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The Phenomenon of Stunting on the Academic Results of Elementary School Students

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ABSTRACTS

Every human being born on this earth will experience a process in their life. This process includes development and growth starting from birth to death. Therefore, it is important to have adequate nutritional intake to support children's growth, so that stunting does not occur. The aim of our article is to find out how influential stunting and several other factors are on cognitive development in children. The method used in this writing is a literature review using a comprehensive strategy via the internet, such as searching for articles or national journals. In the final stage, a total of thirteen journals were collected, including ten bibliography journals and three of them were literature journals, which in the end of the thirteen journals were summarized into one journal which studied "the phenomenon of stunting on the academic results of elementary school students". The results from the thirteen journal sources that we read stunting influences the academic results of elementary school students. However, stunting is not the only factor that influences the academic results of elementary school students. Because there are still other factors that influence it.

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1. INTRODUCTION

Every human being experiences a process throughout their life. This process can include growth and development, starting with growth failure caused by poor nutrition and poor health before and after birth (Kusvitasari et. al., 2023). This growth and development process occurs primarily during childhood. However, in every process, there are factors that can hinder it. One of the obstacles in the growth process is whether a child receives adequate nutrition.

According to Istiqomah & Suyadi (2019), every child experiences differences in their growth and development process. Some are fast and some are slow, because there are several aspects that influence the growth and development process, namely talent factors (genetics), environment (parental education, utilization of health services, etc.), and convergence factors (a combination of talent and environment) (Saripudin, 2019). Therefore, it is not permissible to treat every child the same and adjust according to the child's growth and development.

In the growth process, adequate nutrition is essential to help children achieve age-appropriate growth (Juairia et. al., 2022). To determine the appropriateness of the nutrition a child receives during their growth process with their age, nutritional status indicators can be measured from anthropometric measurements of Height for Age (H/A) and Body Mass Index for Age (BMI/A) (Vidiasari et. al., 2023). Thus, fulfilling good nutrition from an early age is an important factor in supporting optimal growth and development in children according to their age.

Child development encompasses several important aspects, including cognitive, physical, motor, language, social-emotional, moral, and religious development. Each aspect develops in an integrated manner and influences the overall growth of the child. The cognitive or intellectual aspect relates to an individual's intellectual potential, particularly the ability to think, reason, remember, and solve problems (Novita et. al., 2023). Cognitive development is also closely related to the maturation of the central nervous system, especially the development of brain nerve cells that support thinking processes, information processing, and decision making. At school age, children with good cognitive development are expected to be able to understand social norms and rules, develop logical thinking skills, and demonstrate sound moral reasoning in their daily interactions (Anita et. al., 2020).

School-age children generally experience relatively stable development in mental, intellectual, physical, and social aspects compared to earlier stages of development. However, the rate of physical growth during this period tends to be slower when compared to infancy and early childhood. According to Pulungan (2020). during school age the growth acceleration curve tends to form a relatively flat pattern, indicating a slower but steady growth phase. Despite the slower growth rate, this stage still requires special attention because it plays an important role in preparing children for adolescence. Therefore, the government has issued Health Law Number 23 of 1992, particularly Article 17, which emphasizes the importance of supporting optimal child growth and development starting from the prenatal period, toddlerhood, preschool age, and continuing through school age. In Indonesia, one of the major issues affecting child growth and development is chronic malnutrition. This condition remains a significant public health problem, as Indonesia is among the countries that still experience relatively high rates of malnutrition (Pibriyanti, 2020).

One of the problems of malnutrition in Indonesia is stunting. Stunting is a condition in which a child experiences stunted growth and is not appropriate for their age, caused by poor nutrition and poor health before and after birth (Daracantika et. al., 2021). Based on the

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results of the 2013 Basic Health Research (Riskesdas), the national prevalence of stunting reached 37.2%, and in 2018, stunting in Indonesia affected 30.8% of children under five (Sumartini, 2020). Although the figures show a decline, this condition remains worrying, as it still exceeds the WHO non-public health limit of 20%.

Stunting can be very detrimental to a child's health and growth. Stunting can impact a child's cognitive abilities. For example, a child will have a lower IQ due to the biological implications of stunting on brain or neurological development, resulting in decreased cognitive scores and impacting poor academic achievement (Daracantika et. al., 2021). According to Yusuf & Helmi (2022) also stated that good nutritional status is essential for the development and maturation of brain neurons. Children with stunting will experience reduced curiosity and reduced motor skills due to impaired muscle maturation.

Chronic malnutrition problems remain prevalent in Indonesia, one example being the high prevalence of stunting in children due to malnutrition. This chronic problem is linked to poverty, low education, and inadequate environmental health services (Ridua & Djurubassa, 2020). School-age children are at a nutritionally vulnerable stage. Nutrition is crucial for children's growth and development. If nutritional needs are not met, growth retardation will occur, manifesting as wasting or stunting. Furthermore, poor nutritional status in children will impact the quality of human resources, as children are the nation's future generation.

Based on these issues, researchers sought information from published national journals on the impact of stunting on students' academic performance. The aim of this study was to determine the effect of stunting on academic performance in elementary school students.

2. METHODS

The method used in this writing is a literature review that applies a comprehensive strategy in collecting and analyzing relevant literature sources. The literature used in this study was obtained from articles published in both national and international journals. These articles were accessed through online journal databases, particularly through academic search engines such as Google Scholar (scholar.google.co.id), which provide full-text articles in PDF format. The literature review process was conducted systematically by identifying, selecting, and reviewing research findings related to the topic being studied. This approach allows the researcher to synthesize various research findings in order to gain a deeper understanding of the relationship between stunting and children's academic outcomes.

The keywords used to obtain relevant articles were “stunting” and “learning outcomes.” The selected journals were limited to publications from the last 10 years to ensure that the data and information used were current and relevant to recent research developments. The articles also specifically discussed aspects related to the phenomenon of stunting and its impact on children's development and learning outcomes. In the initial stage of the literature search, 24 journals were collected as potential sources. These consisted of 18 reference sources and six literature review articles related to the research topic. After conducting a screening and selection process based on relevance and research focus, 13 journals were chosen for further analysis and synthesis. The findings from these selected journals were then summarized and integrated to produce a comprehensive discussion regarding the phenomenon of stunting and its influence on the academic outcomes of elementary school students.

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3. RESULTS AND DISCUSSION

Indonesia faces a serious nutritional problem, characterized by numerous cases of malnutrition. Stunting is a form of malnutrition related to past nutritional deficiencies, making it a chronic nutritional problem. Stunting is caused by multidimensional factors and is not solely caused by poor nutrition experienced by pregnant women and toddlers (Dwijayanti & Setiadi, 2020). Socio-Economic Characteristics of Subject Families (Ners, 2019), said that the characteristics of stunted children's households are low income and expenditure on food and there is a significant difference ($p<0.05$) in the level of parental education between the group of stunted children and the group of normal children.

In 2018, the Ministry of Health concluded that, in addition to insufficient food availability, nutritional status can also be influenced by socioeconomic and cultural factors within the family. A study in South Africa found that the average scores obtained by stunted children in all three areas of school performance—mathematics, reading, and writing—were lower than those of children of normal height. Stunting is associated with brain damage, the effects of which vary depending on the severity, duration, and duration of malnutrition, and can be irreversible in severe cases. This study confirmed the association between stunting and wasting with school performance in mathematics, reading, and writing for beginners (Pratiwi, 2021). Stunting is a condition in which a child experiences growth failure due to impaired nutrient absorption, as evidenced by a height-for-age (H/A) z-score <-2 SD from the median for child growth standards. Stunting in children can lead to poor cognitive, motor, and socio-emotional development. Furthermore, this disorder leads to poor school performance. The literature review aims to specifically identify and review articles and journals related to the impact of stunting on children's academic achievement. The method used was to search for research articles relevant to the topic discussed using the Google search engine with e-Resource access. Based on the article review, it was found that stunting negatively impacts children's academic achievement. Children with stunting tend to have lower academic achievement compared to children without stunting (Pratiwi, 2021). Another study in Ethiopia, involving 362 schoolchildren, found a statistical test result of $p<0.05$ (p-value=0.042), indicating a relationship between stunting and academic achievement. Children with stunting had lower academic scores than those without stunting.

Further research has shown that improving nutritional status has a direct and positive impact on academic achievement. When children's basic nutritional and fitness needs are met, they have the cognitive energy to learn and achieve. Research shows that while several factors play a significant role in determining children's educational outcomes, this study has shown that child health and stunting have significant potential to impact academic achievement (Rahmidini et. al., 2020).

Another study found that poor academic performance and behavioral disorders occurred more frequently among stunted children compared to normal children (Pratiwi, 2021). It was found that children with a Height/Age z-score had significantly lower academic achievement compared to their other peers. Seven of the twenty journals in the literature review, namely (Yusuf & Helmi, 2022; Daracantika et. al., 2021; Juairia et. al., 2022; Novita et. al., 2023; Rahmidini et. al., 2020) discussed the average math score used as a parameter for children's academic achievement to see whether there was a relationship between stunting and learning achievement. Stunting can be caused by several factors, including environmental factors, parental education, utilization of health services, and others.

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3.1. Environmental Factors Affecting Stunting Conditions

1. Parental education

Parental education significantly impacts a child's nutritional status. Children with low parental education are 20 times more likely to experience stunting or malnutrition than children with highly educated parents. Furthermore, a relationship between stunting and an individual's ability to interact in groups or socialize, as well as fine motor skills, language, and gross motor skills has been found, all of which are influenced by maternal education (Wulansari et. al., 2021). Furthermore, according to Hidayati & Hasibuan (2022) maternal education also plays a role, as a good maternal education can influence a mother's awareness, understanding, and acceptance of all information about childcare and nutritional needs, enabling them to maintain their child's health and provide a good education.

2. Utilization of Health Services

One example of community access to health services is the Integrated Health Post (*Posyandu*), or integrated service post, which is usually available to the community and assisted by health workers who monitor all aspects of child growth and development and provide counseling or information related to nutrition, child health, immunization, and other community needs. This can influence stunting because, if communities have difficulty accessing health services, they will experience low awareness and knowledge about health, nutrition, and child growth, which they should know (Wulansari et. al., 2021).

3. Number of Toddlers in Care

Several studies have shown that there is no correlation between the number of toddlers in a family and stunting. However, some studies have shown a link between the number of toddlers in a family and stunting. This can occur if the ages of the toddlers are too close together. Therefore, it is recommended that the age gap between toddlers in a family be at least three years. The fewer toddlers in a family, the less parental attention, the less the child's economic needs, and other needs to support their growth and development, including nutritional needs.

4. Parental income

Parental income is one of the contributing factors to stunting. Lack of income can result in parents' inability to provide nutritious, protein-rich food to meet their child's nutritional needs (Hidayati & Hasibuan, 2022).

5. Parenting

Several studies have shown no significant effect of parenting on stunting. However, several studies have shown a significant relationship between parenting and stunting. One study found that the relationship between parenting and maternal care and stunting is caused by mothers lacking knowledge in caring for toddlers. Poor maternal attitudes in caring for toddlers can result in stunting in children. Lack of attention to children can increase the risk of stunting, as essential needs and care, such as immunizations and breastfeeding for nutrition and growth, are not met, which can increase the risk of stunting in children (Wulansari et. al., 2021).

6. Eating pattern

Diet is linked to stunting because the food consumed is the primary source of protein, the energy the human body receives to support its nutritional needs. If the diet does not meet nutritional needs, then the nutritional needs for development will be insufficient, resulting in stunting (Suriany Simamora & Kresnawati, 2021).

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3.2. Impact of Stunting

Stunting occurs in children who experience malnutrition, malnutrition in children can have an impact on disrupting the child's development process, one of which is in the aspect of cognitive development:

1) The Impact of Stunting on Achievement

Children with stunting experience long-term impairments in cognitive development through several processes, including irreversible structural damage to the brain and a reduction in the ratio of granules to Purkinje cells in the cerebellum, which impairs motor development. Child development generally involves responding to sight, hearing, thinking, and movement. These are significantly influenced by the brain, the central nervous system (Pratiwi, 2021). To prevent stunting in children, parents need to pay attention to nutrition through the food consumed and obtained by children, whether it is in accordance with their needs or not.

2) Academic Achievement

Children with stunting tend to have lower academic performance compared to children with normal learning disabilities. Some stunted children also achieve lower academic results in certain subjects, such as mathematics, which requires numeracy skills (Pratiwi, 2021). Similar to the cognitive impairment caused by stunting, children's academic performance and achievement are also relatively lower than those of children with normal learning disabilities. This can be helped by increasing stimulation and extending the duration of learning to align cognitive development with age-appropriate learning.

4. CONCLUSION

The conclusion from the 13 journal sources we reviewed is that stunting affects the academic performance of elementary school students. However, stunting is not the only factor affecting elementary school students' academic performance. Other factors contribute. Stunting can also affect the academic performance of stunted children. Academic performance can be addressed and improved by maximizing the child's learning time and increasing stimulation to develop academic and cognitive abilities.

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