vulnerable to nutritional problems, one of which is malnutrition which includes being underweight, stunting, and wasting (1). Based on Riskesdas data, 10.2% of toddlers in Indonesia are underweight, 30.8% of toddlers are stunted, and 17.7% of toddlers are wasting (2). One of the causes of nutritional problems for toddlers is infectious diseases, such as diarrhea. Diarrhea is a condition of defecating three times with a liquid consistency. Diarrhea is caused by a pathogen, generally Escherichia Coli (3). Diarrhea is associated with a higher risk of nutritional status (4). Diarrhea causes nutritional deficiencies due to reduced appetite and digestive disorders that affect the absorption of nutrients in the body (5). Based on Riskesdas data, the prevalence of diarrhea under five is 11.0% (2).

Lack of nutritional intake causes a decrease in nutritional status and immunity. The way to fulfill nutritional intake is to practice proper feeding. Poor feeding behavior has a 0.2 times greater risk of diarrhea. Good feeding for children 2-5 years will improve their health (6). In addition, the behavior of parents in feeding children is related to the nutritional status of children 2-5 years (7). This study aimed to analyze the relationship between feeding practices and a history of diarrhea with the nutritional status of children under five based on underweight, stunting, wasting, and normal categories. It is expecteThis research is expected to insight into the importance of proper feeding for toddlers.

Methods

This study used a cross-sectional design. It was conducted in the Bantargebang Health Center area, Bekasi City. The study population was 2655 toddlers. Subjects were selected using the purposive sampling technique, with inclusion criteria, namely toddlers 24-59 months; indicators of weight-for-age z-score (WAZ), height-for-age z-score (HAZ), and weight-for-height z-score (WHZ) are normal and below normal; and have no complications or other non-communicable diseases. Meanwhile, the exclusion criteria were toddlers <24 months and currently experiencing diarrhea or other infectious diseases. The number of samples obtained is 102 children under five, using the following formula and adding 10% of the calculation results to anticipate the occurrence of dropouts. However, in the implementation of the study, it was found that the dropout sample was six children under five because it did not meet the inclusion criteria, namely the nutritional status of children under five at greater risk.

$$= \left(\frac{Z^2p(1-p)N}{d^2(N-1)+Z^2p(1-p)}\right) + (\text{ x } 10\%)\frac{Z^2p(1-p)N}{d^2(N-1)+Z^2p(1-p)}$$

Information:

n = number of samples
N = total population
Z = degree of confidence (95% = 1.96)
p = proportion of cases to population (unknown proportion = 50% = 0.5)
d = degree of deviation from the desired population (10% = 0.1)

The variables in this study consisted of independent variables (feeding practices, and history of diarrhea) and dependent variables (nutritional status of children under five) were collected using direct measurement techniques and interviews. Instruments were used in the form of weight scales, stature meters, and questionnaires consisting of 2, namely the main questionnaire and a questionnaire for the practice of feeding

modified Child Feeding Questionnaire (CFQ) (8).

The data collected in this study included data on the characteristics of children under five (gender, age, birth order, birth spacing, weight, and height), feeding practice data, diarrhea history data, and data on family demographic characteristics (age of mother and father, education of mother and father, occupation of mother and father, family income/month, and some family members). The analysis conducted for this study focused on the relationship between dietary practices and the history of diarrhea with nutritional status.

Data analysis using SPSS version 22 includes univariate analysis and bivariate analysis. Bivariate analysis using the chi-square test and fisher's exact test if there is at least one cell with an expected value of less than five (20%). The decision of the test results if the significance value of $p<0.05$.

Results

The predominant gender of children under five is female, which is 53.1%. As many as 42.7% of toddlers have an age category of 24-35 months, with an average age of 39±10.5 months. Most toddlers are the first or second children, which is 84.4% of toddlers, and 58.3% of toddlers have a birth distance of >2 years with other children, with an average birth distance of 3.8±3.63 toddlers. year.

The demographic characteristics of the family showed that 52.1% of mothers had an age range of 26-35. while the father's age of 43.8% of the father has an age range of 26-35 years. Most of the education of mothers and fathers in high school, which is 70.8% of mothers and fathers. 86.5% of mothers work only as housewives, while 46.9% of fathers work as laborers. Family income in this study is categorized based on the UMK Bekasi City in 2022, which is Rp.4,800,000. In dominant families, 89.6% of families have a family income per month of Rp.4,800,000, with an average income of Rp.3,187,500 ±Rp.1,065,561. In addition to income, 80.2% of families have a family of 4 people.

Table 1. shows that as many as 71.9% of respondents practice proper feeding, with 1.0% underweight and 70.8% having normal nutritional status. Meanwhile, 28.1% of respondents practiced inappropriate feeding, with 17.7% underweight and 10.4% having normal nutritional status. The results of statistical tests obtained p value = 0.000 ($p<0.05$). So it can be interpreted that there is a relationship between feeding practices and the incidence of being underweight in toddlers. Based on Table 1, shows that as many as 52.1% of toddlers do not have a history of diarrhea, of which 5.2% of toddlers are underweight and 40.6% of toddlers have normal nutritional status. Meanwhile, 47.9% of children under five had a history of diarrhea, of which 13.5% had underweight and 34.4% had normal nutritional status. This illustrates that toddlers who do not have a history of diarrhea or who have a history of diarrhea tend to have normal nutritional status. The results of statistical tests obtained p value = 0.043 ($p<0.05$).

Table 2. shows that 71.9% of respondents practice proper feeding, with 1.0% of toddlers experiencing stunting and 70.8% of toddlers having normal nutritional status. Meanwhile, 28.1% of respondents practiced inappropriate feeding, with 16.7% of toddlers experiencing stunting and 11.5% of toddlers having normal nutritional status. The results of statistical tests obtained p value = 0.000 ($p<0.05$). Table 2. shows that 52.1% of toddlers have no history of diarrhea, of which 5.2% of toddlers have stunted and

46.9% of toddlers have normal nutritional status. Meanwhile, 47.9% of children under five had a history of diarrhea, of which 12.5% had stunting and 35.4% had normal nutritional status. This illustrates that toddlers who do not have a history of diarrhea or who have a history of diarrhea tend to have normal nutritional status. The results of statistical tests obtained p value = 0.073 (p>0.05).

Table 3. shows that 71.9% of respondents practice proper feeding, with 9.4% of toddlers experiencing wasting and 62.5% of toddlers having normal nutritional status. Meanwhile, 28.1% of respondents practiced inappropriate feeding, with 17.7% of toddlers experiencing wasting and 10.4% of toddlers having normal nutritional status. The results of statistical tests obtained p value = 0.000 (p<0.05). Table 3. shows that 52.1% of children under five had no history of diarrhea, of which 9.4% had wasting and 42.7% had normal nutritional status. Meanwhile, 47.9% of children under five had a history of diarrhea, of which 17.7% had wasting and 30.2% had normal nutritional status. This illustrates that toddlers who do not have a history of diarrhea or who have a history of diarrhea tend to have normal nutritional status. Statistical test results obtained p value = 0.063 (p>0.05).

Discussion

Results indicate that feeding practices are associated with the incidence of underweight in toddlers. Indeed, in the practice of proper nutrition, the nutritional state of toddlers tends to be normal and in the practice of inappropriate nutrition, toddlers tend to be underweight. Research results are in line with research by Sari and Ratnawati (9) that the pattern of feeding is related to the nutritional status of children under five based on indicators of WAZ. The better the practice of feeding, the better the nutritional status of children under five. Good feeding for toddlers in terms of food quality will increase nutritional adequacy which plays a role in the growth and development process. Mistakes in feeding practices that are not corrected for nutritional status, especially at present.

Based on the results obtained, it is known that there is a relationship between history and the incidence of being underweight in toddlers. The results of this study are in line with research by Pratiwi et al. (10) that there is a relationship between diarrheal disease and being underweight in children under five. Diarrhea disease with the incidence of being underweight in toddlers is interrelated. Underweight conditions can worsen the incidence of diarrhea. On the other hand, persistent diarrhea will cause toddlers to be underweight due to decreased appetite and fluid loss, which in turn causes a decrease in nutrient intake.

The findings show that there is a relationship between feeding practices and the incidence of stunting in toddlers. In research, Widyaningsih et al. (11) showed that there was a relationship between eating parenting and stunting in children aged 24-59 months. Poor parenting, especially during the golden age, will lead to suboptimal brain development. Toddlers who get less parenting tend to be delayed when the mother provides food. Mothers also tend not to pay attention to the nutritional needs of children when providing food. This poses a risk of stunting due to poor food consumption in terms of quality and quantity if it lasts for a long time.

Table 1. Analysis of the Association between Feeding Practices and Diarrhea History with Underweight Toddlers

Variable	Nutritional status				Total		*p-value*
	Underweight		Normal				
	n	%	n	%	n	%	
Feeding Practice							
Appropriate	1	1.0	68	70.8	69	71.9	<0.001*
Not appropriate	17	17.7	10	10.4	27	28.1	
Diarrhea history							
No	5	5.2	45	40.6	50	52.1	0.043*
Yes	13	13.5	33	34.4	46	47.9	

Using Chi-square test: *level of significance < 0.05

Table 2. Analysis of the Association between Feeding Practices and Diarrhea History with Stunting Toddlers

Variable	Nutritional status				Total		*p-value*
	Stunting		Normal				
	n	%	n	%	n	%	
Feeding Practice							
Appropriate	1	1.0	68	70.8	69	71.9	<0.001*[a]
Not appropriate	16	16.7	11	11.5	27	28.1	
Diarrhea history							
No	5	5.2	45	40.6	50	52.1	0.073[b]
Yes	12	12.5	34	35.4	46	47.9	

Note: [a]Fisher's exact test, [b]Chi-square test, *level of significance < 0.05

Table 3. Analysis of the Association between Feeding Practices and Diarrhea History with Toddler Wasting

Variable	Nutritional status				Total		*p-value*
	wasting		Normal				
	n	%	n	%	n	%	
Feeding Practice							
Appropriate	9	9.4	60	62.5	69	71.9	<0.001*
Not appropriate	17	17.7	10	10.4	27	28.1	
Diarrhea history							
No	9	9.4	41	42.7	50	52.1	0.063
Yes	17	17.7	29	30.2	46	47.9	

Using Chi-square test: *level of significance < 0.05

The results indicate that there is no relationship between the history of diarrhea and the incidence of stunting in toddlers. In line with research by Sari dan Sulistyaningsih (12) that infectious diseases do not increase stunting. This is because the history of infectious diseases is only assessed within the last month. A period of one month is an acute infection. In acute infection conditions, it will only affect body weight and does not affect height. In this study, there was no relationship between a history of diarrhea and stunting because it only looked at the impact of diarrhea in the last 3 months and did not see the frequency and duration of diarrhea. Toddlers in this study did not experience pain in the long term.

Based on the results obtained, it is known that there is a relationship between feeding practices and the incidence of wasting in toddlers. A study by Alamsyah et al. (13) shows that the mother's attitude toward food is related to the incidence of malnutrition and malnutrition. The mother's bad attitude toward food has a greater risk of 6.98 times having children under five who are malnourished and malnourished. A mother's knowledge affects the selection of food ingredients and the adequacy of the amount and variety of food available. Errors in food selection due to ignorance are related to poor eating habits in toddlers and have an impact on nutritional problems in the short and long term.

Results indicate that there is no relationship between history and the incidence of wasting in toddlers. The results of this study are in line with research by Darwis et al. (14) showed that there was no relationship between infectious diseases and the incidence of malnutrition in children under five. Infectious diseases can reduce appetite which causes nutritional deficiencies and will worsen the nutritional condition of children. Weight loss often occurs due to increased nutritional needs when children are sick. However, this is only temporary because the weight can return after recovery with improved nutrition. So that wasting can occur temporarily when sick and can return to good nutrition after recovery.

Conclusion

Based on the results of the study, it was concluded that there was a relationship between feeding practices and underweight, stunting, and wasting. There was also a relationship between a history of diarrhea and being underweight. However, there was no relationship between a history of diarrhea with stunting and wasting.

It is necessary to do further research related to feeding practices and the history of diarrhea related to nutritional status in toddlers starting from the first time the child received complementary foods so that they can find out more deeply related to the history of feeding.

References

1. Dinas Kesehatan Kota Bekasi. Profil Kesehatan Kota Bekasi Tahun 2019. Bekasi (Indonesia): Dinas Kesehatan Kota Bekasi Press: 2019.
2. Kemenkes RI. Hasil Riset Kesehatan Dasar Tahun 2018. Jakarta (Indonesia): Kementrian Kesehatan RI: 2018.
3. [WHO] World Health Organization [homepage on the internet]. [updated 2017 May 2; cited 2022 March 8]. Available from: https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease
4. Khairani, N., Suryani, & Juniarti, D. Hubungan tingkat pendapatan

keluarga dan kejadian diare dengan status gizi pada balita yang berkunjung ke puskesmas sawah lebar kota bengkulu. Journal of Nursing and Public Health, 2020. 8.1: 87–96.

5. Kurnia, M.P.K., Ismanto, A.Y., & Pondang, L. Hubungan diare dengan kejadian malnutrisi pada balita di Irina E Bawah RSUP Prof. Dr. R. D. Kandou Manado. ejournal Keperawatan (e-Kp), 2015. 3.1: 1-7. https://doi.org/10.35790/jkp.v3i1.6689
6. Febriana, S.F., & Amelia, V.L. Hubungan antara sanitasi dan perilaku pemberian makan terhadap kejadian diare pada balita di wilayah Puskesmas Kedung Banteng. Jurnal Keperawatan Muhammadiyah, 2020. 5.1:116-121.
7. Purnama, N.L.A., Lusmilasari, L., & Julia, M. Perilaku orang tua dalam pemberian makan dan status gizi anak usia 2-5 tahun. Jurnal Gizi Klinik Indonesia, 2015. 11.03: 97–104. https://doi.org/10.22146/ijcn.19281
8. Camci, N., Bas, M., & Buyukkaragoz, A.H. The psychometric properties of the Child Feeding Questionnaire (CFQ) in Turkey. Appetite, 2014. 78C: 49–54. http://dx.doi.org/10.1016/j.appet.2014.03.009
9. Sari, M.R.N., & Ratnawati, L.Y. Hubungan pengetahuan ibu tentang pola pemberian makan dengan status gizi balita di wilayah kerja Puskesmas Gapura Kabupaten Sumenep. Amerta Nutr, 2018. 2.2: 182–88. 10.2473/amnt.v2i2.2018.182-188
10. Pratiwi, R.H., Suyatno, & Aruben, R. Faktor-faktor yang berhubungan dengan berat-kurang (underweight) pada balita di perkotaan dan perdesaan Indonesia berdasarkan data Riskesdas tahun 2013. Jurnal Kesehatan Masyarakat, 2015. 3.2: 127–37.
11. Widyaningsih, N.N., Kusnandar, & Anantanyu, S. Keragaman pangan, pola asuh makan dan kejadian stunting pada balita usia 24-59 bulan. Jurnal Gizi Indonesia, 2018. 7.1: 22-29. https://ejournal.undip.ac.id/index.php/jgi/
12. Sari, R., & Sulistianingsih, A. Faktor determinan yang berhubungan dengan kejadian stunting pada balita di Kabupaten Pesawaran Lampung. Jurnal Wacana Kesehatan, 2017. 2.2: 208-218.
13. Alamsyah, D., Mexitalia, M., Margawati, A., Hadisaputro, S., & Setyawan, H. Beberapa faktor risiko gizi kurang dan gizi buruk pada balita 12-59 bulan (studi kasus di Kota Pontianak). Jurnal Epidemiologi Kesehatan Komunitas, 2017. 2.1: 54-62. https://doi.org/10.14710/jekk.v2i1.3994
14. Darwis, R.E., Majid, R., & Ainurafiq. Analisis determinan yang berhubungan dengan kejadian gizi kurang pada balita usia 12-59 bulan di wilayah kerja Puskesmas Benu-Benua Kota Kendari tahun 2017. Jurnal Ilmiah Mahasiswa Kesehatan Masyarakat, 2017. 2.6: 1-14.