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Original Research Paper

The Relationship Between Feeding Patterns and Stunting in Toddlers Aged 24-59 Months in the Working Area of the Gisting Community Health Center, Tanggamus Regency, Lampung

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Abstract

Background: Feeding patterns significantly influence stunting. Eating habits in children affect growth and development since food provides essential nutrients, vitamins, and minerals. **Objective:** To analyze the relationship between feeding patterns and stunting in toddlers in the Working Area of the Gisting Community Health Center, Tanggamus Regency, Lampung. **Method:** This was an analytical study with a cross-sectional design. Cluster random sampling was used, involving 82 mothers of toddlers as respondents. Data were collected using questionnaires and interviews. Feeding patterns were measured with the Child Feeding Questionnaire, while consumption patterns were assessed through a 24-hour recall. Stunting was identified using anthropometric measurements based on height-for-age and converted into z-scores. **Results:** Most toddlers had inappropriate feeding patterns (53.7%), while the majority were not stunted (62.2%). The chi-square test showed a significant relationship with $p = 0.000$. **Conclusion:** There is a significant association between feeding patterns and stunting in toddlers aged 24–59 months. Mothers should fulfill children's nutritional needs by applying balanced and varied diets according to age requirements.

Keywords: *Toddlers, Feeding patterns, Stunting.*

Introduction

Stunting is chronic malnutrition due to insufficient nutrient intake in the past, which disrupts future physical and cognitive development. Stunting is characterized by a height-for-age (H/A) z-score less than -2 Standard Deviation (SD)[1]. Other impacts of stunting in toddlers include inhibited intelligence, increased vulnerability to disease, and long-term effects that can hinder economic growth, increase poverty, and widen inequality[2].

Stunting is a global problem, not only in Indonesia. The prevalence rate of stunted toddlers worldwide tends to increase. According to the World Health Organization (WHO), in 2018 there were 149 million stunted toddlers, or 21.9% of the total population. This figure decreased to 144 million, or 21.3%, in 2019. In 2020, the figure increased to 22%, or 149.2 million stunted toddlers[3]. Based on the Indonesian Nutrition Status Survey (SSGI), the prevalence of stunting cases decreased from 24.4% in 2021 to 21.6% in 2022. The prevalence of stunting cases according to the Indonesian Nutrition Status Survey (SSGI) in Tanggamus Regency in 2022 was 20.4%, then in 2023 the prevalence of stunting decreased to 17.1%. The prevalence of stunting in the Working Area of the Gisting Community Health Center is 5.04%. Stunting needs more attention despite experiencing a decline.

Therefore, the government targets stunting to decrease to 14% by 2024[4].

Stunting is influenced by direct factors such as low nutritional intake and health, as well as indirect factors such as income, economic disparity, food systems, and urbanization[5]. Stunting in toddlers is caused by inadequate nutritional intake, which depends on parental parenting patterns[6]. Nutritional factors in food are related to stunting. The quality and quantity of children's nutritional intake need to be considered by mothers, as they are often deficient in the nutrients needed to support growth[7]. This shows that good nutritional intake needs to be supported by the mother's ability in parenting, especially in feeding practices, because eating patterns play a very important role in children's growth[8].

Eating patterns can describe a person's habits in choosing food to meet nutritional needs, including frequency, portion, and type of food[9]. One of the determining factors for stunting is the activity of feeding patterns. The growth and development of toddlers depend on eating patterns, because food contains many nutrients for toddler growth and development. Poorly implemented eating patterns in children result in growth disorders, the body will lose weight, lose concentration, malnutrition, and even become stunted. Mothers of toddlers must strive to provide appropriate food to support children's health and development[10].

Toddler eating patterns greatly influence growth, because food contains important nutrients that support children's health and intelligence[11]. In Amanda et al.'s research at the Botania Community Health Center in Batam City, it was shown that there is a relationship between feeding patterns and the incidence of stunting in toddlers[12]. In Putri et al.'s research in the Working Area of the Gedongan Community Health Center, Mojokerto City, it was shown that there is a relationship between feeding patterns and the incidence of stunting. Some children still do not apply appropriate eating patterns such as only consuming rice, tofu, and vegetable soup. Children who are not given varied and balanced food are at risk of stunting. In addition, the frequency and quantity of food given to children that are not appropriate for their age result in less than optimal nutritional intake[13].

Based on a preliminary survey conducted through interviews, it was found that 65% of mothers of toddlers aged 24-59 months had inappropriate feeding patterns. Data showed that some toddlers tended to only consume rice, side dishes, and milk. Some toddlers rarely eat on time and quite often consume snacks such as wafers, chiki, and crackers.

This study aims to determine the relationship between feeding patterns and stunting in toddlers in the Working Area of the Gisting Community Health Center, Tanggamus Regency, Lampung. With a deeper understanding of the factors influencing stunting, this research is expected to make a significant contribution to stunting prevention efforts.

Materials and Methods

Study Design

This type of research is an analytical study with an observational approach, namely collecting data on independent variables (feeding patterns) and dependent variables (stunting) simultaneously.

Sample

The sample in this study was 82 mothers of toddlers in the Working Area of the Gisting Community Health Center. This sample size was considered adequate to represent the target population and to meet the study’s analytical requirements.

Data Collection Techniques

The sampling technique used was cluster random sampling. Inclusion criteria applied to obtain respondents were mothers who have toddlers aged 24-59 months registered in the

Working Area of the Gisting Community Health Center and willing to be research subjects by filling out an informed consent statement. Exclusion criteria applied were mothers of toddlers who do not have permanent residence and who were incomplete in filling out the questionnaire.

Feeding patterns used the Child Feeding Questionnaire consisting of 15 statements in the form of a Likert scale questionnaire, namely five alternative answers including Very Often (VO), Often (O), Quite Often (QO), Rarely (R), and Never (N). The Child Feeding Questionnaire assesses mothers' feeding patterns towards toddlers including types of food, amount of food, and meal schedules. This questionnaire has been declared valid and reliable for assessing feeding patterns with Cronbach's alpha 0.840. Feeding patterns will be assessed using a Likert scale, then the data is processed with Method of Successive Interval (MSI) analysis. The feeding pattern category is interpreted as inappropriate with a median value <50.32 and appropriate ≥50.32. In addition, interviews were also conducted using a 3x24-hour recall form to determine the description of toddler consumption patterns. The category of toddler food intake is interpreted as inadequate <80% RDA and adequate ≥80% RDA.

Meanwhile, for stunting, data collection was carried out by measuring the height of toddlers using a stadiometer. Stunting is categorized based on the results of calculating height-for-age (H/A). Stunting is categorized into two, namely stunting if the z-score value <-2 SD and not stunting if the z-score value ≥ -2 SD.

Data Analysis Techniques

Data analysis in this study used SPSS for Windows version 22. Data analysis in this study was univariate analysis for an overview of frequency distribution and percentage in variables. Bivariate analysis used the chi-square test to determine the relationship between feeding patterns and stunting

Ethical Consideration

This research has received ethical approval from the Health Research Ethics Commission (KEPK) of the Faculty of Health Sciences, Universitas Muhammadiyah Surakarta with Number 634/KEPK-FIK/XI/2024, and all respondents have signed informed consent.

Result

Respondents in this study consisted of 82 mothers of toddlers in the working area of the Gisting Community Health Center. The characteristics of respondents can be seen in Table 1.

Based on Table 1, it can be seen that out of 82 mothers of toddlers in the Working Area of the Gisting Community Health Center, the majority of mothers of toddlers in this study work as housewives (93.9%), the majority of respondents with the latest education were high school graduates (59.8%), and the majority of family income was below the minimum wage (79.3%). In addition, based on data regarding toddler samples, the majority of toddlers in this study were aged 37-59 months (64.6%), the majority were female (53.7%), and the majority received exclusive breastfeeding (96.3%). Regarding feeding patterns, the majority of toddler samples in this study had inappropriate feeding patterns (53.7%). For toddler energy intake obtained from 3x24-hour recall, the results showed inadequate energy intake at 50.0%, and 62.2% of toddlers were not stunting.

Based on Table 2, it can be seen that there were 44 respondents with inappropriate eating patterns, where out of these 44 respondents, 16.1% experienced stunting and 27.9% did not experience stunting. In addition, there were 38 respondents with appropriate eating patterns, where out of these 38 respondents, 13.9% experienced stunting and 24.1% did not

experience stunting. Based on the results of the chi-square statistical test, a value of p = 0.000 (p < 0.05) was obtained, which means there is a relationship between feeding patterns and stunting in toddlers aged 24-59 months in the Working Area of the Gisting Community Health Center, Tanggamus Regency, Lampung.

Table 1. Respondent Characteristics

Variable	Frequency (n=82)	Percentage (%)
Mother's Occupation		
Housewife	77	93.9
Civil Servant (PNS)	1	1.2
Entrepreneur	4	4.9
Mother's Education		
Elementary School (SD)	7	8.5
Junior High (SMP)	19	23.2
Senior High (SMA)	49	59.8
University	7	8.5
Family Income		
<Minimum Wage (UMR)	65	79.3
≥Minimum Wage (UMR)	17	20.7
Toddler Age		
24-36 Months	29	35.4
37-59 Months	53	64.6
Toddler Gender		
Male	38	46.3
Female	44	53.7
History of Exclusive Breastfeeding		
No	3	3.7
Yes	79	96.3
Feeding Patterns		
Inappropriate	44	53.7
Appropriate	38	46.3
Toddler Energy Intake		
Inadequate	41	50.0
Adequate	41	50.0
Stunting		
Stunting	30	37.8
Not Stunting	52	62.2

Source: *Primary data*

Table 2. Distribution of Stunting Incidence based on Feeding Patterns

Feeding Patterns	Stunting Incidence		Total	p-value
	Stunting	Not Stunting		
Inappropriate	24	20	44	0.000
	(16.1%)	(27.9%)	(53.7%)	
Appropriate	6	32	38	
	(13.9%)	(24.1%)	(46.3%)	

Source*: Primary data*

Discussion

Based on the research results, it can be concluded that there were 44 respondents with inappropriate eating patterns, where out of these 44 respondents, 16.1% experienced stunting and 27.9% did not experience stunting. In addition, there were 38 respondents with appropriate eating patterns, where out of these 38 respondents, 13.9% experienced stunting and 24.1% did not experience stunting. Based on the results of statistical analysis using chi-square, a value of p = 0.000 (p < 0.05) was obtained. This can be concluded that there is a significant relationship between feeding patterns and stunting in toddlers aged 24-59 months in the Working Area of the Gisting Community Health Center, Tanggamus Regency, Lampung.

The results of this study are in line with Diyani et al.'s research which also found a relationship between feeding patterns and the incidence of stunting in toddlers. Mothers who pay attention to feeding patterns in terms of quality and quantity will provide optimal nutrition to support children's physical growth and intelligence[14].

In Syafei et al.'s research, it was mentioned that there is a significant relationship between feeding parenting patterns and the incidence of stunting. Poor eating patterns due to economic limitations and lack of understanding about nutrition can increase the risk of stunting. Many mothers of toddlers lack understanding of appropriate feeding, thus allowing children to refuse food according to the predetermined portion and habituating them to snacks and sweet drinks[15].

The quality of food ingredients that are not well processed by mothers will affect eating patterns, causing stunting. Therefore, the cooking time process must be considered so as not to change the nutritional content in food. A history of poor eating patterns in toddlers has a greater chance of experiencing stunting compared to a history of good eating patterns. This is because incorrect eating patterns can lead to stunting[16].

Appropriate feeding patterns are patterns that are appropriate to the type, amount, and schedule of the child's meals. Mother's knowledge and skills are the key to success related to fulfilling children's nutrition in

preparing food by paying attention to nutritional requirements[17].

In the indicator of food consumption types given to toddlers by mothers, it was considered inappropriate because some mothers provided less varied food. Some toddlers consumed the same type of food from morning to night menus, and some toddlers consumed incomplete food such as rice and side dishes only or rice and vegetables. Varied and nutritious types of food are very important for toddlers, because they are a nutritionally vulnerable group and need intake that suits their body's needs and digestive capacity[7].

In the indicator of the amount of food consumption given to toddlers by mothers, it was considered inappropriate because mothers provided amounts that did not suit the toddlers' needs. Based on the results of 3x24-hour recall, the results of toddler energy intake were categorized as inadequate with a percentage of 50%.

Toddlers need energy as a macronutrient. In Rohmania et al.'s research, it was mentioned that toddlers with inadequate energy intake have a 9.892 times higher risk of stunting compared to toddlers with adequate energy intake[18].

Energy intake that is less than the required energy adequacy number will cause the body to use energy reserves stored in muscles. If intake deficiency occurs over a long period, it will impact weight loss and nutritional deficiencies. The body will experience nutrient deficiencies, tissue damage, and lead to stunting. In addition, stunted toddlers tend to have lower development compared to children with normal nutritional status[19].

In the indicator of meal schedules for toddlers given by mothers, it was considered appropriate. Mothers applied meal schedules by providing breakfast, lunch, dinner, and snacks.

Mother's awareness in fulfilling good nutrition in children has an important role in determining food quality[20]. Stunting can be prevented by increasing consumption of nutritious food from the surrounding area[21]. Mothers need to increase toddler food intake by applying three meals a day, two snacks while paying attention to the nutrients in the food chosen and must be guided by balanced nutrition. Balanced nutrition is daily food intake that is diverse and contains nutrients for energy, building substances, and regulating substances[22,23]. Food given to toddlers must be appropriate to the type, amount, and nutritional content needed, which depends on age, gender, child's activity, weight, and height[24].

Conclusion

The majority of toddler feeding patterns were inappropriate (53.7%) and the majority of toddlers were not stunting (62.2%). Based on the analysis results, it shows that there is a significant relationship between feeding patterns and stunting in toddlers aged 24-59 months in the Working Area of the Gisting Community Health Center, Tanggamus Regency, Lampung.

Recommendations for mothers to pay attention to fulfilling nutrition by paying attention to the principles of balanced and varied nutrition according to the needs of children of the same age.

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