The Relationship Between Health Education Interventions and Changes in Parental Knowledge and Attitudes in Overcoming Stunting in Early Childhood

Melia Eka Daryati1, Muhammad Hatta2, & Wembrayarli3

1 Program Studi PGPAUD, Universitas Bengkulu, Indonesia
2 Program Studi Kesehatan Masyarakat, Universitas Ratu Sambang, Indonesia
3 Program Studi PGPAUD, Universitas Bengkulu, Indonesia
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Abstract
Stunting in early childhood is a global concern because of its long-term impact on children's growth and development. This study aims to evaluate the relationship between health education interventions and changes in parental knowledge and attitudes in dealing with stunting in early childhood. The research method used is an intervention study with a quasi-experimental design. The sample for this study consisted of parents of early childhood children who were selected using convenience sampling. The health education intervention was carried out through workshops, providing materials, and discussion sessions for two months. Data collection was carried out before the intervention (baseline) and after the intervention using a questionnaire to measure the level of knowledge and attitudes of parents towards stunting. Data analysis was carried out using the paired t-test and Pearson correlation. The results of the study showed a significant increase in parental knowledge and attitudes after the health education intervention with a value of \( p = 0.001 \). In addition, there was a significant positive relationship between increased knowledge and changes in parental attitudes in overcoming stunting in early childhood \( (r = 0.75, p < 0.01) \). In conclusion, health education interventions are effective in increasing parental knowledge and attitudes and can potentially reduce stunting rates in early childhood.

Keywords: Health education, knowledge, parental attitudes, stunting, early childhood.

INTRODUCTION
Stunting is a public health problem that is a serious concern in many countries, including Indonesia. Stunting in early childhood (0-59 months) can have a significant long-term impact on children's physical and cognitive health and development. Parents have an important role in preventing and overcoming stunting in early childhood, especially through the knowledge and attitudes they have regarding nutrition, diet, health care, and sanitation practices. The government has programmed a special program to deal with the problem of child stunting, because stunting is not a problem that is considered simple. Stunting is a condition where a person...
experiences chronic malnutrition. This is caused by continuous nutritional intake over a long period, which falls into the deficient criteria, which means their food intake does not meet the body's nutritional needs (Hapsari & Ichsan, 2021, p. 119). Children who are stunted (have limited growth) are more likely to get sick and have an increased risk of death. Their brains also don't develop as well, which can affect their movement and ability to learn (Happy Maullida Hikmah, Nadia Widhiya Harini, Partiwi Rahmawati, Ziana Nurul Hikma, Tannia, Laili Ifadhoh, 2022, p. 621).

According to data collected by the World Health Organization (WHO), Out of all the countries in Southeast Asia, Indonesia has one of the highest rates of stunting in children under five years old. (Maryam et al., 2021, p. 902). Stunting challenges a country's competitiveness because its side effects include reduced brain development, intelligence, physical growth, and metabolic disorders in children's bodies (Widayati et al., 2021, p. 9). According to the World Health Organization's Child Growth Standards (2015), children under 5 years old are considered stunted if they fall significantly below the average height expected for their age. Apart from chronic malnutrition, the cause of stunting in children is infectious diseases which can worsen nutritional status, thereby inhibiting the child's physical growth if it continues (Fitri et al., 2020, p. 592). A very concerning issue in 2017, over 22%, or around 150 million of young children under five suffered from stunting. The World Health Organization (WHO) has a goal to significantly reduce this by 40% in 2025, potentially saving around 70 million children from stunting. This problem is especially prevalent in Asia (55%) and Africa (39%). Within Asia, South Asia has the highest percentage of stunted young children (58.7%), while Central Asia has the lowest (0.09%) (Rohmah & Natalie, 2020, p. 208).

Children from one to three years old need 1250 kcal of energy, and children from four to six years old need 1750 kcal of energy to meet their energy needs (Supriasa, 2012). Foods that contain carbohydrates, proteins, fats, vitamins, and minerals are considered foods that provide adequate nutrition (Warya, 2010). If energy consumption through food is greater than energy expenditure, then the amount of energy obtained from carbohydrates, proteins and fats will decrease (Warya, 2010) (Fitri et al., 2020, p. 593). According to research conducted in Oenesu, Kupang Regency, parents' parenting patterns towards children is one of the factors that causes stunting. Family income and parental education also influence parenting patterns (Indriyati et al., 2020, p. 78).

Globally, around 25% of children will experience stunting or growth failure in 2020 (De Onis et al., 2012). There has been some progress in reducing childhood stunting. While 155 million children under five still suffer from it globally, the prevalence has decreased from 29.5% to 22.9% between 2005 and 2016. However, chronic malnutrition remains a challenge. The estimated number of people suffering from it worldwide increased slightly from 777 million in 2015 to 815 million in 2016. This is still an improvement compared to around 900 million in 2000. (FAO, IFAD and WFP, 2017) (Widiyanto et al., 2019, p. 61). Stunting is a common problem regarding malnutrition or malnutrition (Setyawati, 2018, p. 835). There are short-term and long-term effects of stunting in childhood, which have an impact on subsequent development and health, which in turn will impact the quality of human resources (Permanasari et al., 2021, p. 80).

One type of malnutrition, stunting is a major cause of child mortality and disease burden. In addition to disease and disability, it accounts for approximately 3.1 million children, or 45% of all child deaths worldwide each year (Masitah, 2022, p. 679). Maternal factors (mother's knowledge about nutritional status, exclusive breastfeeding and complementary foods) are one of the factors that cause stunting (Wati et al., 2021, p. 41). The government is paying attention to the high stunting rate. To prevent stunting, better diet, parenting and sanitation are needed. Some of the causes of
stunting include a lack of food absorbed by the body from in the womb until after birth, and lack of access to health services and clean water (Puspitasari et al., 2021, p. 5).

Sulastri’s study shows that the mother’s education level and the family’s socio-economic level are two factors that contribute to school children’s stunting (Hapsari & Ichsan, 2021, p. 120). *The Window of Opportunity* states that there are 1000 days between pregnancy and two years of age. Children will grow better and meet their ideal physical and cognitive needs with foods rich in nutrients (Ruaida, 2018, p. 139). Children who are stunted experience a range of problems right away and later in life. In the short term, they are more likely to get sick and even die. They may also have delays in learning, thinking, movement, and speaking, and this can lead to higher healthcare costs. In the long term, they might be shorter than expected and have a higher risk of obesity, other diseases, and difficulty having children. Their ability to learn throughout life can also be affected (Rusliani et al., 2022, p. 33).

Stunting should receive more special attention because it can increase the risk of death for children, and can even hinder children's physical and mental development. Stunting or linear growth disorders can prevent children from reaching their genetic potential, are indicative of long-term events, and are the effects of inadequate nutritional intake, health conditions, and inadequate parenting (Basri & Siddi, 2021, p. 3). To prevent stunting, integrated nutritional interventions are needed, including sensitive and specific nutritional interventions. Sensitive nutrition interventions aim to address indirect causes of stunting and target pregnant women and children under five. These interventions include increasing access to nutritious food, increasing awareness and commitment to maternal and child nutritional care, improving the quality of health services, and access to clean water and sanitation sources (Permanasari et al., 2021, p. 80).

However, there is still a lack of knowledge and awareness among parents regarding strategies for preventing and controlling stunting. Factors such as low access to information, false beliefs, and community habits that are difficult to change are obstacles in efforts to overcome stunting in early childhood. Therefore, health education was identified as a potential strategy to increase parents’ knowledge and attitudes in overcoming stunting in early childhood. However, more in-depth research is still needed to measure the extent of the effectiveness of health education in influencing changes in parental knowledge and attitudes, and how it relates to efforts to reduce the prevalence of stunting in early childhood.

This research will focus on answering these questions by identifying the relationship between health education interventions and changes in parental knowledge and attitudes in the context of overcoming stunting in early childhood. Thus, it is hoped that this research can contribute to the development of more effective intervention strategies in reducing the prevalence of stunting and improving overall early childhood health.

**METHOD**

This study uses a quasi-experimental design using a non-equivalent control group. The population in this study were parents of young children in Kemumu Village, Arga Makmur District, North Bengkulu Regency. The sample was taken by convenience sampling, which included 100 parents, who were willing to be part of the research. The independent variable in this study is health education intervention, while the dependent variable is changes in parents' knowledge and attitudes in dealing with stunting in early childhood. Data was collected using a questionnaire consisting of two parts. The first part was a questionnaire to measure parents' knowledge about stunting and strategies for overcoming stunting. The second part is a questionnaire to evaluate parents' attitudes toward stunting prevention and health practices in early childhood. The research procedure was carried out in stages: Pre-test where parents will be asked to fill out a knowledge and attitude
questionnaire before the health education intervention is carried out, 2) Intervention: Health education intervention was carried out in the form of workshops, providing materials, and interactive discussion sessions. The intervention was implemented for two months. 3) Post-test: After two months of intervention, parents will be asked to re-fill the knowledge and attitudes questionnaire as a post-test.

Data will be analyzed using descriptive and inferential statistical methods. Descriptive analysis will be used to describe the characteristics of respondents, while the paired t-test will be used to compare parents' knowledge and attitude scores before and after the intervention. In addition, the Pearson correlation will be used to evaluate the relationship between changes in parental knowledge and attitudes in dealing with stunting in early childhood.

RESULTS AND DISCUSSION

This study examines how educational programs on health can affect parents' understanding and approach to early childhood stunting. It involved dividing 100 parents of young children with stunting into two groups. One group received the educational program, while the other didn't. By comparing the parents' knowledge and attitudes before and after the program, the researchers aimed to see if the program made a difference.

Health education interventions are carried out in the form of training, counseling, and educational materials about balanced nutrition and child care. Understand the impact of the program, the researchers collected information from parents using a standardized questionnaire both before and after Health education interventions. They then analyzed this data using methods that describe the information (descriptive statistics) and compared the results before and after in the groups (inferential analysis) to see if the program had any effect. The results showed that after the health education intervention, there was a significant increase in the knowledge and attitudes of parents in the intervention group compared to the control group. Parents in the intervention group showed better knowledge about balanced nutrition and child care, as well as more positive attitudes towards stunting prevention practices.

Table 1. The Relationship between Health Education Interventions and Changes in Parental Knowledge and Attitudes in Overcoming Stunting in Early Childhood

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test Knowledge</td>
<td>50</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>Post-test Knowledge</td>
<td>85</td>
<td>60</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pre-test Attitude</td>
<td>45</td>
<td>48</td>
<td>-</td>
</tr>
<tr>
<td>Post-test Attitude</td>
<td>80</td>
<td>50</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Note: A significant p-value indicates a significant difference between the intervention group and the control group in terms of knowledge and attitudes after the health education intervention.

In conclusion, health education interventions have a significant relationship with changes in parents' knowledge and attitudes in dealing with stunting in early childhood. Recommendations for future research are to involve more samples and expand the scope of interventions to cover other aspects relevant to the stunting problem. So far, parents' perceptions and views about stunting are also wrong. Parents assume that stunted children are stunted due to hereditary factors. Stunting is not due to heredity but due to failure to grow and develop and other factors. One of the factors
causing stunting is inadequate exclusive breastfeeding and very low basic education of parents, especially mothers (Sari et al., 2023, p. 2680).

Health education interventions are an important strategy in efforts to overcome stunting in early childhood. Health education provides parents with the opportunity to gain better knowledge about the factors that cause stunting and the steps that can be taken to prevent it. According to Atmojo (Widjayatri et al., 2020, p. 18), nutritional elements are an important factor in the formation of quality human resources, namely people who are healthy, intelligent, and productive. Poor nutrition in early childhood has lasting consequences. Toddlers who are malnourished don't just experience stunted growth, they can also face challenges with mental development and their ability to be productive adults.

Stunting is a serious problem in young children (under 5 years old). It happens when a child isn't getting enough nutrients for a long time, and as a result, they grow to be shorter than they should be for their age (Efendi et al., 2021, p. 108). The frequency of MPASI (Weaning Food) feeding for children should be as frequent as possible because children can consume food little by little while the need for calorie intake and other nutrients must be met. Adequate MPASI (Weaning Food) frequency or more can meet the food consumption and nutrients needed by children according to their age of 15 (Wangiyana et al., 2021, p. 85). If stunting isn't addressed early on, during a critical development period for children (often called the "golden period"), it can lead to long-term problems. These include lower learning ability and a weaker immune system. In the short term, it can disrupt both brain development and physical growth in young children (Safitri et al., 2021, p. 71).

There are 4 types of nutritional problems in Indonesian children under five, namely protein-energy deficiency (PEM), vitamin A deficiency (VAC), iodine deficiency (endemic goiter), and iron deficiency (iron nutritional anemia). Conditions of malnutrition cause the body to become vulnerable to infectious diseases, thereby increasing morbidity and mortality during childhood (WHO) (Sofiana et al., 2021, p. 104).

Table 2. The Relationship between Health Education Interventions and Changes in Knowledge in Overcoming Stunting in Early Childhood

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Pre-test Knowledge</td>
<td>50</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>Post-test Knowledge</td>
<td>85</td>
<td>60</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Note: A significant p-value indicates a significant difference between the intervention group and the control group in terms of knowledge after the health education intervention.

A higher level of maternal education can also reduce childhood stunting as can increased knowledge about sanitation practices and healthy behavior. An educated mother will know how to process food, organize food menus, and maintain good quality and cleanliness of food. Apart from higher education, mothers must also be active and responsive in seeking information about children's nutrition from the mass media or health workers (Aditianti et al., 2021, p. 59). The research results show that health education interventions have a positive impact on increasing parents’ knowledge about balanced nutrition and child care. This better knowledge is an important aspect in enabling parents to make more informed decisions regarding their child's diet, nutrition, and care.
Community empowerment in creating a nutritionally aware millennial generation that is free of stunting through 1000 HPK activities using counseling methods, and providing PMT has proven effective in increasing residents' understanding of stunting in the community (Hidayah & Marwan, 2020, p. 89). Five main factors cause stunting, namely poverty, social and cultural, increased exposure to infectious diseases, as well as food insecurity, and community access to health services. (Lestari et al., 2022, p. 327).

Table 3. The Relationship between Health Education Interventions and Changes in Parental Attitudes in Overcoming Stunting in Early Childhood

<table>
<thead>
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<tbody>
<tr>
<td>Pre-test Attitude</td>
<td>45</td>
<td>48</td>
<td>-</td>
</tr>
<tr>
<td>Post-test Attitude</td>
<td>80</td>
<td>50</td>
<td>&lt;0.001</td>
</tr>
</tbody>
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Note: A significant p-value indicates a significant difference between the intervention group and the control group in terms of parental attitudes after the health education intervention.

Apart from knowledge, health education interventions also influence changes in parents' attitudes towards stunting prevention. More positive attitudes include a willingness to adopt stunting prevention practices, such as providing nutritious food, better health care, and seeking medical help when necessary. Left untreated, stunting hurts children in both the short and long term. In the early years, it can disrupt brain development, leading to lower intelligence. It can also cause problems with physical growth and the body's metabolism. As adults, stunted children may have trouble learning and remembering things, be more likely to get sick, and have a higher risk of serious diseases like diabetes, heart problems, and cancer. They may also face disability later in life (Aurima et al., 2021, p. 44).

Things to do to prevent stunting are to first recognize what stunting is and its symptoms. Then pay attention to food hygiene, and breastfeeding until 6 months of age. Apart from that, when pregnant you must consume protein and iron. Provide accurate and timely MPASI and most importantly (Rochmatun Hasanah et al., 2023, p. 5). Breastfeeding is a powerful tool in the fight against childhood stunting. During the first six months, breast milk provides all the essential nutrients a baby needs for optimal growth and development. It's packed with immune-boosting antibodies that protect against infections, a critical factor in preventing stunting. Around six months, when a baby's nutritional needs become more complex, introducing appropriate weaning foods alongside continued breastfeeding is essential. These weaning foods should be rich in iron, zinc, and other vital nutrients to ensure proper growth and brain development. By providing a combination of breast milk and a balanced variety of nutritious weaning foods, parents can significantly reduce the risk of stunting and set children on the path to a healthy and productive future.

The role of parents is very crucial in overcoming stunting in early childhood. They are the primary agents responsible for the child's diet, care, and environment. With the knowledge gained through health education interventions, parents can become more effective in playing their role in optimizing their children's growth and development. Parents are on the front lines of the fight against childhood stunting. During this critical period of development, from pregnancy to age five, a child's nutrition has a profound impact on their growth and future health. By ensuring their children receive a balanced diet, practicing good hygiene, and seeking regular healthcare, parents play a vital role in preventing stunting. Their understanding and actions directly influence their
child's physical and mental development, shaping their ability to learn, resist illness, and reach their full potential. If stunting is identified, parents play a key role again in working with healthcare providers to implement treatment plans and ensure their child gets the support they need to thrive. Although the research results show a significant relationship between health education interventions and changes in parental knowledge and attitudes, this research has several limitations. One of them is the relatively small sample size and the research was only conducted over a certain period. Therefore, further research with a larger sample and a longer observation period could provide a deeper understanding of the effectiveness of health education interventions in overcoming stunting in early childhood. This discussion underlines the importance of health education interventions as an effective strategy in increasing parents' knowledge and attitudes in dealing with stunting in early childhood, as well as providing direction for the development of stunting prevention programs in the future.

CONCLUSION

This research shows that health education interventions have a significant impact on changing parents' knowledge and attitudes in dealing with stunting in early childhood. After participating in the intervention, parents in the group who received health education showed a significant increase in knowledge about balanced nutrition and child care, as well as a more positive attitude towards stunting prevention practices. This shows the importance of health education as a strategy to improve parents' understanding and attitudes in dealing with the problem of stunting in early childhood. With better knowledge and a positive attitude, parents have the potential to take more effective steps to prevent and overcome stunting in their children. Therefore, health education must be an integral part of stunting prevention efforts, with a focus on providing parents with accurate and relevant information about balanced nutrition and child care. This research provides a strong basis for continuing and expanding health education programs to reduce the prevalence of stunting and improve the welfare of early childhood.

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