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THE EFFECT OF HEALTH EDUCATION ON KNOWLEDGE OF MORINGA LEAF UTILIZATION FOR STUNTING PREVENTION AMONG TODDLERS

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ABSTRACT

Stunting remains a nutritional problem among toddlers, influenced by low parental knowledge regarding the utilization of nutritious local foods. Moringa leaves (Moringa oleifera) have a high nutritional content and potential to be used as an alternative for stunting prevention. This study aimed to determine the effect of health education on knowledge regarding the utilization of Moringa leaves as an effort to prevent stunting among toddlers. The study employed a pre-experimental method with a one-group pretest–posttest design. The study population consisted of 30 respondents selected using purposive sampling. Knowledge was measured before and after the provision of health education. Data analysis was conducted using the Wilcoxon test. The results showed that before health education, all respondents (100%) had poor knowledge. After the intervention, most respondents had good knowledge (28 respondents; 93.3%), while 2 respondents (6.67%) had sufficient knowledge. The Wilcoxon test results indicated a p-value of 0.000 ($p < 0.05$), demonstrating a significant difference in knowledge before and after the health education intervention. It can be concluded that health education has a significant effect on improving knowledge regarding the utilization of Moringa leaves as an effort to prevent stunting among toddlers.

Keywords: Toddlers, Moringa Leaves, Health Education, Knowledge, Stunting

INTRODUCTION

Stunting remains one of the major nutritional problems among children under five, with long-term impacts on the quality of human resources, including impaired physical growth, cognitive development, and an increased risk of non-communicable diseases in adulthood (WHO, 2023). In Indonesia, stunting continues to be a public health priority due to its relatively high prevalence and its contribution to reduced productivity of future generations (Ministry of Health of the Republic of Indonesia, 2023). One of the key factors contributing to stunting is the low level of parental knowledge, particularly among mothers, regarding adequate toddler nutrition and the utilization of nutritious local food resources (UNICEF, 2022). Limited understanding of locally available, nutrient-dense foods leads to suboptimal dietary patterns among children, even when such food sources are readily accessible in the surrounding environment (Ruel & Alderman, 2021).

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Moringa leaves (*Moringa oleifera*) are a local food resource with high nutritional value, containing essential nutrients such as protein, vitamin A, vitamin C, calcium, iron, and antioxidants, making them a promising alternative for stunting prevention among toddlers (Gopalakrishnan et al., 2022). Several studies have demonstrated that the utilization of moringa leaves can improve nutrient intake and child health status, particularly among nutritionally vulnerable groups (Sutrisno et al., 2021). Nevertheless, the daily utilization of moringa leaves remains limited due to insufficient community knowledge and skills related to processing and preparing moringa-based foods for toddlers (Rahmawati & Lestari, 2022). Therefore, promotive and preventive efforts through health education are necessary to enhance parental knowledge and awareness of the benefits and proper utilization of moringa leaves as a nutritious food source.

Health education is recognized as an effective strategy for increasing knowledge and promoting positive health behavior changes in the community, including stunting prevention efforts (Glanz et al., 2020). Previous studies have shown that nutrition education improves maternal knowledge and contributes to better child feeding practices (Notoatmodjo, 2018; Sari et al., 2022). However, research specifically examining the effect of health education on knowledge related to the utilization of moringa leaves for stunting prevention among toddlers remains limited.

Based on these considerations, this study was designed to evaluate the effect of health education on improving knowledge regarding the utilization of moringa leaves as a strategy for preventing stunting among toddlers. The findings of this study are expected to provide scientific evidence for the development of local food–based educational strategies and serve as a foundation for health professionals, particularly midwives, in supporting sustainable stunting prevention programs.

RESEARCH METHODS

This study employed a pre-experimental method with a one-group pretest–posttest design to examine the effect of health education on the level of knowledge regarding the utilization of moringa leaves as an effort to prevent stunting among toddlers. The study was conducted in Sukorejo Village, within the working area of Ngasem Public Health Center, Kediri Regency. The research was carried out during the month and year adjusted to the implementation schedule of posyandu activities and local health programs.

The study population consisted of all mothers with toddlers in Sukorejo Village, within the working area of Ngasem Public Health Center, Kediri Regency. A total of 30 respondents were selected as the study sample using a purposive sampling technique. The inclusion criteria were: (1) mothers with toddlers aged 0–59 months, (2) willingness to participate as research respondents, and (3) ability to read and communicate effectively. The exclusion criteria included: (1) mothers who did not fully participate in the health education sessions, and (2) mothers who did not complete the pretest or posttest questionnaires.

The research instrument used was a questionnaire assessing the level of knowledge regarding the utilization of moringa leaves as a strategy for preventing stunting among toddlers. The questionnaire was administered twice, before the intervention (pretest) and after the intervention (posttest). Knowledge scores were categorized into good, moderate, and poor levels. The study began with the administration of a pretest questionnaire to measure the respondents'

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baseline knowledge. Subsequently, respondents received health education covering the definition of stunting, its impacts, the nutritional content of moringa leaves, and methods of utilizing moringa leaves as complementary foods for toddlers. After the health education intervention, respondents completed the posttest questionnaire to assess changes in knowledge levels. Data analysis was conducted using univariate analysis to describe the distribution of respondents' knowledge levels before and after the intervention. Bivariate analysis was performed using the Wilcoxon signed-rank test to determine differences in knowledge levels before and after the health education intervention, with a 95% confidence level (α = 0.05).

RESULTS

Table 1. Characteristics of Respondents According to Maternal Age

No	Maternal Age	N (%)
1	< 20	0 (0%)
2	20–35	27 (90%)
3	> 35	3 (10%)

Table 2. Characteristics of Respondents Based on Parity

No	Paritas	N (%)
1	Primipara	18 (60%)
2	Multipara	10 (3.3%)
3	Grandemultipara	2 (6.7%)

Table 3. The Effect of Health Education on Knowledge of Moringa Leaf Utilization as a Strategy for Preventing Stunting among Toddlers

No	Level of Knowledge	Pre Intervention	Post Intervention	Total
		N	N	N
1	Good	0 (0%)	28 (93.3)	28 (93.3)
2	Moderate	0 (0%)	2 (6.7)	2 (6.7)
3	Poor	30 (100%)	0 (0.0)	30 (100%)
		ρ 0,000	α 0.05	

DISCUSSION

The results of the study indicate that the majority of respondents were in the 20–35 years age group. This age range is considered a healthy reproductive age, during which individuals possess optimal biological and psychological capacities to receive and process health-related information. According to adult cognitive development theory, the ability to think abstractly, understand cause-and-effect relationships, and make health-related decisions reaches its optimal level during early to middle adulthood (Santrock, 2020). This condition supports the effectiveness of the health education provided to the respondents.

In the context of stunting prevention, maternal age plays an important role as it influences parenting practices, food selection, and the mother's ability to apply nutritional information. Previous studies have shown that mothers of productive age are more responsive to nutrition education and more likely to adopt new health behaviors compared to adolescent or older mothers (Sari et al., 2022). Therefore, the dominance of respondents aged 20–35 years in this study

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served as a supporting factor for the success of the health education intervention.

Based on parity, most respondents were primiparous mothers. Primiparous mothers generally have limited experience in child-rearing practices, including meeting toddlers' nutritional needs. According to experiential learning theory, prior experience greatly influences an individual's knowledge and skills (Kolb, 2019). Limited experience among primiparous mothers may result in lower baseline knowledge regarding the utilization of local food resources such as moringa leaves. However, this condition also presents an opportunity for health education interventions. Primiparous mothers tend to have high learning motivation and are more open to new information, particularly related to child health. A study by Rahmawati and Lestari (2021) reported that health education has a greater impact on primiparous mothers compared to multiparous mothers due to their higher information needs. This finding is consistent with the results of the present study, which demonstrated a significant increase in knowledge after the health education intervention.

The findings further revealed that prior to the health education intervention, all respondents (100%) had a poor level of knowledge regarding the utilization of moringa leaves as a strategy for preventing stunting. This reflects the low level of maternal understanding of the potential benefits of nutrient-rich local food sources, despite the fact that moringa leaves are readily available in the surrounding environment.

According to health behavior theory proposed by Notoatmodjo (2018), knowledge is a primary predisposing factor influencing the formation of health-related behaviors. Insufficient knowledge may prevent individuals from recognizing the benefits of health actions, thereby hindering behaviors that support the prevention of nutritional problems such as stunting. In this study, the lack of maternal knowledge regarding the nutritional content and benefits of moringa leaves resulted in the underutilization of this local food resource for toddlers.

After receiving health education, most respondents experienced an improvement in knowledge to the good category. The health education intervention covered the definition of stunting, its impact on child growth and development, the nutritional content of moringa leaves, and methods of utilizing moringa leaves as complementary foods for toddlers. According to health promotion theory, educational interventions tailored to the needs of the target population and delivered using clear and understandable language can significantly improve knowledge and health awareness (Glanz et al., 2020). These findings are also consistent with the Health Belief Model, which suggests that increased knowledge enhances perceived benefits and reduces perceived barriers to adopting health behaviors (Rosenstock et al., 1988). By understanding the benefits of moringa leaves in preventing stunting, mothers became more confident in utilizing this local food source for toddler feeding.

The Wilcoxon test results showed a p-value < 0.05, indicating a statistically significant difference in knowledge levels before and after the health education intervention. This finding demonstrates that health education is an effective intervention for improving maternal knowledge regarding the utilization of moringa leaves. The results are consistent with previous studies reporting that nutrition education based on local food resources improves maternal knowledge and attitudes toward stunting prevention (Sutrisno et al., 2021). Other studies

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have also reported that education on moringa leaves significantly increases maternal knowledge and nutritional practices among mothers of toddlers (Handayani et al., 2022; Gopalakrishnan et al., 2022).

Both theoretically and empirically, the findings of this study reinforce the notion that improving knowledge through health education is a crucial initial step in stunting prevention efforts. The utilization of moringa leaves as a nutrient-rich local food source is not only nutritionally relevant but also supports sustainable promotive and preventive approaches at the family and community levels.

CONCLUSION AND RECOMMENDATION

This study demonstrates that health education has a significant effect on improving maternal knowledge regarding the utilization of moringa leaves as a strategy for preventing stunting among toddlers. All respondents had a poor level of knowledge prior to the educational intervention, while after the intervention, most respondents showed an improvement to the good knowledge category. The results of the Wilcoxon test further confirmed a statistically significant difference in knowledge levels before and after the health education intervention. These findings affirm that health education is an effective approach for enhancing maternal knowledge related to the utilization of nutrient-rich local food resources.

The strength of this study lies in its focus on education-based interventions utilizing locally available food resources and the use of a pretest–posttest design, which allows for the direct observation of changes in knowledge levels. However, this study has several limitations, including the absence of a control group, a relatively small sample size, and the assessment being limited to knowledge outcomes without evaluating changes in attitudes, practices, or the impact on toddlers' nutritional status. Based on these limitations, future research is recommended to employ experimental designs with control groups, involve larger sample sizes, and expand the research variables to include behavioral changes and toddlers' nutritional status. In addition, further studies should explore the long-term effectiveness of education on moringa leaf utilization to obtain a more comprehensive understanding of its contribution to stunting prevention.

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