The Effect of Feeding Patterns on the Nutritional Status of Elementary School Children During the COVID-19 Pandemic In Tuban Regency, East Java

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Abstract

Background: The COVID-19 pandemic, which was discovered in December 2019, impacts all aspects of life, such as health, economy, social, culture, education, and community welfare. Increased unemployment, which results in poverty during the pandemic, can affect children's welfare, such as feeding patterns and nutrition, health, environmental sanitation, and child protection. Before the pandemic, nutritional problems in school children were still relatively high in Indonesia, which is likely to worsen during the COVID-19 pandemic. This study aimed to determine the effect of feeding patterns on the nutritional status of elementary school children during the COVID-19 pandemic in Tuban Regency, East Java. **Methods:** The method used is observational analytic with a cross-sectional approach, which uses secondary data, namely reports of weight and height measurements before and during the COVID-19 pandemic, and uses primary data, namely the questionnaire instrument. The sampling technique used is Total Sampling. The statistical test of the study used the Wilcoxon Test and Linear Regression**.** **Results:** From the results of the Wilcoxon statistical test, it was found that p(sig) 0.996 in the trial of differences in feeding patterns before and during the COVID-19 pandemic. Then the results were obtained from a linear regression test with p(sig) 0.000 to determine the effect of feeding patterns on the nutritional status of elementary school children during the COVID-19 pandemic. **Conclusion:** The study results showed no differences in the feeding patterns of elementary school children before and during the COVID-19 pandemic and the influence of feeding patterns on the nutritional status of elementary school children during the COVID-19 pandemic in Tuban Regency, East Java.

Keywords: COVID-19; Feeding Patterns; Nutritional status; Primary school children

1. Introduction

The first case of COVID-19 was discovered in December 2019, which was officials reported in Wuhan, China, as a case of pneumonia of unknown etiology. Then in Indonesia, it first appeared on March 2, 2020, as many as 2 cases, and until now, it is still increasing to millions of cases [1]. As a result of the increasing number of COVID-19 cases, it will impact all aspects of people's lives, such as aspects of health, politics, economy, society, culture, education, and community welfare. According to UNICEF (2020), COVID-19 paralyzes people's work, which increases poverty, affecting children's welfare, such as feeding patterns and nutrition, health, education, environmental sanitation, and child protection[2].

Based on RISKESDAS data (2013), elementary school children's nutritional problems are still relatively high in Indonesia. Before the pandemic onset, half of the 10.9 million child deaths were dominated by malnutrition cases, most of whom resided in developing countries[3]. Then during the pandemic, it is estimated that there will be an increase in the number of acute malnutrition in children worldwide as many as 10 million children [15]. Elementary school children are at risk for nutritional problems related to diet and growth and development. The impact that can be caused if children experience difficulties with malnutrition will be more vulnerable to diseases, such as pneumonia, measles, diarrhea, malaria, and HIV / AIDS to death [4]. At the same time, the impact that can be caused on overweight children will be at risk of suffering from various diseases such as heart disease, atherosclerosis, diabetes mellitus, orthopedic disorders, disorders of mental health, and cognitive function [5].

Elementary school-age children have characteristics that can regulate their eating patterns from information obtained from their environment. It will attract children's interest which will cause food faddism, namely children only consume certain foods they like [6]. School children will experience speedy physical, intellectual, mental, and emotional growth.

Food with balanced nutritional elements is necessary for growth and development and can fulfill the body's needs and activities. Regularly consuming adequate nutrition can help children learn and body fitness for movements to become a quality generation [7].

Nutritional status is caused by a balance between nutritional intake and body needs. Assessment of the nutritional status of children aged 5-18 years in Indonesia based on the Minister of Health of the Republic of Indonesia Number 2 of 2020 using the BMI/U index, which refers to the anthropometric standard of The WHO reference 2007[8]. According to the bar, the assessment results will show the child's growth if it is achieved. In measuring nutritional status, BMI data is needed, which is obtained from the calculation of weight and height measurements which are then adjusted for the age and sex of the child [8].

To obtain optimal child growth, it is necessary to fulfill balanced nutrition [5]. However, due to the COVID-19 pandemic, which impacts economic, educational, and health aspects, it can interfere with the welfare of children, which causes the growth and development of elementary school children to be hampered. Therefore, further research is needed on the effect of feeding patterns on the nutritional status of elementary school children during the COVID-19 pandemic in Tuban Regency, East Java.

2. Method

This study uses an observational analytic study with a cross-sectional approach that uses secondary and primary data. Secondary data was obtained from reports on weight and height measurements before the pandemic, namely in July-December 2019 and during the pandemic in July-December 2021. Then, primary data was obtained from filling out questionnaires conducted by the respondent's parents. The research was conducted in two schools, namely SDIT Al-Uswah Tuban and MIN 1 Tuban. The sampling technique used was total sampling. The research respondents obtained as many as 196 respondents consisting of elementary school students in grades 3 and 4 who live in Tuban Regency, East Java.

2. Result

Data collection in this study was carried out in two schools, namely SDIT Al-Uswah Tuban and MIN 1 Tuban, with 196 respondents, consisting of grade 3 and 4 elementary school students residing in Tuban Regency, East Java.

Table 1 characteristics of elementary school children

Variable	Category	f	%
Age During Pandemic	8 years	60	30,6
	9 years	100	51,0
	10 years	36	18,4
Total		196	100,0
Gender	Male	81	41,3
	Female	115	58,7
Total		196	100,0
Consumption of Fast Food	1-2 times/week	118	60,2
	3-4 times/week	40	20,4
	Every day	5	2,6
	Never	33	16,8
Total		196	100,0

Based on table 1, it is known that the age characteristics of the respondents during the pandemic showed that most (51%) of respondents were 9 years old, 30.6% were 8 years old, and 18.4% were 10 years old. The gender of the

respondents in this study (58.7%) was primarily female, while 41.3% were male. In this study, data were collected regarding the frequency of consuming fast food, namely 1-2 times/week (60.2%) and a small portion (2.6%) consuming fast food every day.

Table 2 Characteristics of Respondents' Mothers

Variable	Category	f	%
Education	Primary school	28	14,3
	Middle school	25	12,8
	High School	49	25,0
	Diploma	32	16,3
	Bachelor	62	31,6
	No school	0	00,0
Total		196	100,0
Profession	Not working	120	61,2
	Entrepreneur	18	9,2
	Private employees	23	11,7
	Government employees	17	8,7
	Teacher	11	5,6
	Farmer	1	0,5
	etc	6	3,1
Total		196	100,0
Income	< 2.532.234,77	25	12,8
	≥ 2.532.234,77	51	26,0
	No income	120	61,2
Total		196	100,0

Based on table 2, on the characteristics of the respondents' mothers, it is known that most of the mothers' last education was undergraduate, namely 62 respondents with a percentage of 31.6%. Then the characteristics of work are dominated by mothers who do not work or as housewives whose data is the same as the characteristics of mothers' income, which is 120 respondents with a percentage of 61.2%.

Table 3 Differences in Feeding Patterns for Elementary School Children Before and During the COVID-19 Pandemic

Based on table 3, it can be seen that the correct feeding patterns were carried out during the pandemic (51.33%). In contrast, incorrect feeding patterns were mainly carried out before the pandemic, which was 50.51%.

Feeding Patterns	before the pandemic		during a pandemic		p
	n	%	n	%	
Correct	97	49,49	101	51,53	0,996
Incorrect	99	50,51	95	49,47	
Total	196	100,0	196	100,0	

The p(sig) value obtained from the Wilcoxon test results is 0.996. These results state that p(sig) > 0.05, then H0 is accepted => H1 is rejected, which means that there is no difference in feeding patterns before and during the COVID-19 pandemic in elementary school children in Tuban Regency, East Java.

Table 4 The Effect of Feeding Patterns on the Nutritional Status of Elementary School Children During the COVID-19 Pandemic

Based on table 4, it can be seen that the pattern of feeding given by parents during the pandemic is the correct feeding pattern by 51.53% and the incorrect feeding pattern by 48.47%. The table also illustrates that children with

improper feeding patterns are primarily obese, namely 47 respondents with a.98%. In contrast, the correct feeding pattern is dominated by elementary school children with normal nutrition (41, 33%).

Feeding Patterns	Nutritional Status										Total		p
	Severely thinness		Thinness		Normal		Overweight		Obese				
	n	%	n	%	n	%	n	%	n	%	n	%	
Correct	1	0,51	2	1,02	81	41,33	14	7,14	3	1,53	101	51,53	0,00
Incorrect	4	2,04	7	3,57	19	9,69	18	9,19	47	23,98	95	48,47	
Total	5	2,55	9	4,59	100	51,02	32	16,33	50	25,51	196	100,0	

The p(sig) value obtained from the linear regression results is 0.00. These results state that p(sig) <0.05, then H0 is rejected => H1 is accepted, which means that there is an effect of feeding patterns on the nutritional status of elementary school children during the COVID-19 pandemic in Tuban Regency, East Java.

3. Discussion

In this study, the Wilcoxon test was carried out on the feeding pattern to determine the different feeding patterns before and during the pandemic. From the results of the other tests carried out, it was found that there were no differences in feeding patterns before and during the COVID-19 pandemic in elementary school children in Tuban Regency, East Java. These results are not in line with the research conducted by Nurdin (2021), which showed the effects of an average change in children's eating patterns before and during the pandemic [9]. This relates to children's eating habits and parents' feeding patterns every day to fulfill their daily nutrition.

Elementary school children with incorrect feeding patterns are dominated by elementary school children with obese nutritional status; namely, there are 47 respondents with a percentage of 23.08%, while elementary school children with proper feeding patterns are dominated by elementary school children with normal nutritional status as much as 81 respondents with a percentage of 41.33%. After the linear regression test was carried out, the results showed an effect of feeding patterns during the COVID-19 pandemic on the nutritional status of elementary school children in Tuban Regency, East Java. These results are in line with Nurdin's (2021) research that there is a significant relationship between diet during the pandemic and the nutritional status of respondents [9]. But there are contradictory results in Hasrul's research (2020), which states that feeding patterns do not affect children's nutritional status [10].

This can be influenced because all activities, such as education, work are recommended at home during a pandemic. So that parents can directly monitor the child's feeding pattern. Other factors can also be seen from the data on the characteristics of fast food consumption during a pandemic, which was dominated by only 1-2 times per week, as many as 118 respondents with a percentage of 60.2%, while 33 respondents who had never consumed fast food with a rate of 16.8%. This is in line with research conducted by Pamungkas (2017) that there is a relationship between snacking habits or consumption of fast food with children's nutritional status [11]. However, according to Candra's research (2013), it was stated that there was no significant change in nutritional status before and after the intervention of providing snacks for approximately three months. Still, there was an increase in the Z-Score of the respondents [12].

Several factors from parents influence feeding patterns, one of which is parental education. Parental education is related to family health awareness, especially regarding the food consumed according to the child's body needs [9]. This statement is by research conducted by Arlovi (2016) and Adawiah (2019), which showed a significant relationship between a mother's education and children's nutritional status [13]. In this study, the educational characteristics of mothers were dominated at

the undergraduate level by 35.6%. Mothers with high education have a higher level of awareness than mothers with low education on the nutrients contained in the food intake consumed by children [14].

The weakness of this research is collecting data on the feeding pattern of respondents. The researcher uses a re-call questionnaire which has the risk of the respondent forgetting to answer the questions on the questionnaire. The researcher does not ask in detail the healthy weight given to children so that it can be seen that the nutrition provided to children is appropriate, according to the needs of their age.

4. Conclusion

The conclusion of this study is the influence of feeding patterns on the nutritional status of elementary school children during the COVID-19 pandemic in Tuban Regency, East Java. However, there is no difference in the feeding patterns of elementary school children before and during the COVID-19 pandemic in Tuban Regency, East Java. Some factors influence fast food consumption, mothers' education and knowledge regarding nutrition, and income from these results.

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