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The Influence of Health Education on the Prevention of Anemia and Stunting in Adolescent Girls at SMAN 1 Wawotobi

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ABSTRACT

Introduction: *Stunting is a chronic nutritional problem with serious long-term impacts. Stunting causes irreversible growth disorders. One of the factors that has the potential to cause stunting is anemia. This study aimed to determine the effect of health education about anemia and stunting on the knowledge of adolescent girls at SMAN 1 Wawotobi.*
Method: *This study employed a quantitative study with a cross-sectional design. The sample consisted of 80 female students at SMAN 1 Wawotobi. A questionnaire was administered to assess knowledge before and after health education. The analysis method used the chi-square test to determine the average level of knowledge of respondents after health education.*
Results: *The results showed an increase in knowledge among adolescent girls after health education about anemia and stunting.*
Conclusions:*These results are expected to provide additional references on the importance of preventing stunting as early as possible, especially in adolescent girls, to meet their nutritional needs and prevent anemia, thus producing a stunting-free generation.*

Introduction

Stunting is a chronic nutritional problem with serious long-term impacts. Stunting causes irreversible growth impairment (Ekayani and Suryani, 2019). One of the factors that has the potential to cause stunting is anemia. Nutritional problems during this period will affect growth and impact a child's cognitive abilities (Fitrotuzzaqiyah and Rahayu, 2022). Healthy adolescents will experience normal growth and development according to age standards, while adolescents with poor health will have an impact on their survival and even on the reproduction of stunted children (Ministry of Health, 2020).

Stunting cases remain a global health problem because they are associated with the risk of illness and even death. One of the factors that has the potential to cause stunting is anemia. Globally, more than 146 million children suffer from stunting (WHO, 2022). Health research has shown a decline from 37.6% (2013) to 30.8% (2018), and the Indonesian Nutrition Status Survey (INSS) has shown a 2.8% decline from 24.4% (2021) to 21.6% (2022). However, this figure remains quite high and remains a public health problem, having not yet reached the government's target of 14%. Therefore, stunting is a health problem that must be addressed in Indonesia. The results of INSS in 2022 for Southeast Sulawesi showed a still-high stunting rate of 27.7%, while

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the stunting rate for toddlers in Konawe Regency was 28.3% (SSGI, 2023). The data from the Wawotobi Public Health Center for the past three years showed an increase in the number of stunted children in 2021 (20 toddlers), 2022 (24 toddlers), and 2023 (73 toddlers).

The figures are still below the national target in tackling stunting, and the increasing tendency of children with stunting makes it necessary to carry out early prevention starting from adolescents by providing education about anemia and stunting as well as their impact on adolescents as prospective mothers so that in the future, the children born are expected not to be stunted.

Stunting is a condition characterized by a child's reduced height compared to other children of the same age. Simply put, stunting is a term for growth disorders in children. The main cause of stunting is inadequate nutritional intake during a child's growth period. Many people do not realize that a child's short height can be a sign of chronic nutritional problems.

Stunting prevention and management must be carried out by all parties and targeted according to the factors causing stunting. Stunting prevention must begin early, so information about stunting needs to be provided, including to adolescent girls to prepare themselves to become prospective mothers with good nutritional and health status (Islamiyah, 2022). Adequate iron intake in adolescent girls is crucial in preventing stunting. Anemia in adolescents caused by iron deficiency negatively impacts immunity, concentration, academic achievement, fitness, and productivity. Anemia experienced by adolescent girls will have a more serious impact, considering that they are prospective mothers who will become pregnant and give birth to a baby, thus increasing the risk of maternal mortality, premature birth, and low birth weight (LBW) (Kinanti and Marliana, 2022).

Stunting prevention can be achieved through several methods, including pregnancy planning, nutritional support during pregnancy, exclusive breastfeeding, and monitoring child growth and development. Prevention during adolescence and pregnancy planning can be achieved through anemia education. Anemia education is crucial for stunting prevention, as anemia is a major risk factor for stunting, particularly in adolescent girls and pregnant women. This education increases public understanding of the relationship between anemia and stunting (Kinanti and Marliana, 2022).

This is due to data obtained by the Indonesian Ministry of Health in 2019 regarding the nutritional status of adolescents aged 13-15 years, which showed that 25.7% were severely stunted. This group of adolescents will eventually become mothers and give birth to the next generation. Malnutrition or overnutrition during adolescence will affect the nutritional status of young women throughout pregnancy. The mother's health during pregnancy and after delivery significantly impacts fetal growth and increases the risk of stunting.

Various efforts are made in the prevention and management of stunting through various interventions, namely specific nutrition interventions and sensitive nutrition interventions. Specific nutrition interventions aim to prevent and reduce the direct causes of the problem. Sensitive nutrition interventions aim to address indirect causes such as food security, access to health services, environmental health, and providing parental education (Fitrotuzzaqiyah & Rahayu, 2022).

Adolescents tend to expend more energy and often consume more fast food. Other factors that can put adolescent girls at risk of anemia include traditional beliefs and food prohibitions during menstruation. Therefore, it is important to educate adolescent girls about stunting and encourage them to actively contribute to stunting prevention.

Knowledge is one of the components that gives rise to intrinsic motivation or desires arising from oneself without being pushed by others, which has an impact on a person's attitudes

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and behavior. Knowledge in a particular field will be related to a person's attitudes and behavior. Adolescents' knowledge of nutrition is often neglected, which impacts their behavior in meeting nutritional needs, especially iron, which can cause anemia. Health education in schools can improve the knowledge of adolescent girls (Adilla, 2021). Health education is the application of educational concepts in the health sector. It is an educational practice. The basic concept of education is the learning process, which means that education causes individuals, groups, or communities to become better, more mature, or to experience change. This is based on the assumption that humans, as social beings in their lives, always need the help of others who have advantages, such as adults who are smart, capable, and knowledgeable. Apart from learning activities, an individual, group, or community does not influence the achievement of these goals. Learning is a change in a person from not knowing to knowing or from being unable to do something to being able to do something (Cholifah et al., 2020).

According to the Basic Health Research in 2018, the prevalence of anemia in adolescents was 32%, which means that 3-4 out of 10 adolescents suffer from anemia (Ministry of Health, 2018). Anemia has a significant impact on human health, social well-being, and economic development. Poor health outcomes, such as neonatal and perinatal mortality, low birth weight, preterm birth, and stunted child growth, are often related to the anemia (Chaparro & Suchdev, 2019). Therefore, this study aimed to determine how health education influences female students' knowledge about anemia and stunting prevention.

Methods

The research design used was quasy-experimental with one group pretest-posttest design without control group. The population in this study was all grade 10^{th} - 12^{th} female students at SMAN 1 Wawotobi, totaling 381 female students with a sample of 80 female students calculated using the Slovin formula and taken using proportionate stratified random sampling technique. The study was conducted at SMAN 1 Wawotobi in 2025. The instrument used in the study was 15 closed-ended questions with four alternative answers (a, b, c and d) used in the pretest and posttest to measure the knowledge of female adolescents. The instrument used has been tested for validity using the Pearson Product Moment (r) to see whether the correlation of each question is significant, and the results are valid with values above p> 0.005. In addition, a reliability test has also been conducted with a Cronbach's Alpha value > 0.6, which is 0.811, indicating that the tested questionnaire is reliable.

This study employed a quantitative design with a quasy eksperimental design. The sample size was 80 respondents. The study was conducted on August 5, 2025, at SMAN 1 Wawotobi. The data collection was conducted by administering a questionnaire to respondents to measure their knowledge before and after health education on anemia and stunting prevention in adolescent girls.

Data analysis was performed by first testing for normality using the Kolmogorov-Smirnov test, which found the data to be non-normally distributed. Statistical testing was then performed using the Wilcoxon test with a 5% error rate to prove the research hypothesis.

Results

The respondents in this study were first given an initial questionnaire to determine their level of knowledge about anemia and stunting prevention in adolescents. The next stage involved providing health education related to anemia and stunting prevention in adolescent girls.

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After processing the data from the questionnaires given to respondents, the following results were obtained:

Table 1. Results of the questionnaire on students' knowledge about anemia

Knowledge	Less		Good		n	Min	Max	Mean
	n	%	n	%				
Pre-test	64	80	16	20	80	27	73	**42**
Post-test	**22**	**27.5**	**58**	**72.5**	**80**	**40**	**93**	**71**

Based on the results of Table 1 above, the results of the anemia pre-test in SMAN 1 Wawotobi students who have less knowledge are 64 students (80%), and those with good knowledge are 16 students (20%), with a minimum score of 27, a maximum score of 73, and a mean score of 42. Meanwhile, in the post-test results of SMAN 1 Wawotobi, students who still have less knowledge are 22 students (27.5%), and those with good knowledge are 58 students (72.5%), with a minimum score of 40, a maximum score of 93, and a mean score of 71. This shows significant results, because the students focus on listening to the material and concentrate during the delivery of educational materials. It is hoped that these results show that students' knowledge about anemia has increased, so that it can be applied to attitudes and behaviors that are in accordance with the education that has been given.

Table 2. Results of the questionnaire on students' knowledge about stunting

Knowledge	Less		Good		n	Min	Max	Mean
	N	%	n	%				
Pre-test	59	73.8	21	26.3	80	15	65	**39**
Post-test	**12**	**15**	**68**	**85**	**80**	**45**	**95**	**73**

Based on the results of Table 2 above, the results of the stunting pre-test in SMAN 1 Wawotobi students who have less knowledge are 59 students (73.8%), and those with good knowledge are 21 students (26.3%), with a minimum score of 15, a maximum score of 65, and a mean score of 39. Meanwhile, in the post-test results of SMAN 1 Wawotobi, students who still have less knowledge are 12 students (15%), and those with good knowledge are 68 students (85%), with a minimum score of 45, a maximum score of 95, and a mean score of 73. This shows significant results, because the students focus on listening to the material and concentrate during the delivery of educational materials. It is hoped that these results can increase the knowledge and understanding of activity participants regarding stunting. This knowledge is expected to be the basis for students' curiosity to find out more about stunting.

Table 3. The influence of health education on the level of knowledge of adolescents about anemia

Variable	Post test-Pre Test
Z	-2.227[b]
Asymp. (2-tiled)	0.026

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Based on Table 3 above, the p-value is 0.026 < 0.05, thus Ha is accepted, which means that there is an influence of health education on increasing adolescent knowledge about anemia.

Table 4. The influence of health education on the level of adolescent knowledge about stunting

Variable	Post test-Pre Test
Z	-7.403[b]
Asymp. (2-tiled)	<0.001

Based on Table 4, the p-value is 0.001 < 0.05, thus Ha is accepted, which means that there is an influence of health education on increasing adolescent knowledge about stunting.

Discussion

Knowledge before being given education to 80 female students in grade 9th at SMAN 1 Wawotobi with an average value of 39 or sufficient category and knowledge after receiving education, obtained an average of 73. The results of the analysis on the Wilcoxon test obtained a significance value of 0.001 <0.05. Therefore, it can be concluded that there is an effect of education on preventing anemia and stunting on the knowledge of adolescent girls using educational methods at SMAN 1 Wawotobi. This is in line with the study conducted by Frisda et al. (2022) that there is an effect of health education using animated video media on increasing knowledge of adolescents with a p-value = 0.000.

Based on the study results, it is found that the average score of respondents shows an increase in knowledge. This is in line with a study conducted by Fayasari et al. (2022) on anemia prevention in adolescents at Bojonggede Vocational High School, which found an average increase. Knowledge is the understanding or information about something acquired by someone through experience and learning, whether by individuals or society in general (Swarjana, 2021). According to Nursalam in Chusniah Rachmawati (2019), knowledge is the result of the process of "knowing," which is obtained after an individual senses a particular object. This sensing process occurs through the five human senses. The knowledge or cognitive domain is crucial in shaping one's actions. Behavior, based on knowledge, tends to be more enduring than behavior without a knowledge base.

Health education has a significant positive impact on adolescents' knowledge about anemia, as evidenced by numerous studies showing an increase in knowledge after education. Effective health education, particularly using engaging media such as audiovisuals, can improve adolescents' understanding of the causes of anemia, its negative health impacts, and preventative measures such as consuming nutritious foods and iron supplements.

Conclusion

Based on the study results, this study can be concluded that education on anemia and stunting prevention for adolescent girls has an impact on their knowledge.

Developing more engaging education on anemia and stunting prevention for adolescent girls is systematically designed to produce effective learning. The average knowledge score before receiving health education using animated videos is in the enough category, and the average knowledge score after receiving education using animated videos was in the good category.

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