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[Original Research]

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Effect of Animation Video-Based Health Education on Adolescent Girls Knowledge of Dysmenorrhea Management: A Quasi-experimental Study

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Abstract

Background: Adolescent girls often have limited knowledge regarding dysmenorrhea management, partly due to the lack of engaging and comprehensible health education. **Aims:** To determine the effect of animated video-based health education on the knowledge of dysmenorrhea management among female adolescents aged 13–15 years at SMPN 10 Tasikmalaya. **Method:** A quasi-experimental study with a one-group pretest-posttest design was conducted. A total of 55 seventh-grade female students were selected using simple random sampling. The intervention involved a 5–10minute animated educational video covering the definition, causes, symptoms, and management of dysmenorrhea. Data were collected using a 25-item validated and reliable knowledge questionnaire (Cronbach's Alpha = 0.826) administered before and after the intervention. **Results:** The average knowledge score increased from 42.11 (pretest) to 86.55 (posttest). Statistical analysis using the Wilcoxon signed-rank test showed a significant difference in knowledge levels before and after the intervention ($p = 0.000$). **Conclusion:** Animated video-based health education is effective in improving adolescent girls' knowledge of dysmenorrhea management. It is recommended that animated videos be considered as an alternative medium for delivering reproductive health education in school settings.

Keywords: Adolescent Girls, Animated Video, Dysmenorrhea, Health Education

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Introduction

Dysmenorrhea, or menstrual pain, is one of the most common reproductive health issues experienced by adolescent girls, significantly impacting their daily activities and quality of life (Wardoyo, 2021). Data from the World Health Organization (2020) indicates that over 50% of women experience dysmenorrhea, and approximately 10–15% suffer from severe pain that interferes with activities, including school attendance and concentration (Nurhidayati & Sustiyani, 2024). Teenage girls, as a group vulnerable to dysmenorrhea, require adequate knowledge about how to manage menstrual pain to reduce discomfort and avoid excessive use of medications. However, teenagers' knowledge about managing dysmenorrhea remains low, exacerbated by the lack of reproductive health education in schools using engaging and easily understandable media (Marliany et al., 2023).

Previous studies have extensively utilized booklets (Purwaningsih et al., 2023) and conventional lecture methods in health education to enhance adolescents'

knowledge regarding dysmenorrhea; however, there remain limitations in capturing their interest and sustaining their understanding of the material. On the other hand, technological advancements offer opportunities to utilize animated video media as a more engaging, effective, and easily accessible educational tool for adolescents, as it combines visual and audio elements that can enhance memory retention (Adventus, 2020; Bolon, 2021). The use of animated videos in health education has been proven to improve understanding of the material and capture the attention of the target audience, but research on the use of this medium in educating adolescent girls about dysmenorrhea management is still limited, so further study is needed as an effort to innovate adolescent reproductive health education. Although the use of animated videos as a health education tool has been widely studied, research on their effectiveness among early adolescent girls (aged 13–15) in school settings remains limited. This study is novel because it customizes the animated video content to the characteristics of adolescents at SMPN 10 Tasikmalaya, including tailored visuals, language, and duration to make it more engaging and understandable. In addition, the study employs a pretest–posttest design within a single session using random sampling, allowing changes in knowledge about dysmenorrhea management to be measured directly and accurately. This approach provides new evidence on the effectiveness of locally contextualized animated videos in improving adolescents' understanding of dysmenorrhea management.

Based on this background, the research question to be answered in this study is: "Does animation-based health education have an effect on improving adolescent girls' knowledge about the treatment of dysmenorrhea?" This study used a quantitative design with a quasi-experimental method, specifically a one-group pretest-posttest design without a control group. A total of 55 seventh-grade female students were selected using random sampling techniques to receive an intervention in the form of an educational animated video about dysmenorrhea and its management, lasting 5–10 minutes. Knowledge was measured using questionnaires before and after the intervention.

This study aims to analyze the effect of animation-based health education on improving adolescent girls' knowledge of dysmenorrhea management, with the hypothesis that there is a significant difference between knowledge scores before and after the provision of animation-based health education intervention to adolescent girls.

Methods

This study used a quasi-experimental design with a one-group pretest-posttest design without a control group to evaluate the effect of animation-based health education on adolescent girls' knowledge of dysmenorrhea management. The study sample consisted of 55 seventh-grade female students selected using random sampling techniques, with inclusion criteria being adolescent girls aged 13–15 years who had experienced menstruation in the past three months, could read and write well, and were present during the intervention. Exclusion criteria included adolescents who were absent during the intervention or had health conditions that hindered participation. The study was conducted in March 2025 at one of the junior high schools in Tasikmalaya.

The research instrument used a questionnaire on knowledge about the management of dysmenorrhea, which was developed based on relevant theories and references. The initial questionnaire consisted of 30 multiple-choice questions, which were then validated with 30 pilot respondents, resulting in 25 questions being deemed valid and used in this study. The questionnaire assessed knowledge about the definition, causes, symptoms, and management of dysmenorrhea, including both pharmacological and non-pharmacological approaches. However, health education should not focus solely on knowledge; it should also address cognitive, affective, and psychomotor aspects to achieve comprehensive learning outcomes. The reliability test using Cronbach's Alpha yielded a value of 0.826, indicating very good reliability. The intervention was delivered through the screening of a 5–10-minute animated video containing education on the understanding, causes, symptoms, and management of dysmenorrhea, with brief explanations before and after the video screening to ensure respondent understanding.

Data collection was conducted by filling out a pretest questionnaire before the intervention and a posttest questionnaire after the intervention on the same day, while maintaining the confidentiality of the respondents' identities and giving them the full right to refuse or stop participating at any time. Data analysis was performed using univariate analysis to describe frequency distributions and bivariate analysis using a paired t-test because the data were normally distributed, with a significance level of $p < 0.05$ to determine differences in mean knowledge scores before and after the intervention. The study obtained ethical approval from the Health Research Ethics Committee of Poltekkes Kemenkes Tasikmalaya with ethical approval letter No. 003/KEPK-PK/III/2025 and was conducted while ensuring the protection of rights, data confidentiality, and respondent

comfort throughout the study.

Results

This study aims to analyze the effect of animation-based health education on improving adolescent girls' knowledge about dysmenorrhea management. A total of 55 female respondents aged 13–15 years participated in the intervention and knowledge assessment.

Based on the characteristics of the respondents, the majority were 13 years old, totaling 51 people (92.7%), while those aged 14 years old totaled 4 people (7.3%). Based on menstrual patterns, most respondents had regular menstrual patterns, totaling 31 people (56.4%), while those with irregular menstrual patterns totaled 24 people (43.6%) (Tabel 1).

Table 1 Characteristics of Female Adolescent Respondents Based on Age and Menstrual Patterns (n= 55)

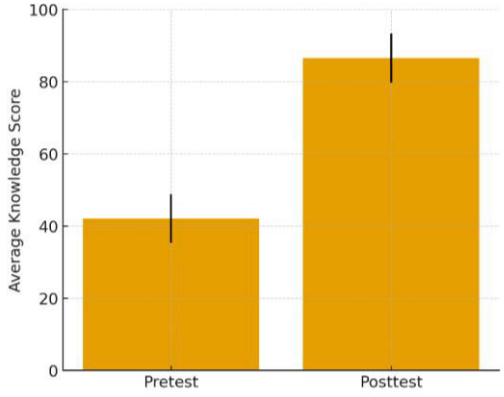
Variable	Category	Frequency	Percentage (%)
Age	13 years old	51	92,7
	14 years old	4	7,3
Menstrual pattern	Regular	31	56,4
	Irregular	24	43,6

The average knowledge score before the intervention was 42.11 (SD = 6.79; 95% CI = 40.28–43.94). The average knowledge score after the intervention increased to 86.55 (SD = 6.81; 95% CI = 84.70–88.39) (Tabel 2).

Table 2 Average Knowledge Scores of Female Students Before (Pre-test) and After (Post-test) Receiving Animation Video-Based Health Education

Variabel Pengetahuan	Mean	SD	Min- Max
Pre-test	42.11	6.792	28-52
Post-test	86,55	6.815	76-100

Graph 1 Average Knowledge Score before and after animated video-based health education

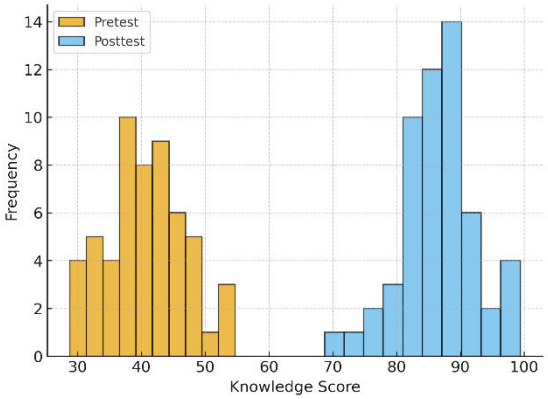


The results of the paired t-test analysis showed a mean difference in knowledge scores before and after the intervention of 44.44 (95% CI = 42.12 – 46.76) and significance of 0.000. This indicates a significant difference between knowledge scores before and after the video-based health education intervention on the management of dysmenorrhea in adolescent girls (Tabel 3).

Table 3 Differences in Average Knowledge Scores Before (Pre-test) and After (Post-test) Video Animation-Based Health Education

Knowledge	Mean	SD	Mean Difference	SEM	P-Value
Pretest	42.11	6.792	44,44	1,145	0,000
Posttest	86.55	6.815			

Graph 2 Distribution of Knowledge Scores Before and After Intervention



Discussion

This study demonstrated a significant improvement in adolescents' knowledge of dysmenorrhea management after receiving health education through animated video media. The findings confirm that audiovisual media can capture attention, enhance comprehension, and improve information retention more effectively than conventional methods such as lectures or printed materials.

The effectiveness of animated video is consistent with studies by Marliany et al. (2023) and Damayanti & Wulandari (2021), which highlighted the superiority of moving visuals combined with audio in increasing adolescents' understanding of reproductive health. The strength of animation lies in its ability to deliver concise and engaging messages tailored to adolescents' learning preferences, thereby reducing boredom and increasing motivation to learn.

These findings imply that innovative educational

media should be integrated into school-based reproductive health programs. Teachers and health workers may utilize animated videos as an effective medium to improve adolescents' knowledge and self-management of dysmenorrhea.

This study has several limitations. Knowledge measurement was conducted only once immediately after the intervention, so it cannot describe long-term retention. In addition, the study was conducted in a single school, which limits the generalizability of the findings. Finally, this study focused solely on the cognitive domain by assessing knowledge of dysmenorrhea management. Affective aspects, such as attitudes, and psychomotor aspects, such as practical skills, were not assessed. Future research is recommended to incorporate these domains to provide a more comprehensive evaluation of the effectiveness of health education interventions.

Conclusion

This study concluded that animation-based health education significantly improved adolescent girls' knowledge of dysmenorrhea management. The increase in knowledge was evident from the difference in average knowledge scores before and after the intervention, indicating that animated videos are an effective educational tool for reproductive health.

Recommendations for implementation: Animated video media should be integrated into school-based reproductive health programs as a complementary or alternative method to conventional lectures. Teachers, school health units, and community nurses are encouraged to utilize this medium to deliver engaging, accurate, and age-appropriate health information. In addition, policymakers and curriculum developers should consider incorporating audiovisual educational content into adolescent health education initiatives at the national and local levels. By adopting this approach, schools can foster adolescents' self-efficacy in managing dysmenorrhea and promote better reproductive health outcomes.

Future research is recommended to evaluate knowledge retention over a longer period and to expand the implementation across diverse school settings to strengthen the generalizability of the findings.

Declaration of Conflicting Interest

No conflict of interest to declare.

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Author's Contribution

N contributed to the study's conception and design, data collection, data analysis, and wrote the first draft of the manuscript. YC and YB contributed to data analysis and critically revised the manuscript for important intellectual content. K contributed to supervision, manuscript revision, and final approval of the version to be published. All authors have read and approved the final manuscript.

Data Availability Statement

The dataset generated during and analyzed during the current study is available from the corresponding author upon reasonable request.

Declaration of Use of AI in Academic Writing

The author uses Grammarly in the writing process to translate and improve readability and eliminate grammatical errors. However, he took full responsibility for the content.

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