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INFLUENCE OF NUTRITION AND HYGIENE EDUCATION FOR STUNTING PREVENTION TO SUPPORT THE ACCELERATION OF SDG's

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ABSTRACT

Background: Sustainable Development Goals (SDGs) aim to ensure healthy lives and promote well-being for all ages. Stunting and other malnutrition in the First 1,000 Days of Life not only increase the risk of inhibiting physical growth and causing children's vulnerability to disease but also inhibit cognitive development, which will affect the level of intelligence and productivity of children in the future. Providing nutrition and hygiene education to adolescent girls is one of the solutions. As a result, they can prepare sufficient nutrients for themselves and their families after getting married or pregnant and having children. Moreover, Islamic boarding schools could be the right place for them to get an education. **Aim:** The present study aimed to determine the effect of counseling on increasing knowledge about balanced nutrition and hygiene in female students. **Methods:** We used quasi-experimental research with one pretest-posttest group on one female student, while data were analyzed using the Wilcoxon test. **Results:** The study showed that the average of the pretest and posttest in nutritional knowledge was 61.56 and 64.23, respectively. These results significantly increased (2.67 points) with a *p-value* of 0.019. On the other hand, there was no significant increase in hygiene knowledge, with a difference of 1.7 points between the pretest and posttest groups (*p* = 0.132). **Conclusion:** In conclusion, counseling using the lecture method can improve nutritional knowledge in female students.

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BACKGROUND

The targets of the SDGs in 2030 are to ensure a healthy life and advance welfare for all ages.¹ Therefore, the government has launched Indonesia's Vision 2045 to become a sovereign, advanced, just, and prosperous country. Meanwhile, one of the health problems in Indonesia is stunting.¹ The prevalence of stunting in Indonesia was 21.6 percent in 2022, which is lower than in 2021 (24.4 percent). However, this figure has not yet met the government's target, which is to target the prevalence of stunted toddlers in Indonesia to be 14 percent by 2024.²

Stunting is a health problem for baby or toddler body growth, so they fail to have the ideal height for their age. Several factors causing stunting are poor nutrition (both from the mother and the baby), lack of health and nutrition knowledge of the mother, limited health services, lack of access to

nutritious food, and lack of access to proper sanitation.³

Stunting and other malnutrition in the First 1,000 Days of Life not only increase the risk of inhibiting physical growth and causing children's vulnerability to disease but also inhibit cognitive development, which will affect the level of intelligence and productivity of children in the future.⁴

The First 1,000 Days of Life is a phase that begins from the formation of the fetus during pregnancy (270 days) until a two-year-old child (730 days). This phase is a golden period that greatly determines the child's future as well as a critical point because the brain has been developing rapidly, so it is very vulnerable to environmental influences that affect brain structure and cognitive abilities. During this period, the child's needs—nutrition, affection, and stimulation—need to be met.¹



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Dietary habits are the most important behaviors that can affect nutritional status because the quantity and quality of food and beverages consumed will affect nutritional intake, which may influence individual and community health. Optimal nutrition is essential for normal growth and physical and intellectual development of infants, toddlers, and entire age groups. Based on this problem, nutrition can be met using balanced nutrition guidelines that guide daily food consumption and healthy behavior based on the principles of consuming a variety of foods, clean living behavior, physical activity, and monitoring body weight regularly to maintain normal body weight.⁵

The government's program to reduce stunting rates is through sensitive and specific nutritional interventions. Sensitive nutritional interventions are given to infants and pregnant women, while specific interventions are targeted at the community and the general public or development activities outside the health sector. These specific nutritional interventions contribute to 70% of interventions, including providing sexual and reproductive health education as well as nutrition for adolescent girls and environmental cleanliness.³

A clean and healthy environment, as well as one free from mosquito breeding grounds, is an example of good environmental hygiene. Research revealed a relationship between drinking water sources and stunting in children. Research findings showed that households using tap water were more likely to experience stunting compared to households using tanker water or well water. This suggests that tap water may not meet physical quality standards for drinking water. In addition to water quality, proper waste disposal facilities are also correlated with reduced incidence of stunting.^{6,7}

One educational option is the Islamic boarding school, which historically focused exclusively on religious studies. However, modern Islamic boarding schools have evolved to incorporate a variety of secular subjects, including mathematics, social sciences, and science. Islamic boarding schools typically consist of administrators, educators, and students. Students, known as *Santri* (male) and *Santriwati* (female), can choose between boarding and non-boarding programs. Unfortunately, the large student population often leads to neglect of environmental cleanliness and personal hygiene.^{8,9}

One way to increase knowledge is through education. According to Notoatmodjo, health education is defined as an effort to improve the knowledge, attitudes, and practices of individuals or groups in managing health. In his latest book, Notoatmodjo explained that health education could empower people to make informed decisions about their health and encourage positive behavior change.¹⁰

Between 2017 and 2019, the majority of teenage women married at the age of 19–24 years. It should be noted that 18-19 years is the average age range for high school/vocational high school/equivalent graduates. To ensure optimal health for themselves and their families in the future, young women require comprehensive education on nutrition and environmental health, especially before marriage, pregnancy, and parenting.

METHODS

The design of this study was pre-experimental with a one-group pretest-posttest (without a control group). The study was conducted on March 8, 2024, at the Islamic Boarding School "X" in Semarang City. The respondents of this study were female students at the Islamic boarding school X who were selected by total sampling. The total number of respondents in this study was 71 female students. Health education was carried out through lectures, while the data obtained were primary data. The research instrument was a questionnaire adapted from previous research to measure knowledge and attitudes before and after counseling, which contained 24 questions about balanced nutritional knowledge, such as breakfast, sources of carbohydrates, protein, fat, vegetable consumption, consumption of fast food, and sweet foods. Meanwhile, 17 questions about personal hygiene include maintaining cleanliness, skin, nails, hair, clothes, and washing hands. We used the Wilcoxon test because the data was not normally distributed.

RESULTS

The total respondents were 71 female students from Islamic Boarding School X, whose characteristics are presented in Table 1.



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Table 1. Characteristics of respondents

Variable	Mean	Min-Max
Age (years)	14,72	(12-20)
Weight (kg)	49,96	(38-80)
Height (cm)	153,32	(136-166)

The average age of female students was 14 years, ranging from 12 to 20 years. The average weight was 49.96 kg (38–80 kg), while the average height was 153.32 cm (136–166 cm).

Knowledge Level

Respondents' knowledge was assessed using a questionnaire before and after the lecture. Nutrition and hygiene knowledge scores are presented in Table 2 and Table 3.

Table 2. Nutrition Knowledge Score (Ratio) with the Wilcoxon test

n = 71	Mean	Min-max	p-value
Pretest	61,56	48-91	0,019*
Posttest	64,23	40-80	

This study used ratio data to assess nutritional knowledge, resulting in pre-test and post-test means of 61.56 and 64.23. The Wilcoxon test was chosen because the data distribution was not normal. Statistical analysis revealed a significant increase ($p = 0.019$) in nutritional knowledge before and after education.

Table 3. Hygiene Knowledge Score (Ratio) with the Wilcoxon test

n = 71	Mean	Min-max	p-value
Pretest	87,8	46,7 – 100	0,132
Posttest	89,5	60 – 100	

This study analyzed nutritional knowledge using ratio data. The pre-test and post-test averages were 61.56 and 64.23, respectively. The results ($p = 0.019$) showed a significant increase in nutritional knowledge after health education with the Wilcoxon test.

DISCUSSION

Nutritional Knowledge

Health education includes efforts to positively influence the behavior of individuals, groups, or communities toward maintaining and improving health. According to Indonesian Health Law No. 17/2023, nutrition improvement initiatives include health education focusing on balanced nutrition. This education aims to raise awareness of the importance of nutrition and improve nutritional status, specifically targeting pregnant and lactating mothers, infants, toddlers, and adolescent girls.¹¹

The results in this study showed a significant increase in knowledge among female students before and after the lecture ($p = 0.012$). The intervention method used was a lecture using a PowerPoint presentation, which included attractive visuals, explanations, diagrams, and colored graphs to facilitate understanding.

This study was supported by research from Erma Juliana, which obtained a p-value of 0.001. This means that there is an increase in knowledge before and after health education. This study is also in line with research conducted by Nur Pratiwi Hartono, Catur Saptaning Wilujeng, and Sri Andarini, which showed that there was a difference in knowledge before and after being given nutrition education with the lecture method ($p \leq 0.05$).

The lecture method involves two-way communication, which is carried out face-to-face so that the instructor can directly find out the response of the audience, who is given nutrition education, as well as there is interaction between the speaker and the audience.¹²

A method is a systematic approach to achieving a specific goal. In health promotion, lectures are an effective method and suitable for large groups (more than 15 participants) at various levels of education. Lectures involve verbal communication, supplemented by visual aids such as PowerPoint slides, which increase engagement and understanding. Moreover, PowerPoint presentations simplify explanations, making health education more efficient and engaging.^{13,14}

Education for adolescents is a crucial point, especially to support their health. Nutritional status in the womb will affect health and quality of life in the future. Pregnant women with malnutrition and anemia have a higher risk of low birth weight (LBW) in babies and maternal death. Adolescents who adopt



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a healthy lifestyle and eating habits will better maintain their health in adulthood. As future leaders, adolescents play an important role in national development. Therefore, educating them about healthy living through various counseling activities is needed.^{15,16}

Personal Hygiene

Personal hygiene plays an important role in maintaining health. Regular hygiene practices effectively protect against germs and prevent illnesses, as well as boost teenagers' increased self-confidence and foster a sense of comfort when interacting with others. Important habits to maintain personal hygiene include bathing, brushing teeth, grooming hair, cutting nails, and dressing appropriately. Good hygiene contributes greatly to a teenager's self-esteem and overall well-being.¹⁷

The results showed an increase in average knowledge scores of 1.7 points before and after lecture-based counseling. However, statistical analysis showed no statistically significant difference in knowledge acquisition ($p = 0.132$).

This finding is contrary to Kistin's (2024) study ($p < 0.05$), which showed that lecture-based counseling with PowerPoint significantly improved personal hygiene knowledge and practice scores among respondents.¹⁸

Nevertheless, this study is in line with Elvi Juliansyah's study (T-test results showed $p = 0.319$), which means there was no statistically significant difference in knowledge before and after personal hygiene education in students of Muhammadiyah Sintang Junior High School.

Personal hygiene counseling increased knowledge, but no significant difference was observed before and after counseling due to high pre-

test scores among female students. Previous exposure to personal hygiene information through various media, health professionals, peers, and family habits contributed to the already high baseline knowledge.¹⁹

This study has limitations, most notably the lack of a control group. Future research should consider including a control group for comparative analysis. Expanding the study to public schools and male students would also increase generalizability.

CONCLUSION

Counseling intervention using the lecture method can increase nutrition knowledge, but there was no significant increase in knowledge about the personal hygiene of female students.

SUGGESTIONS

Addressing stunting requires nutrition education programs that can be implemented among female students in Islamic boarding schools. Integrating nutrition and environmental hygiene modules into daily activities and ensuring balanced food choices according to nutritional guidelines can effectively support this initiative.

ETHICAL APPROVAL

The present study was approved by Komite Etik Fakultas Kedokteran Universitas Diponegoro (approval no. 331/EC/KEPK/FK-UNDIP/VII/2023).

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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