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Community Service Report

Improving Adolescents' Knowledge of Stunting through Health Education Interventions

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ABSTRACT

Stunting is a manifestation of chronic undernutrition that occurs during critical periods of growth and development, beginning in early life. Adolescents play an important role in stunting prevention, as they represent future parents whose knowledge and awareness can influence child health outcomes. This study aimed to improve adolescents' knowledge regarding stunting, its causes, and preventive measures as an early strategy to reduce stunting prevalence. A quantitative study design was employed using a pre-test and post-test approach. Health education sessions were delivered to adolescents in Tanetea Hamlet and Lembang Loe Hamlet, with knowledge levels measured before and after the intervention using the same questionnaire. The results demonstrated a statistically significant improvement in adolescents' knowledge after the intervention ($p = 0.016$; $p < 0.05$), indicating a meaningful difference between pre- and post-education scores. These findings suggest that health education interventions are effective in increasing adolescents' understanding of stunting. It is recommended that structured training programs on stunting prevention be continuously provided for adolescents. Additionally, strengthening adolescents' communication skills may enable them to disseminate stunting-related information to peers, families, and the wider community, while regular evaluations should be conducted to assess knowledge improvement and behavioral change outcomes.

1. Introduction

A persistent dietary issue, stunting has wide-ranging effects on a person's adult physical, mental, and productive development. The long-term quality of human resources can be impacted by children who suffer from stunting during the first 1,000 days of life because they often show

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delayed linear growth and impaired cognitive development that can last into school age and adulthood (Deshpande & Ramachandran, 2022). These effects have a substantial socioeconomic impact in addition to being detrimental to an individual's health, since they raise the likelihood of developing chronic illnesses in later life and lower educational attainment and employability (Ramlan et al., 2025).

In addition to direct nutritional factors, recent evidence suggests that social determinants such as parental education, family income, access to health services, and feeding and sanitation practices play a significant role in the occurrence of stunting (Saputra et al., 2025). By understanding stunting as a multifactorial phenomenon with cross-sectoral impacts, preventive interventions require a holistic approach involving aspects of nutrition, WASH (Water, Sanitation and Hygiene), education, and community empowerment.

The lack of protected drinking water sources and improper water treatment serve as transmission channels for pathogens that cause diarrhea and worm infections. These persistent infections lead to environmental enteric dysfunction (EED), a chronic inflammatory bowel condition that inhibits the body's absorption of essential nutrients, even when food intake is deemed adequate (Millward, 2017). Therefore, the current approach to stunting prevention is shifting from nutrition-specific interventions to nutrition-sensitive interventions that include improved sanitation and comprehensive health education for all levels of society.

The most recent national and regional statistics show Indonesia's success in reducing stunting as well as its difficulties. According to the 2022 Indonesian Nutritional Status Survey (SSGI), the country's stunting prevalence had decreased to 21.6% from the year before, and the 2024 SSGI data revealed that the decline had continued to 19.8%, which was still higher than the government's medium-term target (BKPK-Kemenkes, 2025). Although there is still considerable regional variation, which calls for more contextual approaches, the central and regional governments reported a number of effective cross-sectoral intervention programs that decreased the number of families at risk of stunting in multiple districts (BKPK-Kemenkes, 2025).

Previous research by Olo et al. (2021) has shown that households with unprotected drinking water sources are twice as likely to give birth to stunted children as households with safe drinking water. Furthermore, a recent study by Eka et al. (2024) highlighted the importance of education through innovative media to change health behaviors in the community. However, most stunting prevention interventions have focused on pregnant women and toddlers. A research gap exists regarding interventions for adolescents, the "upstream" group in the life cycle. Adolescents are potential parents who will determine the nutritional status of future generations, yet their health literacy levels regarding the link between sanitation, nutrition, and stunting remain relatively low in many areas (Nugraheni, 2024).

The primary objective of this study was to improve adolescents' understanding and knowledge in Tanetea and Lembang Loe hamlets regarding stunting prevention strategies through improved healthy lifestyles and sanitation. Using quantitative methods with a pre-test and post-test approach, this study aimed to measure the extent to which educational interventions can produce tangible changes in adolescents' cognitive levels. The hypothesis proposed in this study was that there would be a statistically significant difference in adolescents' knowledge levels before and after the outreach

program (Ho is rejected and Ha is accepted if $p < 0.05$). Specifically, this study is expected to demonstrate that education targeted at adolescents as expectant mothers can be an effective instrument in reducing stunting risk factors at the family level. The results of this study are also intended to provide policy recommendations for village governments to integrate health communication training programs for adolescents, enabling them to become active peer educators in disseminating information about stunting prevention within their families and communities.

2. Method

This community service program was implemented using the ABCD (Asset-Based Community Development) method. ABCD is based on the principles put forward by John McKnight and Jody Kretzmann, founders of The Asset-Based Community Development (ABCD) Institute. The asset-based approach helps communities see the reality of their internal conditions and the potential for change. This approach guides change, focuses on what the community wants to achieve, and helps communities realize their vision. This research was used to achieve the goal of this community service program, which was to increase knowledge about stunting. The study used a quantitative method, administering a pre-test before the counseling session and then a post-test with the same questions after the counseling session to adolescents in Tanetea and Lembang Loe hamlets.

This intervention was conducted to determine differences in adolescent knowledge before and after counseling by the authors. This study used primary data collected in May 2024. Analysis was conducted using a t-test to determine differences in adolescent knowledge and attitudes before and after the counseling. This program was implemented on Sunday, October 6, 2024, at SDN 18 Rumbia. Our research subjects were adolescents living in Tanetea and Lembang Loe hamlets.

This one-day community service activity consisted of the following stages:

a. In the first stage, adolescents were gathered in a room at SDN 18 Rumbia.
b. In the second stage, a pre-test was conducted to determine the adolescents' knowledge about stunting.
c. In the third stage, counseling was conducted by the community service implementer.
d. In the fourth stage, a post-test was conducted to determine the adolescents' knowledge after the counseling.

3. Results & Discussion

Result

The results of the study showed that after being given an extension intervention using poster media, there was a statistically significant increase in knowledge.

Table 1 *Descriptive Test knowledge pre-test and post-test adolescents*

	N	Minimum	Maximum	mean	Std. Deviation
Pre-test	21	30	70	50.00	10.000
Post-test	21	10	90	62.38	23.855
Valid N (listwise)	21				

Table 1 show statistical test results obtained p value is 0.016 and if compared to with a value = 0.05, p value < a means that there is a significant difference in the average value of adolescent attitudes before and after being given counseling media in the form of posters about stunting in Tanetea and Lembang Loe hamlets located at SDN 18 Rumbia, Pallantikang Village.

Based on the results of the analysis, it was found that the average value of adolescent knowledge about stunting before being given poster media was 50 with a standard deviation of 10 and the lowest value was 30 and the highest value was 70. Meanwhile, the average knowledge of adolescents about stunting after being given poster media was 62.38 with a standard deviation of 23.8 and the lowest value was 10 and the highest value was 90.



Figure 1. Pre-test filling by teenagers in Tanetea and Lembang Loe hamlets

One in four toddlers in Indonesia suffers from stunting. Stunting occurs in all provinces in Indonesia. Stunting not only impacts the affected child personally but also their environment. Stunted children will not perform as well as other healthy children when entering the workforce. Public knowledge about stunting remains lacking.



Figure 2. Counseling Process

Table 2. Results of the Normality Test of Adolescent Knowledge About Stunting in Tanetea and Lembang Loe Hamlets

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	Df	Sig.
Pre-test	0.262	21	0.001	0.899	21	0.034
Post-test	0.198	21	0.030	0.901	21	0.037

Based on table 2, it can be seen from the sample below 50, the significance is seen from the Shapiro-Wilk test and the result is 0.037, which means the data is not normal because the significance value is <0.05.

Tabel 3. The Result of Wilcoxon Test

		N	Mean Rank	Sum Of Ranks
Post-test – Pre-test	Negative Ranks	3[a]	8.67	26.00
	Positive Ranks	14[b]	9.07	127.00
	Ties	4[c]		
	Total	21		

	Post-test – Pre-test
Z	-2.413
Asymp. Sig (2-tailed)	0.016

The results of research conducted in Tanetea Hamlet and Lembang Loe indicate that educational intervention through counseling has a significant positive impact on adolescents' understanding of stunting. This is statistically proven through the Wilcoxon test which produced a significance value (p-value) of 0.016, which is smaller than the alpha value of 0.05. By rejecting the null hypothesis (Ho) and accepting the alternative hypothesis (Ha), it can be concluded that there is a significant difference between the level of adolescents' knowledge before and after being given counseling using poster media. This increase is evident from the shift in the average knowledge score from 50.00 in the pre-test to 62.38 in the post-test. Despite this increase, the very wide range of scores in the post-test, namely between 10 and 90, indicates that the absorption of information among participants is still quite varied.

Discussion

The results of this study indicate that a health education intervention using posters significantly improved adolescents' knowledge about stunting. The difference in mean knowledge scores before and after the intervention, as evidenced by a Wilcoxon test of significance of 0.016 ($p < 0.05$), indicates that the education provided was significantly effective in improving adolescents' understanding of the concept, causes, impacts, and prevention efforts for stunting. This finding is important considering that stunting is a chronic nutritional problem that not only impacts children's physical growth but also influences cognitive development, productivity, and the quality of human resources in the future.

This increase in knowledge aligns with the behavioral theory proposed by Lawrence Green in Notoatmodjo (2012), which states that a person's behavior is influenced by three main factors, one of which is predisposing factors. Knowledge is a crucial component of these predisposing factors because good knowledge will underlie the formation of more permanent attitudes and actions within an individual. In the context of this research, providing information about stunting serves as a stimulus to improve these predisposing factors in adolescents, so that in the future they are

expected to be able to make appropriate health decisions regarding nutritional status and consumption patterns. This finding is also supported by previous research which confirmed that the counseling method is very effective in boosting students' knowledge scores on chronic health issues such as stunting (Tampake et al., 2023).

The increase in adolescent knowledge following counseling interventions can also be understood within the context of a behavior change communication approach that emphasizes the importance of media matching to the target audience. Adolescents are in the formal operational cognitive development phase, enabling them to understand cause-and-effect relationships and abstract concepts. However, they still require an engaging and relevant information delivery approach to their daily lives. Posters, as a form of static visual media, have the advantage of conveying key messages concisely, concisely, and easily remembered. This aligns with the findings of Glanz et al. (2015) who stated that visual media plays a crucial role in health promotion because it can increase attention, comprehension, and message retention, particularly among younger age groups.

The effectiveness of using posters in this outreach program was also a key point in the discussion of the research findings. Posters, as a visual medium, can simplify complex information about stunting into messages that are easier to remember and understand. This is consistent with the results of questionnaire analysis, which showed an increase in correct answers for the majority of questions after the intervention. For example, the question regarding the physical characteristics of stunted children saw a sharp increase in correct answers, from only 10% in the pre-test to 76% in the post-test. The visualizations in the posters help adolescents recognize physical symptoms they may not have previously recognized as part of chronic malnutrition (Maheshwar et al., 2024). Similarly, previous research emphasize that education regarding stunting and achieving balanced nutrition must be delivered through engaging media to maximize adolescents' absorption of the information (Nurhaeni et al., 2024).

Targeting adolescents in stunting prevention efforts in Pallantikang Village is a strategic step supported by various literature. Adolescents are the closest generation before adulthood, who will eventually assume the role of parents in the future. Stunting itself is a chronic state of malnutrition that begins early in life. Therefore, interventions for expectant mothers are crucial to breaking the cycle of this problem (Widaryanti et al., 2024). By involving adolescents as agents of change, information about stunting prevention not only stops with the individual but can also spread to family and peer groups (Nurhaeni et al., 2024).

In addition to cognitive aspects, this study also touches on the importance of social engagement and the role of the community in supporting health programs. Although initially challenged by community resistance and limited resources, support from community leaders proved effective in overcoming these obstacles. The success of adolescent cadres in conveying health messages also demonstrates that community-based approaches can strengthen social cohesion and build collective trust in other health programs. This is reinforced by Herlina et al. (2025), who stated that active

community participation is an indicator of the long-term success of health programs. Therefore, ongoing training for adolescents is crucial not only to improve their own health literacy but also to hone their communication skills so they can educate the wider community about the dangers of inadequate water and sanitation, a major risk factor for stunting.

Overall, these findings provide a strong foundation for schools and village governments to continue promoting regular health promotion programs. The knowledge adolescents gain about the long-term impacts of stunting such as decreased performance in the workplace and low productivity must be continually reinforced to maintain their awareness. Continued support from various stakeholders, including health organizations and the government, is essential to ensure the sustainability of this youth cadre program. Therefore, efforts to create a healthy, prosperous, and productive Indonesian society can begin with strengthening basic services at the village level through targeted education for adolescents.

4. Conclusion

Based on the analysis, the average adolescent knowledge score about stunting before being given the poster was 50, with a standard deviation of 10, with the lowest score being 30 and the highest score being 70. Meanwhile, the average adolescent knowledge score after being given the poster was 62.38, with a standard deviation of 23.8, with the lowest score being 10 and the highest score being 90. The stunting training for adolescents has resulted in increased awareness and knowledge about prevention, highlighting the importance of regular monitoring and intervention to prevent stunting. Increased community participation in other health programs indicates that the program has successfully built trust and collective awareness.

Several recommendations were made, including providing training to adolescents on stunting issues, its causes, and prevention methods. Additionally, adolescents could be trained in communication skills to convey this information to peers, family, and the community. Evaluations should be conducted to measure the extent to which adolescent knowledge about stunting has increased and the behavioral changes resulting from the program.

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