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The Relationship Between Environmental Care for Children Aged 2-3 Years and Nutritional Status in Tambaksari District, Surabaya

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ABSTRACT

Background: Nutritional status is a crucial aspect of children's health, as it directly impacts their growth and cognitive development. Adequate nutrition and a healthy environment are vital for optimal physical and cognitive growth in children. The parenting practices of mothers in providing a nurturing environment play a significant role in ensuring children's well-being. ***Objective:*** This study aims to investigate the correlation between environmental care and the nutritional status of children aged 2-3 years at the Pacar Keling Health Center, Tambaksari District, Surabaya. ***Method:*** This study used a cross-sectional method and employed simple random sampling to select participants based on specific research criteria. The sample comprised mothers with children aged 2-3 years attending the Pacar Keling Health Center. Data collection involved distributing questionnaires to the mothers. The chi-square test was performed as a bivariate analysis to find a relationship between variables. ***Result:*** The statistics test obtained a p-value of 0,01 for the child's environmental and children's nutritional status based on weight-for-age and height-for-age, but a p-value of 0,302 based on weight-for-height (p>0,05). ***Conclusion:*** There's a significant relationship between children's environmental care with children's nutritional status based on weight-for-age and height-for-age but not on weight-for-height. The Health Department can promote preventive measures for undernutrition, stunting, and malnutrition, such as handwashing education and improved sanitation. Local health cadres can encourage proper handwashing and sanitation in the community to prevent these issues, especially among young children. Future researchers are encouraged to explore nutrition.

Keywords: children; environmental care; parenting practices; nutritional status.

INTRODUCTION

Nutritional status is a measure of success in achieving children's nutritional needs, which can be assessed by height and weight (Sahid et al., 2021). Nutritional status refers to the condition of health and adequate nutrition that supports optimal growth and development. According to the Indonesian Nutrition Status Survey (SSGI) 2022, the prevalence of malnutrition in East Java was 23.5%, and the prevalence of malnutrition in Surabaya was recorded at 4.8% (923 toddlers)[1]. This result aligns with the data on malnutrition cases recorded at the Pacar Keling Health Center in the Tambaksari District, Surabaya.

Children who receive adequate nutrition and live in a healthy environment will have better physical growth and cognitive abilities [2]. Environmental care for children is important and influences their health. Infections in children were caused by poor environmental hygiene and sanitation. Environmental care for children can be categorized into two types: geological and non-geological. In terms of geological environmental care, factors to consider include proper housing with good drainage, the availability of latrines with septic tanks, and waste disposal locations [3].

The parenting style in environmental care plays a crucial role in maintaining children's health. According to a study by Lestari et al. (2022), young children with poor personal hygiene are 62 times more likely to experience stunting compared to those who maintain good hygiene [4]. Additionally, child health care is one aspect of parenting that can affect children's nutritional status, help prevent diseases, and reduce the occurrence of infections in toddlers [5].

On the other hand, a study by Zalukhu et al. (2022) found no relationship between environmental sanitation and malnutrition in toddlers in Nagari Balingka, IV Koto District, Agam Regency, as 55.8% of respondents had good environmental sanitation [6].

Based on these findings, the various studies on the relationship between environmental care and children's nutritional status serve as a driving factor for the researcher to analyze the relationship between the two specifically in children aged 2-3 years.

METHODS

This study is analytical research with a cross-sectional design. The population of this study consists of all mothers with children aged 2-3 years at the Pacar Keling Health Center, Tambaksari District, Surabaya. The sample in this study includes 106 mothers of toddlers aged 2-3 years, selected using simple random sampling. The research materials consist of medical records and data from a questionnaire survey conducted with the mothers, regarding environmental care for children aged 2-3 years, and the assessment of nutritional status through anthropometry. This assessment was carried out by measuring height and weight, then calculating the Z-Score and comparing it with the WHO standard reference. Data analysis was conducted using both univariate and bivariate analysis. Bivariate analysis was performed using the Chi-Square test.

RESULT AND DISCUSSION

Respondent Characteristics

Based on Table 1, the most common level of education among mothers is high school (44;63,8%), the occupation is as a housewife (44;63,9%), and the number of children is two (30;63,8%), all of them in 26-35 years old age group. According to Table 1 also, the majority of mothers (46 mothers, 65.7%) fall into the "good" category for environmental care for children. For child's nutritional status, the majority of mothers have children with normal nutritional status based on weight-for-age (35;61,4%), height-for-age (39;60,0%), and weight-for-height (47;62,7%) in the age group of mothers aged 26-35 years.

TABLE 1: Respondent Characteristics Based on Mother's Age.

Characteristics of Mother	Age (Mother)				Total N (%)
	17 – 25 N (%)	26 – 35 N (%)	36 – 45 N (%)	46 - 55 N (%)	
Educational Background					
Junior	3 (14,3)	14 (66,7)	4 (19,0)	0 (0,0)	21 (100)
Senior	17 (24,6)	44 (63,8)	7 (10,1)	1 (1,4)	69 (100)
Associate's Degree / Bachelor's Degree	3 (18,8)	10 (62,5)	3 (18,8)	0 (0,0)	16 (100)
Occupation					
Housewife	15 (21,7)	44 (63,8)	9 (13,0)	1 (1,4)	69 (100)
Entrepreneur	7 (25,9)	16 (59,3)	4 (14,8)	0 (0,0)	27 (100)
Civil Servant	1 (10,0)	8 (80,0)	1 (10,0)	0 (0,0)	10 (100
Number of Children					
1 (One)	6 (20,7)	20 (69,0)	3 (10,3)	0 (0,0)	29 (100)
2 (Two)	10 (21,3)	30 (63,8)	6 (12,8)	1 (2,1)	47 (100)
3 (Three)	7 (23,3)	18 (60,0)	5 (16,7)	0 (0,0)	30 (100)
Child's Environmental Care					
Poor	8 (23,5)	22 (61,1)	6 (16,7)	0 (0,0)	36 (100)
Good	15 (21,4)	46 (65,7)	8 (11,4)	1 (1,4)	70 (100)
Child's Nutritional Status (Weight-for-Age)					
Severely Underweight	1 (50,0)	1 (50,0)	0 (0,0)	0 (0,0)	2 (100)
Underweight	8 (20,5)	25 (64,1)	6 (15,4)	0 (0,0)	39 (100)
Normal	13 (22,8)	35 (61,4)	8 (14,0)	1 (1,8)	57 (100)
Risk of Overweight	1 (12,5)	7 (87,5)	0 (0,0	0 (0,0)	8 (100)
Child's Nutritional Status (Height-for-Age)					
Severely Stunted	1 (6,7%)	14 (93,3)	0 (0,0)	0 (0,0)	15 (100)
Stunted	7 (26,9)	15 (57,7)	4 (15,4)	0 (0,0)	26 (100)
Normal	15 (23,1)	39 (60,0)	10 (15,4)	1 (1,5)	65 (100)
Nutritional Status (Weight-for-Height)					
Severely Wasted	3 (33,3)	3 (33,3)	3 (33,3)	0 (0,0)	9 (100)
Wasted	1 (8,3)	8 (66,7)	2 (16,7)	1 (8,3)	12 (100)
Normal	19 (25,3)	47 (62,7)	9 (12,0)	0 (0,0)	75 (100)
Risk of Overweight	0 (0,0)	4 (100)	0 (0,0)	0 (0,0)	4 (100)
Obesity	0 (0,0)	4 (100)	0 (0,0)	0 (0,0)	4 (100)

Based on Table 2, the most common nutritional status among children is in the normal category, with 40 children (70.2%) based on weight-for-age, 40 children (61,5%) based on height-for-age, and 50 children (66,7%) based on weight-for-height in the age group of child aged 2 years old.

TABLE 2: Respondent Characteristics Based on Child's Age.

Characteristics of Children	Age (Child)		Total N (%)
	2 years old N (%)	3 years old N (%)	
Nutritional Status (Weight-for-Age)			
Severely Underweight	2 (100,0)	0 (00,0)	2 (100)
Underweight	17 (43,6)	22 (56,4)	39 (100)
Normal	40 (70,2)	17 (29,8)	57 (100)
Risk of Overweight	7 (87,5)	1 (12,5)	8 (100)
Nutritional Status (Height-for-Age)			
Severely Stunted	9 (60,0)	6 (40,0)	15 (100)
Stunted	17 (65,4)	9 (34,6)	26 (100)
Normal	40 (61,5)	25 (38,5)	65 (100)
Nutritional Status (Weight-for-Height)		-age	
Severely Wasted	5 (55,6)	4 (44,4)	9 (100)
Wasted	5 (41,7)	7 (58,3)	12 (100)
Normal	50 (66,7)	25 (33,3)	75 (100)
Risk of Overweight	3 (75,0)	1 (25,0)	4 (100)
Obesity	3 (75,0)	1 (35,0)	4 (100)

The results of this study indicate that the majority of children have a normal nutritional status (weight-for-age), (height-for-age), and (weight-for-height). Nutritional problems are closely related to various factors, including infectious diseases such as diarrhea, pulmonary tuberculosis, acute respiratory infections (ARI), dengue fever (DF), malaria, and others, which are associated with environmental sanitation factors [7]. Another theory suggests that nutritional problems, especially in toddlers, are due to inadequate food intake and diseases that directly cause nutritional issues in children. This situation arises from improper feeding practices, recurrent infectious diseases, poor hygiene, and caregiving behaviors. Essentially, all of this is caused by factors such as insufficient education and knowledge about child-rearing, the use of unsafe water, an unhealthy environment, low income, and limited access to food. Good nutritional status occurs when the body receives sufficient nutrients, enabling optimal physical growth, brain development, work capacity, and overall health [8].

The results of the study indicate that the majority of environmental care for children performed by mothers falls into the "good" category (66%). Environmental care for children includes maternal hygiene and environmental sanitation. Handwashing habits and sanitation are essential components of a healthy lifestyle that everyone should practice. Efforts to raise children's awareness to prevent the transmission of infectious diseases can be carried out by parents or other family members who understand and implement personal hygiene practices, such as handwashing. Family members should wash their hands when cleaning children, after defecation, before preparing food, before eating, and before feeding children, and parents should remind children to wash their hands before eating [9].

Sanitation can affect health, particularly human waste and infections, specifically related to water systems, drainage, and the disposal of waste and household garbage(10). Environmental cleanliness is closely related to the availability of clean water, latrines, the type of flooring in the house, and the cleanliness of eating utensils in each household. When clean water is available for daily needs, children are at risk of malnutrition. Environmental cleanliness can be seen in the quality of life through clean water, sanitation, toilets, and smoke-free air circulation in indoor spaces. Poor environmental cleanliness makes children under five years old more vulnerable to infectious diseases, which can ultimately affect their nutritional status. The status of environmental health plays a dominant role in providing an environment that supports children's health, growth, and development [11].

Poor hygiene and sanitation will lead to the presence of bacteria that can use the child's body as a breeding and reproductive site, triggering the child to experience environmental enteropathy. Children will also suffer from various diseases, such as diarrhea, pneumonia, and diseases that affect the child's nutrition, including malnutrition, stunting, undernutrition, and even severe malnutrition [2].

The Relationship Between Child's Environmental Care and Nutritional Status (Weight-for-Age)

Table 3 shows that the nutritional status of children (weight-for-age) in the normal weight category includes 51 children (89.5%) whose environmental care provided by mothers is categorized as good.

This indicates that better environmental care for children positively affects their nutritional status (weight-for-age) and weight. The analysis results reveal a significant relationship between environmental care for children and nutritional status (weight-for-age) with a p-value of 0.001 (p<0.05).

A similar study by Arnisa et al. (2022), titled "The Impact of Environmental Sanitation on Nutritional Status of Toddlers," found a p-value of < 0.05. There are two factors influencing nutritional status: direct and indirect factors. Direct factors include the quality and quantity of food consumed, as well as infectious diseases. Indirect factors include environmental sanitation and hygiene [7]. Toddlers are vulnerable to negative impacts on health if they do not receive proper nutrition, correct caregiving, and a healthy and conducive environment [2].

TABLE 3: Bivariate Analysis.

Nutritional Status	Child's Environmental Care		Total N (%)	P-value
	Poor N (%)	Good N (%)		
Weight-for-Age				
Severely Underweight	2 (100)	0 (0,0)	2 (100)	0,001
Underweight	26 (66,7)	13 (33,3)	39 (100)	
Normal	6 (10,5)	51 (89,5)	57 (100)	
Risk of Overweight	2 (25,0)	6 (75,0)	48(100)	
Height-for-Age				
Severely Stunted	13 (86,7)	2 (13,3)	15 (100)	0,001
Stunted	14 (53,8)	12 (46,2)	26 (100)	
Normal	9 (13,8)	56 (86,2)	65 (100)	
Weight-for-Height				
Severely Wated	4 (44,4)	5 (55,6)	9 (100)	0,302
Wasted	6 (50,0)	6 (50,0)	12 (100)	
Normal	22 (29,3)	53 (70,7)	75 (100)	
Risk of Overweight	0 (0,0)	4 (100)	4 (100)	
Obesity	3 (75,0)	1 (25,0)	4 (100)	

The study by Nikmah et al., 2024, showed similar results regarding caregiving patterns, environmental sanitation, and the incidence of underweight in Alahair Village. The results revealed a relationship between environmental sanitation and the incidence of underweight (p<0.05). Early childhood is a vulnerable period for diseases, including underweight. Underweight negatively impacts growth, and intellectual development, and can increase morbidity and mortality rates in toddlers. Factors contributing to underweight in toddlers include environmental sanitation [12]. According to BPS (2017), only 72% of the population has access to proper drinking water sources. This condition affects the occurrence of infections due to poor sanitation. The incidence of diseases such as diarrhea and worm infestations can disrupt the absorption of nutrients from food, leading to weight loss in infants and toddlers. If this persists without adequate food intake, it can result in underweight. Clean water, hygiene, and environmental sanitation play a crucial role in reducing underweight in Indonesia. Environmental sanitation and access to clean water need to be improved to decrease the prevalence of underweight [12].

The Relationship Between Child's Environmental Care and Nutritional Status (Height-for-Age)

Table 3 shows that the nutritional status of children (weight-for-age) in the normal nutritional status category includes 56 children (86.2%) whose environmental care is categorized as good. Therefore, better environmental care for children positively impacts their nutritional status (height-for-age) and stunting status. The analysis results reveal a significant relationship between environmental care for children and nutritional status (height-for-age) with a p-value of 0.001 (p<0.05).

The findings of this study align with research by Rezki et al. (2024), which identified a significant relationship between sanitation, hygiene, and stunting in the Kassi-Kassi Health Center area, Makassar (p<0.05). Stunting, a chronic growth disorder caused by malnutrition, can be triggered by both direct and indirect factors. Direct factors include maternal nutritional status during pregnancy, infections, and toddlers' nutritional intake, while indirect factors involve sanitation and hygiene behaviors, such as handwashing habits, which contribute to stunting(13). Rezki et al., 2024, also found a significant relationship between handwashing practices and stunting (p<0.05). The Indonesian Ministry of Health recommends handwashing with soap at key times to promote daily habits: before eating, preparing food, breastfeeding, feeding toddlers, after using the toilet, and after contact with animals. Toddlers often touch objects that carry germs, and if they then put their hands in their mouths or touch food, bacteria can enter the body, leading to infections like diarrhea.

Handwashing with soap and water effectively removes germs, helping prevent infections that may otherwise divert the body's energy from growth to fighting illness, delaying development [13].

In contrast, Zalukhu et al. (2022) found no relationship between environmental sanitation and stunting (p>0.05). Environmental sanitation includes monitoring physical environmental factors that affect human health and development. Poor sanitation, including inadequate access to clean water, unsanitary latrines, and poor handwashing habits, contributes to infectious diseases like diarrhea and worm infestations. These conditions can disrupt growth and increase child mortality rates [6].

The Relationship Between Child's Environmental Care and Nutritional Status (Weight-for-Height)

Table 3 shows that the nutritional status of children (Weight-for-Height) in the good (normal) category was 53 children (70.7%) with environmental care provided by the mothers categorized as good. The analysis reveals that there is no significant relationship between environmental care and nutritional status (weight-for-height), with a p-value of 0.302 (p>0.05).

This study found no relationship between children's environmental care and the incidence of stunting (p>0.05). However, Triveni et al. (2023) found a significant relationship between hygiene and sanitation and the incidence of wasting in children aged 0-59 months. Wasting, a nutritional issue in children, occurs when weight is disproportionate to height [11]. This condition is influenced by multiple complex factors, including environmental factors such as inadequate sanitation and poor hygiene [14]. Previous research suggests that good nutritional status in preschool children depends on home safety, a healthy environment, adequate prenatal care, and the number of children. However, nutritional status is influenced by the interaction between these factors. Hygiene behavior, such as handwashing with soap (before meals, after handling animals, or after using the toilet), and proper sanitation (use of toilets and boiling water before meals), plays a critical role in maintaining health [11].

While this study found no significant relationship between children's environmental care and nutritional status (TB/BB), other factors like feeding practices and family caregiving styles were found to have a more direct impact. Improper feeding practices can lead to malnutrition. Additionally, maternal nutrition, children's age, balanced feeding practices, and building materials used in homes influence children's nutritional status. For instance, building materials for floors are significantly associated with stunting in children. Although environmental sanitation may not show a direct significant effect, it remains crucial for ensuring optimal health and development, especially during the first 1000 days of life [15].

CONCLUSION

The results of this study show that the majority of children's nutritional status, based on weight-for-age, height-for-age, and weight-for-height, falls within the normal category. Regarding environmental care provided by mothers, most of it was classified as good. Additionally, the study found a significant relationship between environmental care and nutritional status based on weight-for-age and height-for-age in children aged 2-3 years, but there's no significant relationship was found between environmental care and weight-for-height status in this age group.

The Health Department can promote preventive measures for undernutrition, stunting, and malnutrition, such as handwashing education and improved sanitation. Local health cadres can encourage proper handwashing and sanitation in the community to prevent these issues, especially among young children. Future researchers are encouraged to explore nutritional status further using different research designs and instruments.

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