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ORIGINAL ARTICLE

Characteristics of stunted toddlers in Medan Belawan

Rifka Febrianti[1], Renita Br Tarigan[1], Riska Gulo[1], Marlinang Isabella Silalahi[2]*, Pahala Maringan Jubel Simangunsong[2], Putri Yunita Pane[2]

ABSTRACT

This study aimed to characterize stunting among children under five years of age in Medan Belawan, North Sumatra, Indonesia, a sub-district with a high prevalence of this public health challenge. Employing a quantitative descriptive design, data were retrospectively collected from records of 40 stunted toddlers at the Belawan Community Health Center in 2024. The analysis examined maternal and parental characteristics, as well as the demographic and anthropometric profiles of the toddlers, including gender, age, weight, height, and nutritional status. The results indicated that the demographic profile was predominantly composed of mothers with lower educational attainment, most having completed only junior or senior high school. Parental occupations were mainly homemakers and fishermen, reflecting the local socioeconomic context. Stunting was more common among male toddlers (57.5%) and those in the older age group (2.6–5 years), who accounted for 70% of the sample. Anthropometric measurements confirmed the severity of stunting, with 55% of toddlers classified as severely stunted and a significant proportion identified as underweight or severely underweight. Despite the high prevalence of stunting, the majority of toddlers were classified as well-nourished based on weight-for-height indices, suggesting that chronic growth failure rather than acute malnutrition constitutes the primary nutritional concern. These findings underscore the multifactorial and complex nature of stunting in this vulnerable population, emphasizing the roles of socioeconomic and environmental determinants beyond mere caloric deficiency.

Keywords: stunting, toddler, malnutrition, child health

Introduction

Stunting is a manifestation of growth failure in children under five years of age. It impairs not only physical growth but also cognitive development, which can significantly affect academic performance and subsequently reduce productivity and creativity in adulthood.[1] According to the World Health Organization (WHO), stunting represents one of the most significant barriers to human development, affecting approximately 162 million children under five years worldwide. A child is classified as stunted when their height-for-age is more than two standard deviations below the WHO Child Growth Standards median.[2]

The etiology of stunting is multifactorial, including inadequate maternal nutrition during pregnancy, short maternal stature, and suboptimal caregiving practices, particularly related to child feeding.[3,4] Children affected by stunting are more susceptible to degenerative diseases and demonstrate diminished intellectual capacity.[5,6] UNICEF reports that one in three children globally experience stunting, with the majority (114 million) residing in rural areas. This condition adversely affects cognitive development, compromises

Affiliation
[1]Undergraduate Program in Public Health, Universitas Prima Indonesia, Medan, Indonesia
[2]Department of Public Health, Universitas Prima Indonesia, Medan, Indonesia

*Corespondence:
marlinangsilalahi@yahoo.com

immune function, and reduces long-term productivity, thereby increasing childhood morbidity and mortality rates.[7]

Multiple factors contribute to childhood stunting, a chronic nutritional problem characterized by below-standard height for age. Socioeconomic status is identified as a significant determinant.[8–11] Other key factors include parental education, child's age and sex, household wealth, breastfeeding practices, low birth weight, maternal age and BMI, water source quality, and rural residence.[9] Parental knowledge, parenting style, and exclusive breastfeeding also play roles.[10] Environmental factors such as sanitation and exposure to infectious diseases interact with nutritional and genetic factors.[12] The complex interplay of these determinants suggests that effective stunting prevention programs should adopt a holistic, multi-strategy approach.[9,12] This comprehensive understanding can guide targeted interventions to address both modifiable and non-modifiable risk factors, potentially leading to improved child health outcomes.

As of 2021, only six provinces in Indonesia—Bangka Belitung Islands, Lampung, Riau Islands, DI Yogyakarta, DKI Jakarta, and Bali—reported stunting rates below the WHO-recommended threshold of 20%.[13] Within Medan City, the Medan Belawan sub-district exhibits the highest incidence of stunting. Despite an overall decline in stunting prevalence in Medan, Medan Belawan remains a critical area of concern. A preliminary survey conducted at the Belawan Community Health Center documented 40 stunting cases in the past year. The aim of this study is to describe the characteristics of children under five suffering from stunting in the Belawan sub-district of Medan, North Sumatra.

Method

This study employed a descriptive quantitative design to provide a detailed overview of the variables under investigation. The findings obtained from this analysis will be used to address the research problem. A quantitative descriptive study measures the values of one or more independent variables without comparing them or establishing relationships with other variables. This approach focuses exclusively on describing the status of the variables themselves, in contrast to experimental or correlational studies which explore causal effects or relationships between variables. The results of this descriptive research are presented in a report that outlines the existing conditions.

The sample comprised all 40 children under five years of age who were diagnosed with stunting in the Medan Belawan sub-district in 2024. Data on the participants' characteristics were collected retrospectively from secondary sources, specifically from the records of the Belawan Community Health Center dated May 2025. Data analysis was conducted descriptively using measures of central tendency and dispersion, including percentages, means, medians, and standard deviations, processed with SPSS software. The results are presented in both frequency tables and narrative form..

Results

Based on the data regarding the characteristics of mothers and parents of stunted toddlers in Medan Belawan, a distinct demographic profile emerges (see Table 1). The educational backgrounds of the mothers in this cohort vary, though there is a tendency toward lower levels of formal education. The largest segment, comprising 30%, completed junior high school. This is followed closely by those who completed senior high school, representing 27.5%, and 25% who only attained primary school education. A smaller proportion, 10%, had no formal schooling, while only 7.5% had pursued higher education.

Analysis of parental occupations reveals a marked concentration in specific fields. The most common occupational pairing is homemaker and fisherman, accounting for 55% of the parents. The next largest group, comprising 22.5%, consists of homemakers and laborers. Other occupations, including part-time teachers, hospital staff or security personnel, security guards, waste pickers, and self-employed individuals, each represent a small fraction of the sample, ranging from 2.5% to 5.0%. Additionally, 7.5% of parents are homemakers with a partner working as a driver. Regarding maternal age, the majority of mothers fall within a mature age range. Specifically, 60% are between 33 and 45 years old, while the remaining 40% are younger, between 19 and 32 years of age.

The study examined a total of forty toddlers in Medan Belawan, revealing distinct patterns across various characteristics. Regarding gender distribution, the majority of toddlers were male, comprising twenty-three individuals (57.5% of the sample), while female toddlers accounted for seventeen individuals (42.5%) (see Table 2).

Table 1. Maternal/Parental characteristics

Characteristics	f	%
Maternal Education		
No Schooling	4	10.0
Primary School	10	25.0
Junior High School	12	30.0
Senior High School	11	27.5
Higher Education	3	7.5
Parental Occupation		
Part-time Teacher	1	2.5
Hospital Staff/Security	1	2.5
Homemaker/Laborer	9	22.5
Homemaker/Fisherman	22	55.0
Homemaker/Security Guard	1	2.5
Homemaker/Driver	3	7.5
Waste Picker	1	2.5
Self Employed	2	5.0
Maternal Age		
19 – 32 years	16	40.0
33 – 45 years	24	60.0

Analysis of age distribution showed a predominance of the older age group, with toddlers aged between 2.6 and 5 years representing twenty-eight individuals (70% of the total). The younger age group, consisting of toddlers aged 1 to 2.5 years, included twelve individuals (30% of the sample). Assessment of toddler weight highlighted a high prevalence of underweight conditions. Nineteen toddlers (47.5%) were classified as underweight, and sixteen (40%) were severely underweight. Only four toddlers (10%) had normal weight, while one toddler (2.5%) was identified as at risk of overweight. Data on toddler height indicated that all observed toddlers were affected by stunting. Specifically, eighteen toddlers (45%) were stunted, and twenty-two toddlers (55%) were severely stunted.

Table 2. Toddler characteristics

Characteristics	f	%
Toddler Gender		
Male	23	57.5
Female	17	42.5
Toddler Age		
1 – 2.5 years	12	30.0
2.6 – 5 years	28	70.0
Toddler Weight		
Underweight	19	47.5
Normal	4	10.0
At-Risk for Overweight	1	2.5
Severely Underweight	16	40.0
Toddler Height		
Stunted	18	45.0
Severely Stunted	22	55.0
Toddler Nutritional Status (Weight-for-Height)		
Well-nourished	26	65.0
Severely Malnourished	3	7.5
Malnourished	10	25.0
Obese	1	2.5

Finally, nutritional status, based on weight-for-height assessment, showed that the majority of toddlers (twenty-six individuals, 65%) were well-nourished. Nevertheless, a considerable proportion experienced malnutrition: ten toddlers (25%) were malnourished, three (7.5%) were severely malnourished, and one toddler (2.5%) was classified as obese according to this measure.

Discussion

An analysis of maternal education levels revealed that the majority of mothers had attained a high school education (32.5%). Maternal education is widely recognized as a key determinant in stunting prevention, in line with health education theory, which suggests that more educated mothers tend to have a better understanding of nutrition, health, and effective parenting practices.[14] Previous studies have

demonstrated that mothers with lower educational attainment often have limited access to health information, resulting in suboptimal childcare. Conversely, mothers with higher educational levels generally exhibit greater awareness of their child's nutritional needs, are more likely to utilize healthcare services, and tend to provide balanced, age-appropriate meals.[15–17] In certain regions of Indonesia, cultural preferences persist for prioritizing higher education for males over females. This practice stems from the belief that men will serve as the family's primary financial providers, whereas women are not expected to pursue higher education. Such gender disparities may significantly influence women's approaches to household management and child-rearing practices.[18,19]

Analysis of parental occupation indicated that the majority of mothers were homemakers and fathers were fishermen (55%). This finding aligns with previous research suggesting associations between maternal employment status and the stunting status of children. Employed mothers may have greater exposure to health and nutrition information, broadening their knowledge base, particularly regarding child nutritional development.[20] Similarly, other studies have found that children of unemployed mothers are more likely to experience stunting. This association is largely attributed to unemployed mothers' limited financial resources, which may restrict their ability to provide adequate nutrition, thereby adversely affecting their children's nutritional status and contributing to stunting.[21]

The predominant age range of the mothers studied was between 33 and 45 years (60%). This age group is generally considered productive and optimal for effective information absorption. However, the data indicate that children of mothers within this age range still experienced stunting. This observation corroborates prior research that found no significant association between maternal age and stunting incidence in toddlers, suggesting that as long as maternal age falls within the reproductive period, it is not a primary determinant of stunting. Instead, multiple other factors may influence stunting, including parental knowledge, exclusive breastfeeding practices, quality of complementary feeding, parenting styles, household income, and environmental sanitation.[22] Gender analysis showed that a greater proportion of stunting cases were observed in males (57.5%). A cohort study conducted in Ethiopia reported that male infants had a twofold higher risk of stunting compared to female infants at both six and twelve months of age. Moreover, male children are generally at higher risk for stunting and underweight status compared to females. Although the underlying reasons remain unclear, several studies in Sub-Saharan Africa have similarly indicated that preschool-aged boys are more vulnerable to stunting than girls.[23]

Most children affected by stunting were between 2.6 and 5 years old (70%). The high incidence of stunting in this age group may be attributed to children becoming more independent in their food choices, often opting for snacks that may be unhygienic or nutritionally inadequate without understanding the implications. Furthermore, children in this developmental stage may have limited awareness of personal hygiene and may reside in environments that do not promote healthy behaviors. Poor hygiene can lead to illness, which in turn can diminish appetite and nutrient absorption. These factors collectively disrupt growth and contribute to stunting.[24] Anthropometric analysis indicated that the majority of children were underweight (47.5%) and very short in stature (55%). These measures are critical indicators of stunting, as they reflect chronic growth deficits relative to age. Stunting, characterized by height-for-age that is significantly below the standard reference, is often accompanied by low or suboptimal weight-for-age. It is closely linked to nutritional status indicators, which assess chronic nutritional deficiencies resulting from prolonged exposure to poor conditions.[25,26]

Based on nutritional assessments, most children were classified as having good nutritional status (65%), suggesting that adequate nutritional intake and parental understanding of child development are generally sufficient within the study population. This finding is supported by previous research demonstrating a significant correlation between energy intake and nutritional status among toddlers in the Oebufu Pustu working area. When energy intake meets a child's physiological needs and activity level, it supports the maintenance of appropriate body weight and prevents nutritional disorders.[27] Efforts to improve child nutritional status and address malnutrition should focus on promoting dietary diversity, which is influenced by parental education and socioeconomic status. Additional challenges contributing to poor nutritional status include insufficient public awareness regarding stunting and the importance of regular monthly height assessments at local health facilities. Enhancing parental knowledge about essential nutrients required for child growth represents a potential strategy to mitigate malnutrition and stunting.[28]

Conclusion

This study provides a descriptive overview of the characteristics of toddlers experiencing stunting in the Medan Belawan sub-district. The findings underscore a complex interplay of socioeconomic and demographic factors, indicating that stunting in this region is not a simple or isolated issue but a multifaceted public health challenge. The data reveal that the majority of affected toddlers were male and aged between 2.6 and 5 years. Anthropometric measurements confirm the widespread nature of stunting, with most children classified as either stunted or severely stunted, alongside a high prevalence of underweight status.

Although most children were found to be well-nourished based on weight-for-height, this coexistence with a significant rate of stunting highlights a paradox: children who appear adequately fed may nonetheless suffer from chronic growth failure. This paradox underscores the necessity of addressing underlying determinants of stunting beyond immediate food intake, including long-term nutritional deficiencies, inadequate sanitation, and exposure to infectious diseases. Additionally, the study identifies a parental demographic profile marked by lower educational attainment and particular occupational patterns, notably homemakers and fishermen. These factors suggest that effective interventions must account for parental education and socioeconomic status.

Ultimately, addressing stunting in Medan Belawan demands a holistic approach that extends beyond food provision alone. Public health strategies should prioritize enhancing parental knowledge, promoting improved hygiene and sanitation practices, and supporting families in accessing diverse, nutrient-rich diets. By targeting these modifiable risk factors, it may be possible to reduce the long-term consequences of stunting in this vulnerable population.

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