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DETERMINATS IN ACCELERATING REDUCTION OF STUNTING IN MARO SEBO DISTRICT: DESCRIPTIVE STUDY

Kaimuddin[1*,2]
[1]Departement of Nursing, Politeknik Kesehatan Kementerian Kesehatan Jambi, Indonesia
[2]PUI-PK, Politeknik Kesehatan Kementerian Kesehatan Jambi, Indonesia
Corresponding author: kaimuddinjambi@gmail.com

ABSTRACT

Background: Stunting is a condition in which a child's growth and development are hampered due to long-term malnutrition and frequent infections, resulting in the child's body being shorter than it should be. The negative impacts of stunting include physical and functional disorders in children, as well as an increased risk of disease. This research aims to identify the main factors contributing to stunting among toddlers in the working area of Jambi Kecil Community Health Center.
Method: This research is a cross-sectional with subject of 68. The variables analyzed included factors influencing the incidence of stunting among toddlers in the area. The research population consisted of toddlers who had experienced stunting, based on data from the Jambi Kecil Community Health Center. The sampling technique used was simple random sampling. Analysed with descriptive.
Results: result this study is low birth weight babies (51.5%), the majority of toddlers (79.4%) experiencing infections in the last month, lack of nutritional intake (55%), low protein intake (60%), and still 30% of toddlers do not receive exclusive breast milk, low level of education (80%), and the majority face low socio-economic challenges (60%).
Conclusion: determinat factor is low birth weight, nutritional intake (including exclusive breastfeeding), parental education level, and socio-economic conditions of toddlers' families.

Keywords: Low birth weight; Infectious disease; Low intake; Makronurtients

INTRODUCTION

Stunting is a condition where children experience disrupted growth and development due to chronic malnutrition and recurrent infections, resulting in their body length or height falling below the standards set by the Ministry responsible for health affairs (PP, 2021). According to the Ministry of Health, stunting is characterized by a failure in children's growth caused by long-term malnutrition, leading to shorter stature compared to their peers. Referring to World Health Organization (WHO) guidelines, stunting is defined as a condition where a z-score review indicates that body length or height relative to age falls within the range of -3 SD to <-2 SD (Ministry of Health of the Republic of Indonesia, 2020).

In Indonesia, the achievement of Sustainable Development Goals (SDGs) in eradicating hunger and malnutrition aims to reduce the incidence of stunting by 40% by 2025 (RI, 2019). Stunting contributes to nutritional problems in Indonesia due to its impact on the physical and functional development of children's bodies, increasing the likelihood of disease (Soliman et al., 2021).

The United Nations International Children's Emergency Fund (UNICEF, 2020a) reported that in 2015, there were 163.4 million children under five who were stunted. By 2017, approximately 22.2% or 150.8 million toddlers worldwide experienced stunting, with Asian toddlers accounting for 55%, followed by Africa at 39%. Specifically, Asia had a total of 83.6 million stunted

children, with South Asia having the highest rate at 58.7%. This report highlights global nutritional challenges among children, including obesity, malnutrition, and stunting, and projects that an estimated 149.2 million (22.0%) children worldwide will experience stunting by 2020.

In the 2022 Indonesian Nutritional Status Survey (SSGI), the prevalence of stunting in Indonesia was recorded at 21.6%, a decrease of 3.8 percentage points from 2021, which was 24.4% (Setwapres, 2023). This data indicates that stunting in Indonesia still exceeds the limit set by the World Health Organization, which is 20%. The high incidence of stunting highlights widespread malnutrition among children in Indonesia, potentially impacting the quality of future generations (Indonesian Ministry of Health, 2022). Based on the results of the 2022 Indonesian Nutrition Status Survey (SSGI), the prevalence of stunting in Jambi Province is 18%. By 2023, it has decreased to 13.5%, which is lower than the national stunting prevalence of 21.6% (Ministry of Health of the Republic of Indonesia, 2023).

Jambi Province's data for 2023 shows a significant decrease in the number of stunting cases, dropping from 8273 cases to 7025 cases (Jambi, 2023). The prevalence of stunting in Muaro Jambi Regency, based on the SSGI in 2022, was 18.6%. In 2023, it decreased slightly to 18.0%, and it is hoped that by 2024, it will further decrease to 16.0%. Currently, several areas in Muaro Jambi district still face challenges with stunting, including Maro Sebo District, which falls under the jurisdiction of the Jambi Kecil Community Health Center.

Maro Sebo District consists of 12 villages, which fall under the jurisdiction of the Jambi Kecil Health Center. According to the Health Profile of the Jambi Kecil Community Health Center for 2022, the population of the health center's working area is 23,584 people, comprising 12,058 men and 11,526 women. The dependency ratio, or dependent burden figure, is 47.87%. Nearly 80% of the population in the health center's working area has a low level of education, primarily at the junior high school and elementary school levels. Additionally, the area faces low socio-economic conditions, with 80% of the population engaged in agricultural labor. Based on data, in 2021, 6735 people (28%) in the UPTD area of the Jambi Kecil Inpatient Health Center, Muaro Jambi Regency, received health insurance contribution assistance (PBI).

Data from the Muaro Jambi Health Service in 2024, recorded in mid-2024, shows that in the Jambi Kecil Health Center working area, 1443 babies were examined, with 5.7% experiencing stunting, 7.6% wasted, and 7.9% underweight. The impact of stunting can be observed in both the short and long term. In the short term, these impacts include suboptimal cognitive, motor, and language abilities, increased mortality and morbidity rates, and higher child medical expenses. Meanwhile, long-term effects encompass suboptimal adult height, reproductive health issues, obesity, poor academic performance with limited learning capacity, as well as reduced productivity and work capacity (Herawati et al., 2022).

The National Planning and Development Agency of the Republic of Indonesia (Bappenas RI) also revealed that stunting is a major problem related to nutrition that can affect social and economic life (RI, 2017).

According to UNICEF, there are several factors that influence children's nutritional conditions. Direct factors contributing to stunting include males being more at risk than females, low birth weight (LBW), low energy and protein intake from food, and a history of infectious diseases such as diarrhea and acute respiratory infections (ARI). Meanwhile, indirect factors influencing stunting include not receiving exclusive breast milk, low parental education levels, and low family economic status (Oktavianisya et al., 2021).

There are several steps that can be taken to prevent stunting, one of which is meeting nutritional needs optimally during pregnancy. This step is considered effective in preventing stunting in children. Additionally, the Ministry of Health recommends that pregnant women regularly visit health workers. Exclusive breastfeeding, coupled with healthy complementary foods starting at 6 months of age, can also prevent stunting. Nutrition experts from the University of Hohenheim, Germany, have stated that breast milk has great potential to reduce the incidence of stunting in children due to its nutritional content (RI, 2019). Active involvement of parents in monitoring children's development is very necessary, especially in measuring children's weight and height. Parents should regularly take their children to the posyandu at least once a month. Monitoring toddlers' weight and height is conducted to determine whether the child is stunted or not (BKKBN, 2023).

Maro Sebo District has 12 villages and health facilities, including the Jambi Kecil Community Health Center, 7 sub-district health centers, 7 polindes (integrated health posts), and 22 posyandu (integrated health service posts). The total number of cadres is 154, distributed across these 12 villages. Serving as the front line in combating and preventing stunting and malnutrition, several programs have been implemented.

The Jambi Kecil Community Health Center conducts early detection for toddlers under 2 years of age, provides health education for expectant mothers, and supplies iron and vitamin supplements, as well as additional food for pregnant women experiencing chronic energy deficiency (KEK). Despite these efforts, reducing stunting rates in the Jambi Kecil Community Health Center's working area has not yet yielded optimal results, as indicated by data from the Community Health Center showing that some children still experience stunting.

Based on these findings, a study is needed to identify the main factors in accelerating the reduction of stunting rates in Maro Sebo District. This research is the first to involve toddlers in the Jambi Kecil Community Health Center's working area, with the hope that the results can support more effective efforts to overcome and prevent stunting.

METHOD

This research uses quantitative methods with a retrospective approach as the main concept and was carried out in Maro Sebo District. Data collection took place from January to June 2024. The variables analyzed included factors influencing the incidence of stunting in toddlers in Maro Sebo District, such as low birth weight (LBW), energy and protein intake, history of infectious diseases, exclusive breastfeeding, parental education history, and family economic status. Toddlers experiencing stunting were identified from data obtained from the Jambi Kecil Community Health Center, totaling 82 children who constituted the research population. The sampling technique used was simple random sampling. The sample size was determined using the Slovin formula, resulting in a sample size of 68 respondents.

This research utilizes an instrument in the form of a standard questionnaire to identify risk factors contributing to stunting, as well as conducting a 1 x 24-hour food recall. The questionnaire captures respondent identities and factors associated with stunting, such as gender, birth weight, history of infectious diseases, exclusive breastfeeding, family economic status, and parental education. Additionally, a food recall questionnaire was employed to assess daily energy and protein intake based on the 2010 Riskesdas Questionnaire. The validity and reliability of both instruments were tested, yielding validity test results with calculated 'r' values ranging from 0.517 to 0.741, indicating their validity. Meanwhile, the reliability test

resulted in an alpha value of 0.725, affirming the questionnaire's reliability.

The data collection process commences following the feasibility testing of the proposal and obtaining research ethics approval. Initial data collection permission was granted by the Jambi Kecil Community Health Center to gather data on toddlers experiencing stunting in Maro Sebo District, forming the basis for defining the research population and sample. The research employs a door-to-door technique to approach parents or guardians of potential respondents, providing them with an explanation of the study. Parents or guardians who agree to participate can complete the questionnaire regarding the respondent's (stunted toddler) identity. Subsequently, the parents participate in an interview session with researchers regarding factors contributing to stunting and food recalls. The data processing involves several stages, including editing, coding, transferring, and cleaning.

Univariate analysis was employed to analyze the research data. This type of analysis aims to provide an overview of respondents based on the distribution and calculation of each variable's quantities, including the dominant factors influencing stunting in toddlers within the Jambi Kecil Community Health Center's jurisdiction. These factors include low birth weight (LBW), gender, infectious diseases, energy and protein intake, history of exclusive breastfeeding, parents' education level, and family economic status.

RESULTS AND DISCUSSION

Weight measurements categorized into LBW groups (<2500 to >4000 grams) and normal birth weight (2500-4000 grams) yielded the following results: 51.5% of infants in Maro Sebo sub-district were found to have low birth weight, while 48.5% had normal birth weight. This finding aligns with the research by Dwi et al. (2022), which reported that 58.4% of stunted infants had below-normal body weight. Utami's study (2023) indicated that toddlers with a history of LBW face a 2,194-fold higher risk of stunting compared to those born with normal weight (BBLN). This underscores LBW as a significant risk factor for toddler stunting. Children born weighing less than 2500 grams are reported to have a 12 times higher risk of stunting (95% CI 0.616–4.97) than their normal-weight counterparts (Lestari et al., 2018). Research by A. Rahayu et al. (2015) similarly emphasizes LBW as a primary risk factor associated with stunting, noting a 5.87-fold increased risk among LBW children. Thus, a history of LBW plays a crucial role in the incidence of stunting among young children.

Furthermore, stunting in children is often attributed to parents' lower education levels, leading to inadequate family knowledge regarding child nutrition. According to the 2022 Health Profile of the Jambi Kecil Community Health Center, the population in its service area totals 23,584 individuals, comprising 12,058 men and 11,526 women. The Dependency Ratio, or the ratio of dependents to the working-age population, stands at 47.87%. Nearly 80% of the area's population has a low educational attainment level, primarily at the junior high school and elementary school levels, and is predominantly engaged in low socio-economic activities, with 80% working as agricultural laborers. Children born with LBW are at a significantly higher risk of stunting compared to those with normal birth weight (Thurstans et al., 2022).

LBW is not the sole cause of stunting, as toddlers born with normal weight can also experience stunting later in life (Soliman et al., 2021). Stunting can result from growth failure and insufficient growth; if these conditions persist inadequately, they can hinder optimal growth (WHO, 2015). Therefore, toddlers born with normal weight are still at risk of stunting if their nutritional

needs are not adequately met (Rahmadhita, 2020).

Based on the research results in Maro Sebo District, it is evident that 79.4% of toddlers experienced infections in the last month, while the remaining 20.6% did not. This study found that a majority of stunted toddlers had a recent history of infection. The most common infectious diseases among toddlers were diarrhea (33.8%), acute respiratory infections (22.1%), worms (14.7%), and other causes (8.8%). Causes of stunting can be categorized as direct or indirect factors. Direct causes include inadequate nutritional intake and infectious diseases, while indirect causes encompass parenting practices, healthcare services, food availability, cultural and economic factors, among others (WHO, 2022). Nutritional issues often coincide with infectious diseases that impact child health (UNICEF, 2020).

Malnutrition and bacterial infections of the digestive and respiratory tracts pose serious public health concerns. The increased incidence and severity of infections in malnourished children largely stem from compromised immune function (Rodríguez et al., 2011). Inadequate nutritional intake, coupled with chronic nutritional deficiencies, can lead to weakened immunity in toddlers, resulting in recurrent digestive infections such as diarrhea that hinder proper growth (Guerrant et al., 2014; Junita et al., 2023).

Infectious diseases are a significant cause of morbidity and mortality in developing countries, particularly among children. Growing evidence indicates that protein-calorie malnutrition is the primary factor contributing to increased susceptibility to infections in these regions. Additionally, certain infectious diseases themselves can lead to malnutrition, creating a vicious cycle (Rodríguez et al., 2011).

Infections can reduce children's appetite and diminish their desire to eat. These diseases also deplete proteins and calories that should otherwise support growth. Poor nutritional status emerges as a significant risk factor for acute respiratory infections (ARI). Toddlers with inadequate nutrition are more vulnerable to ARIs due to weakened immune systems. Infectious diseases can suppress toddlers' appetites, leading to malnutrition (Siddiq & Nuzul, 2018). Children who experience ARIs often exhibit symptoms such as runny nose, fever, and cough. These conditions can impair children's ability to consume adequate nutrition, particularly during illness (Tadi et al., 2023).

The study results indicate that 45% of toddlers experiencing stunting in the Jambi Community Health Center Working Area have adequate nutritional intake, while the remaining 55% lack sufficient energy intake. This finding aligns with previous research by Azmy et al. (2018). Furthermore, the study reveals that a majority of stunted toddlers exhibit low consumption levels of essential nutrients such as energy, fat, protein, carbohydrates, zinc, and iron. In contrast, most non-stunted toddlers have adequate nutritional intake. These findings underscore the correlation between energy, protein, fat, carbohydrate, and zinc intake and toddlers' nutritional status (TB/U), emphasizing the critical need for adequate nutrition during early childhood growth. Toddler nutrition should adhere to the Balanced Nutrition Guidelines stipulated in Minister of Health Regulation Number 28 of 2019 concerning Recommended Nutritional Adequacy Rates for Indonesian Society (Putri et al., 2022; Junita et al., 2023).

Research utilizing food recall and nutrition surveys (Sabilla, 2020) indicates that over half of the surveyed stunted toddlers have low protein intake (60%). Stunting is a chronic nutritional deficiency resulting from various adverse environmental factors, including inadequate food intake, which impacts linear growth, brain development, and cognitive function. Interventions aimed at meeting the protein requirements of stunted children can help prevent further cognitive impairment.

High-protein foods are sourced from various local commodities in Indonesia, highlighting their crucial role in the diets of stunted children and promoting toddler growth (Endrinikapoulos et al., 2023).

Toddlers' insufficient protein intake can lead to linear growth disorders, resulting in stunting (Sudirman et al., 2023). Optimal nutrition during the first 1000 days of life (from conception to the second birthday) is crucial for the healthy development and lifelong well-being of the child. Throughout pregnancy and the postpartum period, physiological changes occur, including increased energy requirements and shifts in essential nutritional needs to support optimal growth and development in infants and toddlers (Beluska-Turkan et al., 2019).

The research results showed that 80% of respondents reported breastfeeding. Among them, 70% of mothers successfully provided exclusive breastfeeding to their toddlers, but 30% did not receive exclusive breastfeeding. Reasons for not exclusively breastfeeding include illness in toddlers, delayed initiation of breastfeeding in the first three days of life, early introduction of complementary feeding (MPASI), and mothers returning to work, resulting in formula milk being given as a substitute for breastfeeding.

Exclusive breastfeeding is considered capable of reducing the risk of stunting because breast milk contains antibodies and highly bioavailable calcium, which optimizes nutrient absorption, particularly in bone formation (Damayanti et al., 2017). Both exclusive breastfeeding and the timing of introducing complementary foods (MP ASI) are factors associated with the incidence of stunting in toddlers (D. Rahayu et al., 2023). Introducing solid foods too early can disrupt exclusive breastfeeding and increase susceptibility to illness due to immature digestive enzymes until the age of 6 months. Poor hygiene during MP ASI feeding can also elevate the risk of diarrhea (Zogara et al., 2014).

Parents with low levels of education, similar to the majority of the population in the Jambi Kecil Health Center's working area—mostly equivalent to middle school and elementary education—affect their childcare practices, which subsequently impact children's development. Research by Hardinata (2023) highlights parental education as a critical factor influencing the incidence of stunting in Indonesia. Higher parental education levels can significantly reduce the risk of childhood stunting (Firrahmawati, 2023).

The economic status of families also influences the incidence of stunting in the Jambi Kecil Community Health Center's working area. In 2024, the district minimum wage (UMK) for Muaro Jambi district is IDR 3,171,413. Family economic status is categorized as either high or low based on this UMK threshold. The majority of toddlers, 60%, come from families with low economic status, while 40% are from families with high economic status. According to UNICEF, low family economic status is associated with increased risks of children being underweight and stunted (UNICEF, 2020). Unfavorable economic conditions can limit access to additional food and impact healthy living habits, potentially leading to malnutrition and stunting among toddlers (Aini et al., 2022). Families with sufficient or higher financial resources can more easily access education and healthcare services, ensuring better nutritional outcomes for their children. This highlights the positive impact of improving economic status on children's health.

CONCLUSION

The primary factors contributing to the incidence of stunting among toddlers in the Jambi Kecil Community Health Center's working area include birth weight, nutritional intake (including exclusive breastfeeding), parental education level, and socio-economic conditions of the toddlers' families. It is hoped

that the findings of this research can support local policymakers, particularly those at the Jambi Kecil Community Health Center, in developing strategies to address stunting cases. These strategies should target the identified main factors and enhance cross-sectoral cooperation to optimize interventions for addressing stunting among toddlers.

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CONFLICT OF INTEREST

There was no conflict of interest in this article.

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