MINH
MALAHAYATI INTERNATIONAL JOURNAL OF NURSING AND HEALTH SCIENCE
ISSN 2620-9152 (Print)
ISSN 2621-4083 (Online)
DOI: 10.33024
Nomor: 79/E/KPT/2023

ARTICLE INFORMATION
Received: March, 31, 2024
Revised: August, 30, 2024
Available online: August, 31, 2024
at : https://ejurnal.malahayati.ac.id/index.php/minh

Stunting among children under 5 years of age in Surakarta City, Central Java

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Abstract

Background: Stunting is defined as the growth of a child below the expected level for his or her age. It can occur during pregnancy, breastfeeding, and up to the first 1000 days (about 2 and a half years) of life. Stunting affects the brain development of the children, physical-motor growth, and has long-term implications for their future. The causes of stunting in children are multifaceted and can range from long-term inadequate nutrition to genetic and psychosocial factors.
Purpose: To investigate demographics data of stunting among children under 5 years of age in Surakarta City, Central Java.
Method: A quantitative design and descriptive analytical approach were used. The data were collected from a population of stunted children in the work area of the Pajang Community Health Centre between November and December of 2023. The research used purposive sampling and involved 93 respondents.
Results: Finding characteristics of both children and mothers with specifically, 71% of the stunted children were categorized as short, 52.7% were male, and the majority had a normal birth length. Most mothers of stunted children are aged between 20 and 35 years, 50.5% of mothers are taller than 155 cm (about 5.09 ft), 52.5% of mothers have a high school education and 74.2% of mothers are unemployed.
Conclusion: The characteristics of children and mothers about stunting are complex and interrelated. Therefore, health service providers should provide the best interventions with particular attention to both community and family-centered care.

Keywords: Children Under 5 Years; Maternal Characteristics; Stunting.

INTRODUCTION

Stunting is a significant issue in child growth and development that persists over a prolonged period and is a profound health concern in most developing countries. Stunting refers to the retardation of physical growth and developmental problems in children that are caused by inadequate nutrition, repeated infections, and a lack of psychosocial stimulation (World Health Organization, 2015). Stunting is a condition that causes growth abnormalities in children, resulting in a lower height for their age compared to their peers (Rahayu, Yulidasari, Putri, & Anggraini, 2018). It occurs when children have not fully developed in the most crucial period of growth and development in early life.

Stunted growth is usually detected by measuring the length or the height of the child. For children under 2 years of age, length is measured while the child is lying down, and for children 2 years of age and older, height is measured while the child is standing. The results can then be interpreted based on international standards using the Z-Score, Child Growth Standards median by WHO. Alternatively, it may be in line with the child anthropometric standards as described in Regulation of the Indonesian Minister of Health No. 2 of 2020. The

DOI: https://doi.org/10.33024/minh.v7i6.306

Body Length by Age or the Height Index by Age Index are listed in the regulation identifies children who are short (stunted) or very short (severely stunted) due to long-term malnutrition or frequent illness.

Worldwide, approximately 22.3% of children under five are stunted. The Southeast Asia region has the second-highest rate of stunting globally after Africa on the report of the World Health Organization, with an estimated 30.1% of children affected (World Health Organization, 2023). The stunting rate in Indonesia as it was reported in the Indonesian nutrition status survey, Indonesian nutritional status survey in 2022 is currently 21.6%, affecting a total of 4,558,899 children. The under-five stunting prevalence in Central Java was 20.8%, with an average age of 20 months and 8 weeks. Furthermore, according to Indonesian nutritional status survey, 16.2% of children in Surakarta City were stunted, with an average age of 16 months and 2 weeks (Ministry of Health of The Republic of Indonesia, 2022a). Based on, the department of women's empowerment, child protection, population control and family planning of the City of Surakarta, there were 788 cases of stunting in 2022, or about 3.1% of the total (Zamani & Rusiana, 2023). One of the health centers that has the most cases of stunting in Surakarta City is the Pajang Health Center area, dominated by children aged 12 to 47 months (about 4 years), reaching 121 childrens.

The greater number of children who have growth retardation has an equally greater risk related to many things such as susceptibility to disease, suboptimal mental and cognitive development, and not optimal growth and development. Stunting is linked to a higher risk of mortality and morbidity, reduced physical ability, and impairments in children's motor and mental development (Nugroho et al., 2021). The effects of stunting on children have both short-term and long-term implications. Brain underdevelopment is associated with this condition, which has long-term harmful consequences. These consequences may include reduced mental ability and learning capacity, low educational attainment in childhood, decreased income and an increased risk of diet-related chronic diseases., increased tendency to store fat especially in the midsection, reduced fat metabolism, reduced energy expenditure, insulin resistance, and increase in the risk of diseases such as glucose dysregulation disorder (diabetes), high blood pressure and abnormal amount of lipids in the blood (dyslipidemia). Stunting can also lead to reduced work capacity and adversely affect maternal reproduction in adulthood (Soliman et al., 2021).

Earlier research, both internationally and in Indonesia, has recognised several determinants of stunting, including individual, households and communities. A child's nutritional well-being can be affected by two categories of factors: direct and indirect (Yani et al., 2023). Direct factors involve individual characteristics such as gender, low birth weight, health conditions, infection risk, exclusive breastfeeding practices, and childhood diet (Beal et al., 2018). On the other hand, indirect factors affecting children's nutritional status include family aspects such as maternal height, maternal education level, availability of food in the family, family type, and family economic status. Additionally, environmental characteristics around the house such as the accessibility of clean water and sanitation, cultural aspects, the availability of health services and the type of housing may also have an impact (Mulyaningsih et al., 2021).

RESEARCH METHOD

Analytical descriptive research was conducted from November to December 2023 in the working area of the Pajang Health Center. A total of 93 mothers were recruited by purposive sampling with the criteria of mothers having stunted children aged 1-3 years with consent. The instruments used were a demographic data questionnaire and a body length measuring instrument. Data analysis in this study used frequency distribution analysis. Ethical clearance was obtained from KEPK-FIK with the number 037/KEPK-FIK/X/2023.

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RESEARCH RESULTS

Table. Distribution Characteristics of Respondents (N=93)

Variables	Results
Maternal Characteristics	
Age (Mean ± SD)(Range)(Years)	(32.37±8.05)(20-41)
Age (n/%)(Year)	
20-35	69/74.2
>35	24/35.8
Maternal Height (n/%)	
< 155 cm	46/49.5
≥ 155 cm	47/50.5
Maternal Education Level (n/%)	
Elementary School	1/1.1
Junior High School	15/16.1
Senior High School	49/52.7
College	28/30.1
Employment (n/%)	
Employed	24/25.8
Unemployed	69/74.2
Children Characteristics	
Age (Mean ± SD) (Range)(Months)	(32.97 ± 9.16)(20-41)
Age (n/%)(Months)	
12-23	14/15.1
24-35	36/38.7
36-47	43/46.2
Gender (n/%)	
Male	49/52.7
Female	44/47.3
Birth Length (n/%)	32/34.4
< 48 cm	61/65.6
≥ 48 cm	
Z-Score (n/%)	27/29.0
< -3 SD (Severely Stunted)	66/71.0
-3 SD s.d <-2 SD (Stunted)	

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The study, it was found that mothers with stunted children had an age (Mean ± SD) (Range) (32.37±8.05) (20-41) range of 20-35 years totaling 69 (74.2%), the majority of mothers had more than 155 cm (about 5.09 ft) body height as many as 47 people (50.5%). According to the level of education, mothers who had high school education have the highest number of 49 people (52.7%). Then, 69 mothers (74.2%) unemployed.

The demographics of children with stunting according to gender are dominated by boys, namely 49 children (52.7%) with (Mean ± SD) (Range)(32.97 ± 9.16)(20-41), the highest age range of 36-47 months, namely 43 children (46.2%) and a total of 61 children (65.6%) are known to have a length greater than ≥ 48 cm and the characteristics of stunted children included 66 children (71.0%) in the stunted category and 27 children (29.0%) in the severely stunted category

DISCUSSION

Child Gender

In this study, 49 children (52.7%) were male and 44 children (47.3%) were female. Research indicates that boys aged about 5 years (0-59 months) are more susceptible to being underweight, stunting, and undernutrition than girls, when using the definition of anthropometric case (Thurstans et al., 2020). It is important to note that all evaluations presented here are objective and free from bias. This suggests a gender-based difference in vulnerability to undernutrition. In line with this, a study on the prevalence of stunted growth in Bandar sub-district showed that boys tend to experience stunting with a chance of 3.111 times than children with female gender (Eliati et al., 2021).

The estimated prevalence of stunting in both infants and toddlers is higher for boys in some regions, although this may be influenced by intra-national and intra-household conditions. Gender differences in growing and immune function that begin prenatally can make boys more susceptible to infections and become malnourished (Thompson, 2021). In Indonesia, there is a considerable disparity between boys and girls in terms of stunting, with boys being more prone to it. This difference may be attributed to the biological factors, living conditions and the nutritional status of mothers, all of which are likely to have an impact on gender differences in growth (Beal et al., 2018).

Childbirth Length

According to the child's birth length, there were 61 children (65.6%) with a length greater than ≥ 48 cm and the remaining 32 children (34.4%) had a length at birth of <48 cm. In line with this, research on stunting incidence at the Gatak Health Center found that most had a normal body length of 78.1% while 29.9% of other children had a history of short birth length (Wahyuningrum, 2020). Another study in Kedawung Village, Mondokan, Sragen Regency showed that 51.7% of children with normal birth length had stunted growth compared to 48.3% of children with short birth length, indicating that there is not such a significant association between birth length and the onset of child stunting (Muwakhidah, 2021). Although the length of a child at birth is linearly related to their growth, children with a history of normal birth length may still be at risk of stunting.

Maternal Age

A total of 24 mothers (35.8%) were older than 35 years and the remaining 69 mothers (74.2%) were 20-35 years old. In one research study, it has been stated that there is a correlation between the age of the mother at time of pregnancy and the occurrence of stunting. The majority of mothers in the risk age group (under 20 years or over 35 years old) had children who were stunted, while in the low-risk age group, while in the low-risk group most mothers had children who were not stunted (Pusmaika et al., 2022). Compared to mothers of childbearing age (20-34 years), adolescent mothers (<20 years) are significantly more vulnerable to having a stunted child when they become pregnant. In contrast to this, in line with research at the Pegandon Kendal Health Center, there were 18 respondents (22.5%) who were below 20 years old or more than 35 years old and 62 respondents (77.5%) who were 20-35 years old, meaning that age of the mother during pregnancy did not significantly influence the incidence of stunting (Nurhidayati et al., 2020). Research at Puskesmas Ceper also showed that 53.8% of mothers with stunted children were 26-35 years old or outside the risk age, in this case the mother's age is more likely to be a psychological factor regarding the mother's readiness for pregnancy, parenting and readiness to become a parent (Susilaningsih, 2020).

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Maternal Height

Out of the total number of mothers, 46 (49.5%) had a height of less than 155 cm (about 5.09 ft), while 47 (50.5%) had a height of more than 155 cm (about 5.09 ft). In relation to BMI (Body Mass Index), which has a very general scale, it is not able to distinguish between individuals who have a normal BMI but are short in height, and individuals who have a low BMI but are tall in height. As stunting is linked to height for age indicators, it is essential to also think about the height of the mother, in addition to her BMI. Research has shown that mothers with a taller height generally have a lower possibility of having stunted children in comparison to mothers who are shorter. The study findings indicate a significant connection between maternal height and stunting incidences. Mothers who are shorter than 150 cm (about 4.92 ft) tall have a 2.5 times high risk of having stunted children in comparison to mothers who are above 160 cm (about 5.25 ft) in height (Amaha & Woldeamanuel, 2021).

The occurrence of stunted growth in children may be influenced by short maternal height (Sumarsono & Irwanto, 2022). The association between maternal height and child height is linear, reflecting a particular confluence of hereditary factors and the maternal environment. Mothers who are shorter may experience anatomical and metabolic inadequacies that can affect maternal and fetal health, such as lower glucose or protein and amount of energy levels, smaller organs of the reproduction, and restricted space for fetal growth, which affects the growth of the foetus through the placental position and the growth of the infant through the amount and the quality of the mother's breastfeeding. Intrauterine growth retardation can be the result from these conditions, which is also linked to children's short stature (Qurani et al., 2022)

Maternal Education

Table 1 shows that mothers who had completed high school education have the highest number of individuals at 49 (52.7%). A study based on a methodological "meta-analysis" of the impact of the education of mothers on the prevalence of stunted growth in infants and toddlers found that less educated mothers were 3.01 times further likely to have a stunted child than highly educated mothers (Azizah et al., 2022). Maternal education level is associated with maternal knowledge, with lower levels of education leading to higher rates of stunted growth in children under 60 months. Maternal knowledge of nutrition and children's health can influence the physical health and nutritional state of children. Maternal nutrition knowledge, including food selection, exclusive breastfeeding, and formula feeding in appropriate doses after 6 months, can lead to good nutrition for their children (Fadare et al., 2019). There was a significant relation found between mothers' level of knowledge and breastfeeding exclusivity (Septyasrini & Rahayuningtyas, 2018). Maternal education is an indicator of the absorption of nutritional information that affects food consumption and nutritional status. Mothers who possess adequate knowledge will pay attention to their children's nutritional requirements to ensure optimal growth (Pakpahan, 2021).

Mother's Occupation

The study discovered that 69 mothers (74.2%) were unemployed, while the remaining 24 (25.8%) were employed. As per the Ministry of Health in 2022, maternal employment is a causative factor for stunting (Ministry of Health of The Republic of Indonesia, 2022b). The mother's income or employment directly affects childcare, the child's nutritional status and the mother herself. Maternal employment can have positive economic and social impacts for women, aligning with Sustainable Development Goal 8's aim to promote economic growth and productive employment for all, as well as it aims to eradicate hunger, ensure food safety and security, and improve the nutritional status of the population (Nankinga et al., 2019).

Stunting can be caused by mothers who do not work due to economic factors so that family income decreases, even though at the same time family income earning capacity can support the provision of food according to the basic needs of toddlers (Abdillah et al., 2020). In terms of experience and knowledge, working mothers will get it from the work environment so that it can help increase knowledge about stunting (Rahmandiani et al., 2019). However, working mothers may miss out on family diets and non-working mothers may not be able to guarantee family diets. The employment status of a mother may impact the intensity of the practice of exclusive breastfeeding (Septyasrini & Rahayuningtyas, 2018). The mother's character plays an important role in this.

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CONCLUSION

Children with stunted children in the Pajang Health Centre area were mostly male with an age range of 36-47 months, and had a birth length of more than 48 cm. The study found that most mothers with stunted children had completed senior high school, were between the ages of 20 and 35, had a height of over 155 cm, and were unemployed or as housewives.

The findings on stunting, which include characteristics of both the child and the mother, are complex and interrelated. Health care providers are expected to pay attention to the discovery of these characteristics and provide the best interventions to reduce and treat stunting in their area both in the context of community health and family centered care. Furthermore, future researchers are advised to be able to develop research on the characteristics of stunting by considering other factors that may be related to updating knowledge and information in order to create a stunting-free nation.

STUDY LIMITATIONS

This study focuses only on the demographic factors of the mothers and children, and other factors related to stunting are excluded from the analysis. The careful application of the study's results is crucial due to numerous complex factors that contribute to stunting.

CONFLICT OF INTEREST

This study had no conflicts of interest.

ACKNOWLEDGEMENT

We express our gratitude to the University of Muhammadiyah Surakarta, the Surakarta City Health Office, the health officers at the Pajang Health Centre, the Mawar and Melati Posyandu cadres, and all those who assisted in the completion of this research.

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