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THE RELATIONSHIP BETWEEN FOOD SECURITY AND WASTING INCIDENTS IN TODDLERS

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Abstract

Wasting is still a major nutritional problem in Indonesia with a prevalence of 8.5%, exceeding the WHO threshold of 5%. Household food security plays an important role in preventing wasting, especially in areas with high economic vulnerability such as Cipicung and Sukatani Villages. This study aims to analyze the relationship between household food security and the incidence of wasting in toddlers. This study was an observational analytical study with a cross-sectional design involving 110 toddlers aged 6–59 months. Data were collected through anthropometric measurements and the Food Insecurity Experience Scale (FIES) questionnaire. The results showed that 93.6% of families were in the category of severe food security, and as many as 13.6% of toddlers experienced wasting. Bivariate analysis using gamma correlation test showed a significant relationship between food security and wasting with a value of p = 0.014. Poor food security increases the risk of wasting due to limited access to nutritious food. The conclusion of this study is that household food security has a significant relationship with the incidence of wasting in toddlers, so there is a need for interventions that focus on improving food security at the community level.

Keywords : Toddlers, Food Security, Wasting

Introduction

One of the many nutritional problems in Indonesia that is still a challenge is wasting. Wasting is a condition of acute weight loss in children under five. The prevalence of wasting was recorded at 8.5%, this figure has increased compared to the previous year (1). Based on SSGI wasting has decreased from 10.2% in 2018 to 7.1% in 2021, but based on the data, it has not reached the national target of 7% (2). This figure represents an increase compared to the previous year and exceeds the threshold set by the World Health Organization of 5% (3). The phenomenon of wasting not only represents individual health, but also illustrates the difficulty of the food system and food security at the household level (UNICEF, 2023).

Food security has a crucial role in the growth of a child who is nutritionally balanced and in anticipating the occurrence of wasting conditions. The condition of food security in households contributes greatly to poverty which results in wasting in children under five. Research shows that access to adequate and nutritious food has a direct impact on children's development and health levels (5). In addition, other studies revealed that households that experience food insecurity are more likely to experience wasting compared to households that have good food security (6). Lack of access to nutritious food makes children more susceptible to disease and lacks the energy and nutrients needed for optimal growth (7). Therefore, the fulfillment of sustainable and permanent food is a strategic step in preventing wasting in children (8).

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Cipicung and Sukatani villages in Purwakarta are rural areas that have problems with food security. Lack of agricultural infrastructure, limited market access, and changes in local food prices have an impact on the availability and accessibility of nutritious food for local communities (9). Fragile food security conditions increase the risk of wasting in children, as they are more at risk of energy deprivation leading to acute weight loss (10). Based on these problems, it is necessary to make many efforts to analyze the relationship between food security and wasting in toddlers in Cipicung and Sukatani Villages. The government and the community need to develop community-based food security programs to improve food access and improve the welfare of families in food-insecure conditions (11).

Method

This study is an analytical observational study with *a cross-sectional* design. The research was carried out in Cipicung Village and Sukatani Village, Purwakarta Regency, from September to December 2023. The study subjects consisted of 110 toddlers from the two villages with the following inclusion criteria: (1) toddlers aged 5–59 months, and (2) have height or height according to age with a Z-Score of <-2SD. Subjects are excluded from the study if they have congenital or other chronic diseases that may affect growth.

The data collected in this study included the characteristics of the respondents, such as gender, nutritional status of toddlers, parents' occupation, family income, and parents' last education. Data collection of respondent characteristics was carried out using a questionnaire referring to the 2021 SSGI questionnaire. Furthermore, data on the nutritional status of toddlers was taken by anthropometric measurements which included body weight (BB), height or body height (TB/PB).

Nutritional status assessment was carried out by calculating body weight and height, which were then analyzed using Z-Score through the WHO Anthro application. Meanwhile, family food security data was collected using a questionnaire *Food Insecurity Experience Scale* (FIES) is a measurement tool developed by *Food and Agriculture Organization* (FAO) to assess the level of food insecurity based on the experience of individuals or households accessing food. The questionnaire consists of eight questions that reflect different levels of difficulty in obtaining adequate and nutritious food (12). The data obtained were analyzed univariate and bivariate using gamma correlation tests through IBM SPSS Statistics software version 26.0.

Result

Univariate analysis was conducted to determine the frequency and percentage distribution of respondent characteristics consisting of gender, paternal education, maternal education, paternal occupation, maternal occupation, and family income can be seen in Table 3.1

Characteristics of respondents	n	%
Gender of Toddlers		
Man	45	59,1
Woman	65	40,9
Toddler Age		
6-11 Months	1	0,9
12-36 Months	52	47,3
37-59 Months	57	51,8
Nutritional status of news (BB/TB)		
Malnutrition	3	2,7

Malnutrition	12	10,9
Normal	93	84,5
At Risk of Overnutrition	2	1,8
More Nutrition	0	0
Obesity	0	0
Father's education		
No/not in school	2	1,8
Not finished elementary school	17	15,5
Finishing Elementary School	54	49,1
Graduating from Junior High School/MTs	19	17,3
Graduated from high school/Islamic high school	15	13,6
End of DI/DII/DIII	2	1,8
Graduated from S1/DIV	1	0,9
Mother's education		
No/not in school	1	0,9
Not finished elementary school	21	19,1
Finishing Elementary School	37	33,6
Graduating from Junior High School/MTs	37	33,6
Graduated from high school/Islamic high school	12	10,9
End of DI/DII/DIII	1	0,9
Graduated from S1/DIV	1	0,9
Father's work		
Laborer	87	79,1
Farmer	3	2,7
Self employed	13	11,8
Merchant	1	0,9
Fisherman	1	0,9
Private Employees	4	3,6
TNI/PNS/POLRI	1	0,9
Mother's work		
Housewives	104	94,5
Laborer	5	4,5
Self employed	1	0,9
Family income		
Low income, < UMR	98	89,1
High income, ≥ UMR	12	10,9
Total	110	100

According to the Weight by Height (BB/TB) indicator, most of the toddlers (84.5%) have normal nutritional status. However, 11.8% are classified as undernourished, 1.8% are malnourished, and 1.8% are in the overnutrition risk category. No cases of obesity were found in this study population. The BB/TB indicator has an important role in assessing acute nutritional status because it describes the balance between weight and height without being influenced by age. An imbalance between weight and height can indicate wasting (thinness) due to lack of energy or overweight due to excess energy.

The majority of respondents' fathers in this study had an education level at the elementary school (SD) level, with a percentage of 49.1%. The next level of education is junior high school/MTs, which

occupies the second position with a percentage of 17.3%. On the other hand, only 0.9% of respondents' fathers have education up to college (S1/DIV). A similar pattern was seen in the respondents' mothers, where most of them only completed their education up to elementary and junior high school/MTs, at 33.6% each. This data shows that the level of education of parents in the respondent group tends to be low.

Low levels of education, especially in mothers, have a significant impact on children's nutritional status. Research conducted by Lubis and Boy (2021) shows that parental education, especially mothers, plays an important role in understanding and implementing nutritional behaviors that support children's growth and development. Mothers with low levels of education tend to have limitations in nutritional knowledge, which has the potential to affect the nutritional status of toddlers.

In terms of employment, most of the respondents' fathers work as laborers with a percentage of 79.1%. The next type of job is self-employed with a percentage of 11.8%. Few fathers work as private employees or in other formal sectors. Meanwhile, the majority of respondent mothers, amounting to 94.5%, are housewives, with only a small percentage working to generate income. This condition reflects that the family's economic structure depends on one main source of income, namely the father.

The limitations in these types of jobs are in line with family income data, where most of the respondent families, namely 89.1%, have an income that is below the Regional Minimum Wage (UMR). This situation indicates that the majority of families fall into the low economic category, which impacts access to nutritious food, health services, and education. Research conducted by Hidayati (2023) found that family income has a significant relationship with the nutritional status of toddlers, where families with low incomes are more prone to experiencing nutritional problems.

In general, the characteristics of the respondents in this study illustrate the fundamental challenges in efforts to improve the nutritional status of children. The low level of parental education, the dominance of informal work, and the majority of family income below the UMR are important factors that need to be considered in the planning of nutrition intervention programs and public health policies.

Overview of family food security

Family food security was measured using the Food Insecurity Experience Scale (FIES) questionnaire based on food access experience in the past 12 months. The scoring score was obtained from the number of "Yes" answers on eight questions, with a score of 1 for "Yes" and 0 for "No".

A score of 0–3 indicates a safe condition, namely stable access to food. Scores of 4–6 indicate moderate disorders, in the form of decreased food quality or quantity. Scores of 7–8 reflect severe disorders, namely hunger conditions due to lack of food. The overview of family food security in this study is presented in Table 4.3 below.

Table 3.1 Overview of family food security

Food Security	n	%
Heavy food security	103	93,6
Moderate food security	1	0,9
Food Resistant	6	5,5
Total	110	100

The Relationship between Food Security and Wasting

Food security has a significant influence on wasting conditions in individuals. When food security decreases, the likelihood of wasting increases due to limited access to nutritious food. The relationship between food security levels and wasting is presented in Table 3.2.

Table 3.2 Relationship between Food Security and wasting

Food Security	Nutritional Status BB/TB (n(%))				N total	p-value	r
	Gizi Buruk	Undernutrition	Normal	At Risk of Overnutrition			
Heavy food security	2 (1,9)	13 (12,6)	86(83,5)	2 (1,9)	103 (100)	0,014*	1,000
Moderate food security	0 (0)	0 (0)	1 (100)	0 (0)	1 (100)		
Food Resistant	0 (0)	0 (0)	6 (100)	0 (0)	6 (100)		

Discussion

Based on the results of the analysis in Table 3.2, it was found that the majority of children from households with severe food security had normal nutritional status (83.5%), but there was also a proportion of children with undernutrition (12.6%) and malnutrition (1.9%). In contrast, children from households with moderate food security and food resistance were all in the normal nutrition category. Statistical tests showed a significant relationship between food security and children's wasting status ($p = 0.014$), with a correlation coefficient r = 1,000. However, this very high correlation value needs to be interpreted carefully considering that the number of samples in the medium food security and food resistance categories is very small, so it may affect the validity of the results.

These results are in line with findings from various studies in the past decade that show that household food security plays an important role in determining children's nutritional status. Food security indicators such as poverty rates, food expenditure, and energy-protein consumption are significantly related to the prevalence of wasting in toddlers (13).

Household food security and parenting patterns are related to poor nutritional status (wasting) in children aged 6-12 years (14). In addition, families who are not food insecure have a 4.189 times higher risk of experiencing a double nutritional burden, including wasting in children (15). Household food security has an important role in determining the nutritional status of children. For example, a study conducted in North Lombok found a significant relationship between village food security and the incidence of stunting in children aged 24–59 months ($p < 0.001$). With an odds ratio (OR) of 0.086–0.225, the results of the study show that poor food security conditions can significantly increase the risk of stunting (16).

Research conducted by Muslihah et al. in Madura found that children aged 12–23 months who came from households with low food security had a higher prevalence of wasting than children aged 6–11 months. The study also shows that 65.3% of households in the region are in the food insecure category. The high proportion of households that are food insecure shows that there are serious problems in meeting children's nutritional needs. Poor food security can have a direct impact on insufficient energy and protein intake, thus risking wasting (17).

According to ayuningtyas et al., it was identified that food security has a significant relationship with the nutritional status of toddlers, including wasting ($p < 0.05$). In addition, this study reveals a striking geographical and socioeconomic gap in the prevalence of child malnutrition in Indonesia. Poor food security can limit access to nutritious food, increasing the risk of malnutrition in toddlers(18).

Conclusion

Household food security has been shown to have a significant relationship with children's nutritional status. Children from households with severe food security mostly have normal nutritional status, but there are also those who experience malnutrition and malnutrition. Statistical analysis shows a clear correlation between food security and wasting, with food security having more effect on linear growth than wasting. Therefore, increasing access to food and improving consumption patterns is very important in an effort to improve children's nutritional status optimally.

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