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Research Article

The Effect of Animation Video-Based Education Toward Stunting Knowledge and Attitude Among Female Adolescents in Jakarta

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Abstract

Aims: The prevalence of stunting in Indonesia is one of the crucial problems that will have an impact on the next generation, so it needs to be prevented. Increasing stunting prevention knowledge and attitudes in adolescents related to health investment in the first 8000 days of life is important in reducing stunting rates. The aims of the study to identify the effect of investment education for the first 8000 days of life with animated videos as an effort to break the stunting cycle.

Methods: This study used the Quasi Experiment method with a two-group pre-posttest design with 214 respondents divided into an intervention group and a control group with 107 people in each group. The research analysis used Wilcoxon Rank and Manova.

Results: This study after being given the intervention showed that there were significant differences in the knowledge and attitude scores between the control group and the intervention group with a p-value of 0.000 ($p < \alpha 0.05$).

Conclusion: This study shows that providing education on health investment in the first 8000 days of life with animated videos affects increasing knowledge and attitudes of young women in preventing stunting.

Keywords:

Adolescent, First_8000_Days Of Life, Stunting, Video_Animation

INTRODUCTION

The prevalence of stunting in the world in 2020 reached 149.2 million. (1). Indonesia is listed as the 5th highest country in the world and 2nd in Southeast Asia whose population experiences stunting. (2). The results of the 2022 Indonesian nutritional status survey stated that 24.27% of toddlers experienced stunting. (1). Stunting can be interpreted as stunted, stunted or short due to failure to grow in children under five years old (toddlers), and if you stand side by side with friends the same age you will look shorter. (3). The condition of failure to thrive experienced by stunted children affects their physical and cognitive

development. The existence of stunting can hinder Indonesia's development goals, namely creating healthy, intelligent and productive Indonesian human resources, so stunting reduction must be accelerated.

Accelerating stunting reduction involves all efforts carried out holistically, integratively and with quality including specific interventions (addressing direct causes) and sensitive interventions (addressing indirect causes) through multi-sector collaboration at the central, regional and village levels with target groups including teenagers, prospective brides and grooms, pregnant women, breastfeeding mothers and children aged 0 - 59 months

(4) Teenagers are a huge opportunity as targets for accelerated interventions to address the stunting problem in Indonesia. Regarding the problem of stunting, young women require more attention, because they are prospective mothers who will give birth to the next generation (5)

Adolescents as prospective mothers need to be given interventions to reduce the incidence of stunting and will be part of efforts to break the cycle of stunting so that they can give birth to a superior generation of Indonesians. (6). Health problems that occur since adolescence have a big influence on the generation that will be born, one of which is the risk of giving birth to stunted babies. (7). The central and regional governments are still focusing on the 1000 First Days of Life period but handling it requires an uninterrupted approach, resulting in the 8000 First Days of Life (FDL) program which is being promoted. This program assumes that it is not only focused on 1000 FDL but there are 7000 other FDL which is also important for producing optimal growth, providing opportunities to correct failures in the previous period and most importantly preventing stunting in the next period and generation. (8). The researcher directed the research participants to high school students because if it was directed to college students, it would be biased because college students may have more progressive views on women's rights and education, which could affect their understanding of the complex factors that contribute to early marriage.

Adolescents can receive education on the following topics to help avoid stunting: anemia, reproductive health, physical exercise, puberty, sexual activity, stunting, and PHBS (4). Few studies have looked at the 8000 FDL program or thoroughly stunting prevention education in adolescents. Positivism in knowledge and character are essential components for preventing stunting. Adolescent perceptions of stunting will change if they possess accurate information about

stunting(9). Positivism will increase in tandem with the expansion of knowledge. The determination of an individual's attitude toward the sun is influenced by knowledge and character (10,11). The process of knowledge enhancement necessitates the utilization of sufficiently engaging media to motivate adolescents to comprehend the provided information (12). Due to its extensive use of audiovisuals, animated video content can provide significant knowledge (3). Animation videos are multimedia resources that use animated visuals to convey information, often accompanied by narration or text (13). These videos can simplify complex concepts, making them more engaging and easier to understand for diverse audiences, including children and parents. The combination of vibrant visuals, dynamic movement, and storytelling can capture attention and enhance the retention of information(14). Previous research showed that there was a change in knowledge and attitudes towards reproductive health in adolescents after being given an animated video about reproductive health education (3). Other studies have shown that providing animated videos can improve mothers' knowledge about nutrition in children aged 0-36 months (2). Both previous studies used animated videos to improve knowledge about the reproductive system and nutrition. The innovative aspect of using animated videos for stunting education lies in its ability to develop materials that cover stunting, nutrition, and the reproductive system. The provision of investment education throughout the first 8000 days of life through animated videos is expected to enhance the knowledge and attitudes of adolescent girls as an effort to break the cycle of stunting.

METHODS

Study Design

This study employed a quasi-experimental design featuring a two-group pre-test-post-test approach. The primary objective was to evaluate the impact of an educational

intervention (an animated video) on knowledge and attitudes regarding stunting among adolescent girls aged 15–19 years at SMAN 7 Jakarta. The design facilitated the assessment of changes within groups over time, allowing for comparisons between an intervention group and a control group.

Sample

The study sample consisted of 214 participants, divided into two groups: 107 respondents in the intervention group and 107 respondents in the control group. The selection of participants was conducted using purposive sampling, focusing on adolescent girls who met specific inclusion criteria: age between 15 and 19 years, presence of physical and mental health issues, experiencing sensory and perceptual challenges. This targeted approach ensured that the sample was representative of the population experiencing vulnerabilities related to stunting.

Instruments

Data collection instruments were developed by the researchers and included a structured questionnaire consisting of 41 items related to knowledge and attitudes towards stunting. The instruments underwent rigorous testing, yielding: Validity: The validity coefficients ranged from 0.52 to 0.837, indicating acceptable levels of construct validity. Reliability: The reliability coefficient was exceptionally high at 0.97, suggesting excellent internal consistency. The questionnaire focused on key areas such as knowledge about stunting, attitudes towards nutritional practices, and awareness of healthy lifestyle choices.

Data Collection

Data collection was conducted in accordance with ethical standards. The study received ethical clearance (No.

B/16/EC/LKS/IV/RSMTH/2023) from the Dr. Montohardjo Hospital Health Research Commission. The data collection process involved several steps:

1. Pre-test: All participants completed the questionnaire to assess baseline knowledge and attitudes regarding stunting.
2. Intervention: The intervention group was exposed to a 6-minute and 3-second animated video that addressed:
 - The concept of stunting.
 - Importance of a balanced diet.
 - Healthy lifestyle choices.
 - Reproductive health awareness.
 - Strategies to break the stunting cycle.
 The control group did not receive any intervention during this period.
3. Post-test: After a two-week period, both groups underwent a post-test using the same questionnaire to measure any changes in knowledge and attitudes.

Data Analysis

Data analysis involved both descriptive and inferential statistical methods:

- Descriptive Statistics: Frequency distribution, mean, standard deviation, minimum-maximum values were calculated to provide an overview of participant demographics and baseline characteristics.
- Inferential Statistics:
- Wilcoxon Signed-Rank Test: This non-parametric test was used to analyze differences between pre-test and post-test scores within groups.

Multivariate Analysis of Variance (MANOVA): This method assessed the differences in knowledge and attitudes between the intervention and control groups, accounting for multiple dependent variables.

RESULTS

Description of respondent characteristics

The results of the characteristics of respondents in this study based on age and class, in the study are presented in the following table:

Table 1. Description of respondent characteristics (N=214)

Variable	control N=107 (%)	Intervention n =107 (%)	Total N=214(%)
Age (Mean±SD)	16.56±0.816	16.50±0.817	16.52±0.815
15	8(7.5)	12(11.2)	20(9.3)
16	45(42.1)	40(37.4)	85 (39.7)
17	44(41.1)	45(42.1)	89(41.6)
18	8(7.5)	10(9.3)	18 (8.4)
19	2(1.9)	-	2 (0.9)
Class			
X	49(45.8)	63(58.9)	112 (52.3)
XI MIPA	32(29.9)	32(29.0)	63 (29.4)
XI IPS	26(24.3)	13(12.1)	39(18.2)

According to the data presented in Table 1, the respondents' average age is 16 years, ranging from a minimum of 15 years to a maximum of 19 years. The control group consists of individuals who are mostly 16 years old, accounting for 42.1% of the group. In contrast, the intervention group has a higher proportion of individuals who are 17 years old. The mean age for both groups combined is calculated to be 16.52 years, with a standard deviation of 0.815. The majority of respondents (45.8%) belong to class X, including over half of the total respondents.

The effect of an investment of 8000 FDL in education on the level of knowledge of female adolescents regarding the prevention of stunting.

Table 2. The effect of an investment of 8000 FDL in education on the level of knowledge of female adolescents regarding the prevention of stunting

Variable	Control group			Intervention group		p-value
	Min-maks	mean±SD	p-value	Min-maks	mean±SD	
Knowledge						
Pre	17 - 30	23.65±2.415	0.07	17 - 30	23.12±2.421	0.00
Post	17 - 28	22.98±2.522		25 - 34	29.52±1.850	
Knowledge of the concept of stunting						
Pre	3 - 10	6.07±1.249	0.05	3 - 10	5.84±1.159	0.00
Post	5 - 10	5.74±1.261		6 - 10	8.62±1.006	
Knowledge of 8000 FDL						

Pre	3 - 6	4.56±1.002	0.88	3 - 6	4.34±1.009	0.00
Post	3 - 6	4.34±1.009		3 - 6	5.21±0.762	
Knowledge of a healthy lifestyle						
Pre	3 - 5	4.30±0.780	0.64	3 - 5	4.30±0.780	0.00
Post	3 - 6	4.56±1.002		4 - 6	5.07±0.730	
Reproductive health knowledge						
Pre	3 - 6	4.09±1.145	0.394	3 - 6	4.24±0.910	0.00
Post	3 - 6	4.22±0.974		3 - 6	5.37±0.830	
Knowledge of balanced nutrition						
Pre	3 - 6	4.63±1.129	0.03	3 - 6	4.15±1.172	0.00
Post	3 - 6	4.15±1.172		4 - 6	5.26±0.731	

According to the data presented in Table 2, it is evident that the intervention group saw a substantial improvement in knowledge levels after receiving the educational intervention on 8000 FDL investments through animated movies. The mean knowledge value improved from 23.12 (SD = 2,421) to 29.52 (SD = 1,850), with a p-value of 0.00.

The influence of investment education of 8000 FDL on adolescent attitudes towards preventing stunting.

Table 3. Effect of Education on investment of 8000 FDL on Adolescents' Attitudes towards Stunting Prevention

Variable	Control group			Intervention group		
	Min-maks	mean±SD	p-value	Min-maks	mean±SD	p-value
Attitude						0.00
Pre	30 - 51	39.39±4.387	0.74	30 - 54	39.45±4.298	
Post	32 - 52	39.69±4.163		48 - 67	60.13±3.699	
Attitudes towards the concept of stunting						
Pre	5 - 19	8.21±3.00	0.680	5 - 19	8.29±2.795	0.00
Post	4 - 12	8.01±1.321		10 - 20	17.03±2.505	
Attitude towards 8000 FDL						
Pre	3 - 11	7.82±1.330	0.011	4 - 11	7.62±1.425	0.00
Post	5 - 12	8.01±1.321		9 - 12	10.89±1.278	

Attitudes towards a healthy lifestyle

Pre	5 – 12	7.93±1.475	0.066	5 – 12	7.59±1.642	0.00
Post	5 – 12	8.00±1.441		9 – 12	10.90±1.281	
Attitudes towards Reproductive health						
Pre	5 – 12	8.12±1.647	0.317	5 – 12	7.99±1.457	0.00
Post	5 – 12	8.10±1.642		8 – 12	10.85±1.491	
Attitude towards balanced nutrition						
Pre	5 – 10	7.09±1.424	0.007	5 – 12	7.56±1.420	0.00
Post	5 – 10	7.29±1.401		8 – 12	10.08±1.408	

The intervention group's attitude scores increased significantly from 39.45 (SD = 4,298) to 60.13 (SD = 3,713) with a p-value of 0.00, as shown in Table 3.

Effect of 8000 FDL investment education on control and intervention group knowledge and attitudes

The following table shows the study's multivariate MANOVA results comparing control and intervention groups:

Table 4. Knowledge and attitudes following 8000 FDL investment education in control and intervention groups.

Group	Variable	Wilks Lambda	Sig
control	Knowledge		0.00
Intervention	attitude	0.22	0.00

The findings of the research indicated a significant multivariate effect resulting from the administration of 8000 FDL investment education. This was evidenced by a Wilks lambda value of 0.22 and a p-value of 0.00, suggesting that the control and intervention groups had distinct knowledge and attitudes.

DISCUSSION

The findings of the study indicate a statistically significant effect of administering investing instruction during the initial 8,000 FDL on the financial understanding of female teens in the intervention group, as evidenced by a p-value of 0.00. According to the data presented in Table 2, there was a noticeable rise in the average value for each sub-

variable when comparing the pre-intervention and post-intervention periods. In contrast, within the control group, a single sub-variable showed a statistically significant effect, specifically about the understanding of balanced nutrition. However, this effect was observed to be negative, as there was a reduction in the pre-intervention mean score from 4.63 (SD=1.129) to the post-intervention mean score of 4.15 (SD=1.172). This educational media increases teenage women's knowledge of stunting, efforts to prevent stunting within 8000 FDL, the significance of a healthy lifestyle, reproductive health, and knowledge of balanced nutrition, which can break the cycle of stunting. Delivering educational videos about reproductive health significantly increased knowledge scores (15). Other research indicates that

the use of digital technology and social media increases adolescents' knowledge of balanced nutrition (16). Providing education to teenagers requires interesting media in the form of short videos so that they are easy to understand and can increase nutritional knowledge in teenagers (17). The use of animated videos has a positive impact on this research so it can increase teenagers' knowledge in breaking the chain of stunting. Awareness of teenagers as the latest generation must behave better in fulfilling balanced nutrition obtained through increasing knowledge (18). In previous research, the media used only focused on stunting prevention, particularly balanced nutrition and reproductive health, whereas in this research, it is more comprehensive, namely increasing the knowledge of young women by about 8,000 FDL, thus providing a more complex knowledge increase.

The influence of 8000 FDL investment education through animated video media has a significant effect on adolescents' attitudes, as indicated by a p-value of 0.00 for both the total attitude scores and each sub-variable. In the control group, which received no intervention, only two sub-variables demonstrated a significant increase in attitudes: attitudes toward 8000FDL ($p = 0.01$) and attitudes toward balanced nutrition ($p = 0.07$). Attitude is a person's belief that serves as the foundation of their behaviour (11). The factor of knowledge causes alterations in attitude (19). Person's attitudes are influenced by changes in their way of thinking and the information they receive from other individuals(20). This may occur in the control group if they receive information outside of the intervention, resulting in a shift in attitude toward 8000 FDL and balanced nutrition. YouTube is informative and has an impact on developing adolescent attitudes (15). The formation of adolescents' behaviour is preceded by congruence between their knowledge and attitudes (21). The intervention group was consistent with knowledge and attitude

improvement. Several other studies on adolescents have shown that disseminating information about reproductive health through animated media has a substantial impact on adolescents' knowledge (3,15,22). The choice of animation media is appealing because it includes text, colourful and moving images, and audio to clarify the material so that respondents are not bored. Material received via educational video media will be more engaging and simpler to comprehend than through books (23). This study found that investing 8,000 FDL in an educational intervention increased adolescent girls' stunting prevention attitudes. The investment of 8000 FDL, which is beneficial in preventing stunting, is supported by a more positive attitude among adolescent girls.

Multivariate analysis using Manova revealed significant differences in the attitudes and knowledge of adolescents in the control and intervention groups regarding stunting prevention, as indicated by a p-value of 0.00 (p -value 0.05). The control group's attitudes and knowledge were inferior to those of the intervention group. The provision of videos to the intervention group increased respondents' knowledge and attitudes. This study's respondents were adolescents, including adolescent girls. Research from the past found that education and educating young women worth about 1000 FDL improved their knowledge and views about preventing stunting (10). Educating the intervention group with animated videos strengthens the findings of this study. Providing videos to young women has yielded favourable results in several previous studies. There was an increase in knowledge about anaemia and reproductive health after providing nutrition-related videos to adolescent girls (3,16,24). The differences in knowledge results between the intervention and control groups indicate that delivering 8000 FDL education has a significant effect on the knowledge and attitudes of young women regarding the prevention of stunting. This study



provided health information to adolescent females through the use of animated videos that were tailored to the needs of adolescents in order to have a meaningful impact. Appropriate health promotion media for adolescents increase self-efficacy and positive knowledge of the presented programs so that information is optimally absorbed (25).

Limitations of this study are that the study assessed the immediate impact of the intervention. Long-term impacts on knowledge retention, attitude change, and behaviour modification require further investigation.

CONCLUSION

Animation video-based education was found to be an effective tool in significantly improving the knowledge and attitudes of female adolescents regarding stunting. This intervention demonstrates the potential of engaging multimedia formats to address complex health issues and empower young women to make informed decisions about their health and the health of future generations. Suggestions for schools include incorporating animated video-based education into school curricula and community health programs to reach more adolescent girls. Suggestions for further research include developing culturally relevant and age-appropriate animated videos to ensure maximum engagement and understanding.

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