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Leveraging the Aspects of Knowledge, Attitude, and Practice as an Alternative to Prevent Detrimental Impacts of Stunting

Memanfaatkan Aspek Pengetahuan, Sikap, dan Praktik sebagai Alternatif untuk Mencegah Dampak Buruk Stunting

Novia Luthviatin[1]*, Ninna Rohmawati[1], Dwi Martiana Wati[1], Jihan Darmaningtyas[1], Yessinia Hanatha Pasha[1]

[1]Program Studi Kesehatan Masyarakat, Fakultas Kesehatan Masyarakat, Universitas Jember, Kabupaten Jember, Indonesia

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Correspondent:
Novia Luthviathin
novia@unej.ac.id

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ABSTRACT

Background: The prevalence of stunting in Indonesia is recorded at 21.6% among children under five, while the WHO target for 2025 is less than 14%. Prevention efforts are crucial for mitigating its detrimental impacts. One of the early prevention efforts is health education about nutrition through strengthening knowledge, attitudes, and practices related to healthy food consumption.
Objectives: This study aimed to measure the differences in the levels of knowledge, attitudes, and practices in school-age children following health education about nutrition.
Methods: This study used a pre-experimental method involving 40 students aged 13 to 15 years. All students received nutritional health education through drama performances and lectures about healthy food and practiced bringing healthy packed meals at certain times. Data were analyzed using the Wilcoxon test and Friedman test.
Results: Descriptive analysis showed an increase in the average values of knowledge, attitudes, and practices. The Wilcoxon test revealed a significant increase in knowledge (p-value=0.035) before and after the intervention. Meanwhile, the Friedman test revealed a significant increase in practices (p-value<0.001) before and after the intervention, with the practice of bringing and consuming healthy packed meals remaining consistent up to four weeks after the intervention.
Conclusions: Interventions using drama performances, lectures, and the provision of healthy packed meals significantly increased knowledge and practices among junior high school students. These interventions can be used by schools and related agencies to promote the habit of bringing healthy food to prevent the negative impacts of stunting.

INTRODUCTION

Stunting is a condition characterized by low height due to chronic malnutrition, which remains a global health problem[1]. According to the World Health Organization (WHO) data, approximately 22% of children aged five years worldwide, or equivalent to 149 million children, experience stunting[2]. This figure highlights the slow progress in reducing cases, which remains above the global target of less than 10% by 2025[3]. According to data from the Ministry of Health of the Republic of Indonesia, in 2023, the prevalence of stunting was recorded at 21.6% in children under five, with a significant downward trend in cases compared to 2018, reaching 30.8%. However, achieving WHO's target of less than 14% requires extra intervention efforts[4-5]. According to data from the Ministry of Health of the Republic of Indonesia, the prevalence of stunting in East Java Province in 2023 was recorded at 23.5%, which, although lower than the national prevalence rate, still falls short of the global target[6-7]. Similarly, data from the Ministry of Health of the Republic of Indonesia states that the prevalence of stunting in Banyuwangi Regency was recorded at 24.1% despite various health and nutrition interventions by the government[6–8].

Stunting prevention is prioritized as a serious public health problem. A child is considered stunted if growth failure occurs due to chronic malnutrition within the First 1000 Days of Life (HPK)[9]. The government has outlined the National Action Plan for Accelerating Stunting Reduction to 14% by 2024, emphasizing the importance of collaboration between the central government, regions, and the community in implementing stunting prevention interventions[10-11]. Specific and sensitive interventions are needed, such as providing the community with supplementary food and nutrition education. A study shows that collaboration between the government, community, and private sector is crucial for stunting prevention[12]. However, challenges persists, including limited awareness of the importance of good nutrition and access to nutritious food[13-14].

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Stunting prevention in Indonesia, including East Java Province, presents complex challenges and requires a multi-sectoral approach. Stunting prevention efforts in Banyuwangi Regency include various innovative programs aimed at increasing public understanding of balanced nutrition and the importance of adequate nutritional intake during the First 1000 Days of Life (HPK)[15-16]. The prevention efforts that have been carried out in Banyuwangi Regency includes increasing public awareness of the importance of balanced nutrition and training health cadres to support families in providing good nutrition to children[6]. Despite a decrease in the prevalence of stunting cases nationally, Banyuwangi Regency must intensify its efforts to achieve the target of reducing stunting rates to less than 14% by 2024 and less than 10% by 2025[3–9].

Focusing on stunting prevention among adolescent girls in school settings is critical, considering their future role as mothers. Education on balanced nutrition and reproductive health can help adolescent girls understand the importance of good nutrition to support their growth and development and to prepare themselves to become healthy mothers[17-18]. Educational programs in schools that include counseling on stunting prevention and mental health can reduce the risk of early marriage, which often contributes to stunting problems among children[17–19]. By increasing adolescent girls' knowledge and awareness of nutrition and health, it is hoped that a healthier and more competitive generation can be created, as well as reducing stunting rates in the future[20-21].

Stunting prevention should not be limited to pregnant women, but should begin earlier during adolescence. A study in Bangladesh showed that adolescent girls with anemia are at risk of giving birth to stunted children in the future[22]. Preventive behaviors for adolescent girls to prevent stunting include regularly consuming iron tablets and consuming foods rich in animal protein[23]. Animal protein plays a crucial role in preventing stunting[24]. Animal protein contained in foods sourced from animals such as meat, milk, fish, and eggs is high-quality protein that is important for growth and development[25]. Interventions for adolescent girls are given in schools starting from junior high school level ensure that female students consume iron tablets and a healthy menu with animal protein[26].

Stunting prevention is an important indicator of the achievement of the National Sustainable Development Goals (SDGs). The implementation of SDGs at the village level is manifested in Villages Without Poverty, Villages Without Hunger, and Villages Caring for Health. Licin Village is one of the villages in Licin Subdistrict, Banyuwangi Regency, with a Village SDGs score of 47.5. This figure has not reached half of the maximum scale of 100. The low scores are particularly evident in the areas of Villages Without Poverty, namely 63.73, and Villages Without Hunger, namely 53.33[27]. Community-based nutrition programs (CBNPs) are key turning points in implementation strategies leading to food and nutrition improvement as a sound basis for socio-economic development. To be effective and successful, CBNPs require a constellation of methods and services planned by the community and policy support for effective implementation, reaching the unreachable and empowering those at the grassroots. Lessons from CBNPs in Asia show that to be effective, the programs must be adopted at the national level and implemented at the community level[28].

A preliminary study identified a problem among female students: most of them had not yet developed the habit of bringing healthy food to school. Healthy food had never been introduced to female students. According to the situational analysis, only five out of 48 female students brought food from home that met the criteria for healthy food. The majority of female students bought snacks from vendors in the canteen or around the school. Female students were unaware of the importance of the consumption of healthy food with animal protein.

This study used several interventions, namely drama performances, lectures, and the provision of healthy packed meals. The combination of these methods offers a comprehensive approach to fostering a healthy eating pattern[29], which has been shown to be more effective in achieving desired health outcomes compared to isolated interventions[8-9]. The provision of healthy packed meals strengthens the formation of behavior among adolescents, consistent with recent studies indicating that school-based nutrition interventions can increase knowledge and improve students' eating habits[32–34]. On a broader scale of health behavior, drama performances have demonstrated effectiveness in raising awareness of health problems such as malaria in Cambodia[35], while lectures are effective in improving hand-washing knowledge in elementary school students[36]. This study aims to improve knowledge and positive attitudes regarding the understanding and benefits of a healthy menu for female students and promote the practice of bringing healthy packed meals to school.

METHODS

This study employed a pre-experimental method to examine the differences in the mean or median values of knowledge, attitudes, and practices before and after the interventions among female students regarding the consumption of healthy menus. The interventions aimed to raise awareness of healthy menus through drama performances, lectures, and the provision of healthy packed meals for the students. The drama performances and lectures were conducted once during this study in order to improve students' knowledge and attitudes. However, healthy packed meals were provided four times every Friday to encourage students to practice bringing healthy packed meals. The aspects of knowledge and attitudes were measured before and after intervention in July 2024, the practice aspect was measured daily for four weeks, from July 2024 to August 2024. The sample consisted of 48 female students from MTs Nahdlatul Wathon. However, female students who could not participate in the interventions from the beginning due to several conditions, such as external assignments, including scouting, flag-raising duties, and absences due to illness or other reasons, were excluded from this study. As a result, only 40 female students of MTs Nahdlatul Wathon were selected as respondents. Data were collected by measuring knowledge, attitudes, and

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practices of consuming healthy food through questionnaires before and after intervention. The instruments used to measure knowledge and attitudes had been validated using the correlation coefficient r and Cronbach's alpha. The 10 questions assessing knowledge were deemed valid and reliable because the calculated r value was greater than the r table (0.32), and the Cronbach's alpha value was 0.78 ≥ 0.7. Similarly, the 10 questions assessing attitudes were deemed valid and reliable because the calculated r value was greater than the r table (0.32), and the Cronbach's alpha value was 0.84 ≥ 0.7. The question assessing practices only consisted of a single question, which did not permit analysis of internal consistency (reliability) or suitability (validity), as these tests are applicable to more complex instruments.

During the intervention sessions, the students' compliance with bringing healthy food was recorded daily using a checklist. Subsequently, knowledge and attitudes were reassessed to evaluate post-intervention outcomes. The data were analyzed using the Wilcoxon and Friedman tests. The Wilcoxon test was used to analyze the significance of changes in knowledge and attitudes before and after the intervention, while the Friedman test was used to analyze the weekly distribution of practices before and after the intervention. This study was approved by the Health Ethics Committee, Faculty of Public Health, Universitas Jember. The registration number is No.545/KEPK/FKM-UNEJ/VIII/2024 which is valid from 16 July 2024 until 16 July 2025. Written informed consent was obtained from each respondent prior to their participation.

RESULTS AND DISCUSSIONS

The questionnaires distributed before and after the intervention to the female students consisted of three aspects, namely knowledge, attitudes, and practices regarding the consumption of healthy food. The knowledge aspect consisted of 10 questions, attitudes consisted of 10 statements, and practices consisted of one question. The knowledge and attitude items covered questions such as types of food that increase hemoglobin levels, frequency of bringing healthy packed meals, micro- and macronutrient content in healthy menus, and examples of unhealthy foods. Meanwhile, the practice question focused on the frequency of bringing healthy packed meals to school. The measurement results are presented in Table 1.

Table 1. Distribution of participants' knowledge, attitudes, and practices

Behavior	Pre-Test			Post-Test			p-value
	Highest score	Lowest score	Mean ± SD	Highest Score	Lowest Score	Mean ± SD	
Knowledge	90	20	75 ± 13.96	100	30	80 ± 16.33	0.035*
Attitude	100	50	79.25 ± 16.33	100	40	82.25 ± 14.05	0.15

*Wilcoxon test, significant at α=5%

Table 2. Distribution of participants' practices

Variable	Highest Category	Lowest Category	Median	Highest Category	Lowest Category	Median	p-value
Practice	2	0	0 ± 0.68	3	1	2 ± 0.92	<0.001*

*Friedman test, significant at α = 5%
Description:
0 = Never
Category 1 = 1-2 times a week
Category 2 = 3-4 times a week
Category 3 = 5-6 times a week

A total of 40 female respondents aged 12-15 years in grades VII to IX participated in this study. The distribution of respondents' knowledge, attitudes, and practices is presented in Table 1 and 2. According to the table, the average value of knowledge before and after the intervention increased from 75 to 80, while the average value of attitude before and after the intervention increased from 79.25 to 82.25. In terms of practices, the highest value before the intervention was in Category 2, while the lowest was in category 0, with a median of 0. After the intervention, the highest value was in Category 3, while the lowest was in Category 1, with a median of 2. The increase in median value suggests a tendency for behavioral change in a positive direction. These findings are consistent with previous studies that used drama performances to increase knowledge related to key messages in health education[37–39]. Increased knowledge can lead to changes in health practices[37]. Effective drama interventions can improve healthy nutritional consumption patterns[38]. Vaccination services in Nigeria also used drama performances and were successful in influencing positive changes in health knowledge and practices[39].

Drama methods in health education have been recognized for creating relevant narratives that make complex health education topics more accessible, engaging, and understandable. These methods can effectively reach a wider community[35]. They can be used to address specific health issues, such as maternal motivation in breastfeeding, and have been shown to influence a person's motivation significantly. This shows the potential success of drama methods as a motivational tool in health promotion[40]. In the community, drama has been proven effective in raising awareness of health

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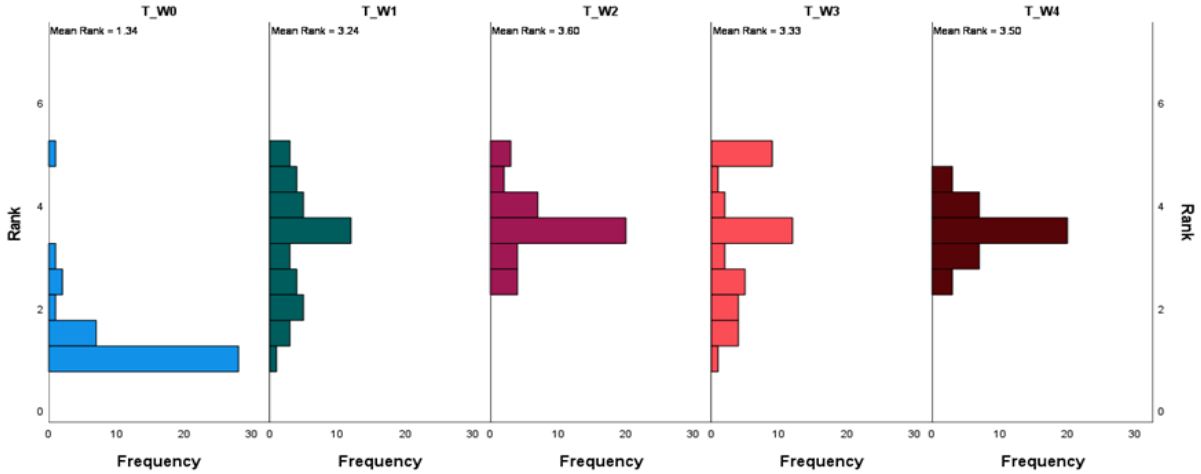
issues, fostering arts-based community involvement. Although the initial level of respondent awareness may be high, measuring the impact of drama on health messages necessitates a focus on the importance of longitudinal assessment of interventions[41].

The lecture intervention method has proven to be appropriate for improving knowledge in school-age students as evidenced by significant results. This is consistent with similar research on elementary school students aimed at improving knowledge and understanding of balanced nutrition[42]. The lecture method also encouraged overweight high school students to improve their understanding of nutrition and nutrition[31-32]. Other studies indicated that a single method is ineffective in changing school student behaviors regarding fulfilling nutritional needs[43,45–48]. Therefore, while the lecture method cannot achieve practical skill development alone[48], an interactive and practical approach is needed for greater effectiveness[21-25], alongside family involvement[46]. In other words, a more comprehensive approach is combining the lecture method with other methods is required for optimal impact[49].

The results of this study are consistent with those of other studies that used a combination of drama and lecture methods, which found an increase in respondents' understanding of cancer patient care[50]. Interventions with a combination of drama and lecture methods can also be carried out in nutrition education, which presents a multi-faceted approach that can significantly increase nutritional knowledge and encourage healthy behaviors in various populations. The integration of interactive and engaging methods such as drama combined with lectures creates a more effective educational experience that encourages active participation and information retention[51]. Studies on the provision of healthy menus aimed at improving children's eating behaviors reported significant changes in food intake and practices after the intervention[52].

The Wilcoxon test revealed a significance value for knowledge (p-value=0.035), indicating a significant change in knowledge before and after the intervention, while the significance value of attitude (p-value=0.15) indicated no significant change in attitude before and after the intervention. The results of this study are in contrast with other studies indicating that the lecture method has succeeded in improving knowledge, attitudes, and quality of eating patterns at once in school students[33]. Nevertheless, these results are consistent with those of other studies indicating that increasing knowledge alone is not sufficient to change attitudes significantly[31-32]. This may occur because of the pre-existing high individual basic attitude, thereby limiting the potential for further attitude improvement[32-33]. Additionally, the drama intervention was conducted only once in this study. In fact, the duration of the drama intervention is important in achieving significant changes in attitudes. In other words, long-term involvement is needed for deeper changes in perception[56].



Images 1. Weekly progress of practices (week 0-4)

The development of practices before and after the intervention increased each week and tended to be consistent (Figure 1). The results of the Friedman test are illustrated in Figure 1. As shown in the figure, there was a change in students' practices related to bringing healthy packed meals. Before the intervention (T_W0), most female students did not bring healthy packed meals, but in the first week (T_W1) after the intervention, the number of female students who brought healthy packed meals increased, and the practice tended to be consistent until weeks 2, 3, and 4 (T_W2, T_W3, T_W4). These findings are consistent with other research on food consumption patterns, indicating that providing a healthy menu as an intervention in a school setting has proven effective in increasing knowledge and eating practices in children[35-36]. The consistency of post-intervention practices is consistent with research on food consumption patterns showing that interventions promoting healthy eating significantly influenced students' food choices, leading to sustained increases in healthy food consumption [59]. These findings further support the notion that structured interventions can lead to long-term changes in dietary behavior, where the intervention successfully increased students' intentions to adopt healthier eating habits, which remained high in the weeks following the intervention[60].

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A study conducted on students of SDN Pesanggarahan 02 South Jakarta found that the habit of bringing lunch boxes was still low, at only 51.6%, with many students rarely bringing packed meals to school[61]. This shows an inconsistency in the behavior of bringing healthy packed meals among adolescents. Although many adolescents realize the importance of bringing healthy packed meals, they are often influenced by the social environment, such as peers and unhealthy food trends that are popular on social media[62-63]. This is supported by research showing that adolescents tend to choose foods that are more easily accessible and visually appealing without paying attention to their nutritional content, leading to irregular and inconsistent eating behaviors[64]. In addition, internal factors such as dissatisfaction with body image and pressure to meet beauty standards can also influence decisions in food choices, resulting in unhealthy and inconsistent eating behaviors[65-66]. Therefore, it is important to increase understanding and awareness of nutrition among adolescents, especially adolescent girls during menstruation, and to create an environment that supports healthy food choices to be more consistent in bringing nutritious food[67].

The advantage of this research lies in the use of several intervention methods applied in an integrative manner, so that the expected behavioral outcomes can be achieved. The disadvantages are the lack measurement to determine which of the three methods was most effective, and the interventions were discontinued after the implementation of the third intervention due to the conclusion of the contract period with the funding provider.

CONCLUSIONS

Interventions using drama, lectures, and provision of healthy packed meals can significantly increase knowledge and practices in respondents. Changes in practices increased before the intervention to the first week after the intervention and tended to be consistent in the following weeks (up to week 4). These interventions can be used by schools or education and health offices to improve the behavior of bringing healthy packed meals that are useful for preventing the negative impacts of stunting.

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

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AUTHOR CONTRIBUTIONS

NL: conceptualization, methodology, supervision; NR: conceptualization, methodology, supervision; DMW: data curation, data analysis testing, validation; YHP: data collection, writing-original draft, writing review, editing; JD: data collection, writing-original draft, writing-review, editing.

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