

## The Effect of Android Based Visual Videos on Knowledge of Preventing Stunting in Women of Childbearing Age

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### Abstract

**Background:** Indonesia faces a severe malnutrition problem, with poor nutrition during pregnancy leading to significant issues such as stunting. To address this, the Caile District Government has collaborated with various stakeholders to strengthen village roles, implement comprehensive nutrition programs, and involve multiple sectors in planning and monitoring. **Objective:** This study aimed to evaluate the effect of Android-based visual videos on improving the knowledge of stunting prevention among women of childbearing age in the UPT Caile Community Health Center area in 2024. **Method:** A quasi-experimental design with pre-test and post-test methods was employed. The study included women of childbearing age visiting the health center for TT immunization or premarital screening between October and December 2023. From a total of 42 eligible women, 30 participants were selected based on their consent and availability to complete both tests. **Result:** significant improvement in the participants' knowledge after watching the videos. **Conclusion:** the importance of integrating interactive and accessible educational tools to enhance awareness about stunting prevention. Continued efforts are essential to encourage mothers to actively seek information and adopt healthy practices for better maternal and child health outcomes.



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### Introduction

Indonesia faces a significant malnutrition problem with severe implications for maternal and child health. Maternal malnutrition during pregnancy is a significant risk factor for maternal, fetal, and neonatal complications, especially in low and middle-income countries (1). Inadequate macro- and micronutrient nutrition can lead to anemia, iron and vitamin deficiencies, and growth retardation in children (2). Interestingly, the causes of stunting are multifaceted and not solely due to inadequate nutrient intake. Factors such as maternal-fetal interactions, poor maternal nutrition during pregnancy and lactation, maternal and pediatric infections, and environmental conditions also contribute to stunting (3).

The World Health Organization (WHO) has reported that Indonesia ranks among the top three Southeast Asian countries with the highest stunting prevalence. In Indonesia, nearly seven million children under five are stunted and throughout the world, Indonesia is the country with the fifth-highest stunting prevalence. South Sulawesi ranks fourth with a high stunting potential in Indonesia (4). This condition is particularly critical during the first 1,000 days of life, a period where adequate nutrition plays a pivotal role in a child's growth and development. Optimizing maternal health in the preconception phase is a critical component of efforts to address stunting. However, a comprehensive approach that includes interventions during pregnancy, early childhood, and addressing broader social determinants of health is necessary for effective stunting prevention. The evidence supports a multifaceted strategy that begins before conception but extends throughout the first 1000 days of life and beyond (5). However, access to accurate and engaging information remains a challenge for many women of childbearing age.

Studies have shown that interactive and visual media, such as videos, are effective tools for delivering educational content. Videos can simplify complex information, provide realistic demonstrations, and allow repeated viewing to reinforce learning. Research by Faradila et al (2024) shows that educational content that is easily accessible and interesting, such interventions can play an important role in improving nutritional practices and ultimately providing health to toddlers.. A mobile phone-based nutrition education intervention for pregnant and nursing mothers in Sri Lanka showed improved knowledge, awareness, attitudes, and practices related to nutrition (7). This indicates that technology-based educational interventions can be effective for pregnant women. Despite these advancements, there remains limited research on the use of Android-based videos specifically targeted at stunting prevention in preconception women.

Based on these considerations, this study aims to evaluate the effect of providing Android-based visual videos on the knowledge of stunting prevention among women of childbearing age in the working area of UPT Puskesmas Caile, Kecamatan Ujung Bulu, Bulukumba Regency, in 2024. By focusing on this approach, the study seeks to contribute to ongoing efforts to reduce stunting prevalence through innovative and accessible educational methods

## Materials and Methods

This study employed a quasi-experimental design with a one-group pre-test-post-test. This design was selected to evaluate the effect of providing health education using Android-based illustrated video media on the knowledge of preconception mothers regarding stunting prevention. The population consisted of all women of childbearing age who visited the UPT Caile Health Center for TT immunization or premarital screening between October and December 2023, totaling 42 individuals. A sample of 30 participants was selected using

the Slovin formula through purposive sampling. This sampling technique was chosen to ensure that participants met the specific criteria required to achieve the research objectives. Inclusion criteria included women of childbearing age who visited the health center during the study period, provided informed consent, and were able to read and write. Participants who did not complete both pre-test and post-test or had cognitive impairments that could hinder their understanding of the videos or questionnaires were excluded from the study.

The study procedure began with a pre-test to assess participants' baseline knowledge about stunting prevention. Following the pre-test, participants watched an illustrated video that provided comprehensive education on stunting prevention, including topics such as the importance of nutrition, maternal health, and TT immunization. A post-test was then conducted to evaluate changes in participants' knowledge levels after the intervention.

The primary instrument used in this study was a validated questionnaire consisting of 20 multiple-choice questions. The questionnaire covered various aspects of stunting prevention and was reviewed by experts for content validity. Data were collected through observation, semi-structured interviews, and questionnaires. Observations were conducted to monitor participant engagement during the video session, while semi-structured interviews provided additional insights into their understanding and perceptions. Data from the questionnaires were scored, and the pre-test and post-test results were analyzed using paired t-tests to assess the statistical significance of any changes in knowledge.

## Results

**Table 1. Characteristics of Respondent**

Characteristics	n	%
<b>Age</b>		
At Risk (<20 and >35 years old)	3	10.0
Not at Risk (20-35 years old)	27	90.0
<b>Education</b>		
Elementary School	3	10.0
Junior High School	5	16.7
Senior High School	14	46.7
College	9	26.7
<b>Job</b>		
Work	14	46.7
Not working	16	53.3
<b>Total</b>	<b>30</b>	<b>100.0</b>

The study involved 30 reproductive-aged women, whose characteristics are summarized in Table 1. Based on age, the majority (90%) were in the non-risk category (20–

35 years old), while 10% were in the risk category (<20 or >35 years old). Regarding education, the largest group (46.7%) had completed senior high school, followed by college education (26.7%), junior high school (16.7%), and elementary school (10%). Employment data showed that 53.3% of respondents were not working, while 46.7% were employed.

**Table 2 The Effect of Illustrated Video-Based Education on Reproductive-Aged Women's Knowledge of Stunting Prevention**

Variabel	N	Mean	SD	95% Confidence Interval of the Difference		Sig. (2-tailed)
				Lower	Upper	
Pre-test Knowledge	30	6.97	1.847			
Post-test Knowledge	30	12.27	1.337	-5.898	-4.702	0.000

The effect of the illustrated video-based education on participants' knowledge of stunting prevention is shown in Table 2. Before the intervention, the mean knowledge score of respondents was 6.97 (SD = 1.847). The pre-test results indicated that 53.3% of participants had inadequate knowledge, while 46.7% demonstrated sufficient knowledge. After the intervention, there was a notable improvement in knowledge. The mean post-test score increased to 12.27 (SD = 1.337). The majority of respondents (80%) exhibited sufficient knowledge, while 20% achieved a good level of understanding. A paired t-test analysis revealed a statistically significant increase in knowledge scores, with a p-value of 0.000 (95% CI: -5.898 to -4.702).

## DISCUSSION

This study aimed to evaluate the effectiveness of Android-based visual video media in improving the knowledge of reproductive-aged women about stunting prevention. Stunting remains a pressing public health issue in Indonesia, affecting nearly one-third of toddlers. Educational interventions targeted at women of childbearing age, particularly during the preconception period, are essential to address this issue effectively. Multimedia health education significantly improved the accuracy of patient self-care implementation compared to paper-based education alone (8).

The results showed that knowledge significantly increased after the intervention, with a mean paired difference of -5.300 between pretest and posttest scores (pretest mean = 6.97, posttest mean = 12.27). This improvement, with a 95% confidence interval of -5.898 to -4.702 and a p-value of 0.000, highlights the effectiveness of the educational videos. This research is in line with Pratama (2022), who showed that Based on the statistical analysis using the Wilcoxon Signed Rank Test, the obtained Z-value is -6.044 with a p-value of 0.00 (<0.05). There was a significant increase in respondents' knowledge after receiving health education using audiovisual media, from a mean pretest score of 74.76 to a mean posttest

score of 86.60. The study Sulastri et al (2022) showed a significant difference in knowledge between the two groups, with a p-value of 0.000. All respondents (100%) in the experimental group had good knowledge after receiving animation-based education, while in the control group, only 33.3% of respondents had good knowledge after education.

Several factors likely contributed to the observed improvement in knowledge. Age, education, and employment are critical determinants of an individual's ability to acquire and apply new information. In this study, most participants were in the non-risk age category (20–35 years), had attained at least a high school education, and possessed varying levels of work experience. Younger individuals are often more receptive to new information, while education provides the foundation for informed decision-making. The employment context can also expose individuals to broader perspectives and enrich their knowledge.

Despite these positive outcomes, the study faced challenges. The educational intervention had to be condensed into a single session due to participants' limited availability, as many were preparing for upcoming weddings. The significant increase in knowledge scores demonstrates the effectiveness of the intervention even within a shortened timeframe. These findings are consistent with Indrawanti and Yuliarti (2023), who highlighted the potential of health promotion media to improve preconception knowledge and attitudes. The study underscores the value of integrating illustrated video media into preconception education programs. This approach addresses diverse learning preferences, enhances engagement, and effectively communicates critical health information. Future research should explore the long-term impact of such interventions on behavior change and consider extending the intervention over multiple sessions to reinforce learning and retention.

## Conclusion

The study involved 30 reproductive-aged women and revealed key findings regarding their demographic characteristics, knowledge levels, and the impact of an Android-based illustrated video intervention on stunting prevention. The majority of participants (90%) were in the non-risk age category, with most having a high school education (46.7%) and not working (53.3%). Before the intervention, more than half (53.3%) demonstrated inadequate knowledge about stunting prevention. However, following the intervention, 80% exhibited sufficient knowledge, and 20% achieved a good understanding. Statistical analysis showed a significant improvement in knowledge levels, as evidenced by a Sig. (2-tailed) value of 0.000 ( $p < 0.05$ ), confirming the effectiveness of the educational intervention. These findings highlight the importance of utilizing technology-based educational tools to enhance knowledge and address public health issues like stunting. Future research could explore long-term behavioural changes and extend the intervention to broader populations for greater impact.

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