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Improving Adolescents' Reproductive Health Knowledge Through Animated Video Education on Vulva Hygiene

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Abstract

A common problem among adolescent girls is a lack of understanding about proper vulva hygiene, which increases the risk of reproductive tract infections. This study aimed to determine the effect of education using animated videos about vulva hygiene on adolescents' knowledge of reproductive health. This study used a quantitative approach with a quasi-experimental pre- and post-test design with a control group. The population and sample consisted of 50 Grade XI IPS students at MA Darul Ulum Purwogondo, selected using total sampling and divided into 25 students in the intervention group and 25 students in the control group. The instrument used was a valid and reliable knowledge questionnaire, while the educational media was an interactive animated video. Data analysis was performed using the paired sample t-test and independent t-test. The results showed a significant increase in the intervention group, with an average knowledge score of 5.20 before education and an increase to 6.92 after education ($p < 0.001$). Meanwhile, the control group experienced a decrease in scores from 4.80 to 4.64 ($p = 0.54$). A comparison between the two groups showed a statistically significant difference ($p = 0.00$). Thus, education using animated videos proved to be effective in increasing adolescents' knowledge about reproductive health. These results imply that visual educational media can be used by school nurses to provide interesting and informative health education for adolescent girls.

INTRODUCTION

Reproductive health is an important aspect of adolescent life, given that this phase involves rapid physical and psychological changes. A lack of knowledge about reproductive health, particularly regarding the maintenance of external reproductive organ hygiene (vulva hygiene), can lead to various problems such as urinary tract infections (UTIs), pathological vaginal discharge, and even serious reproductive disorders in the future. Reproductive issues in adolescents require serious attention, as these problems are prevalent in Indonesia, partly due to inadequate knowledge and poor behaviour. (Rahma et al., 2025). A WHO report shows that

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adolescents aged 10–14 years in various countries experience a high prevalence of reproductive health disorders. Approximately 35–42% of reproductive tract infections (RTIs) are found in adolescents, with candidiasis reaching 50% and bacterial vaginosis up to 40% (I. P. Sari et al., 2023). In Indonesia, the WHO estimates that 222 million people experience ISK, with 55% of adolescent girls not maintaining proper vulva hygiene (Floressia Djuang, Maria Lella Sebastian K. Tahu, 2021). In Central Java Province, there has been a continuous increase in cases of ISR and infections related to reproductive organ hygiene among adolescents, supported by data from the Central Java Provincial Health Office, which recorded an increase in cases of sexually transmitted infections from 1,467 in 2015 to 52,177 in 2021.

The main risk factor in this issue is poor hygiene habits in the genital area. A lack of age-appropriate education and engaging learning materials means that many adolescents do not understand proper vulva hygiene techniques. Reproductive health issues are vital for building and maintaining health.

Women will but in its resolution is not can be resolved with curative efforts alone , so preventive efforts are prioritised. ((Fitri & Jamiati, 2020). Education using conventional media has proven to be ineffective, so a more engaging approach such as interactive animated videos is needed (Mohebi et al., 2022). Interactive animation-based education can improve knowledge scores among adolescents. Therefore, video animation-based interventions can be an effective, innovative educational strategy that suits the characteristics of today's youth (Agis Marludia et al., 2023). This medium stimulates both visual and auditory attention and can convey sensitive topics in an easy-to-understand and engaging manner (W. N. Sari et al., 2024).

Previous research has shown that the use of animated videos can significantly improve adolescents' knowledge and positive attitudes (Umami, 2020). This finding is further reinforced by recent studies (Amalia et al., 2025) which found that educational animated videos significantly improve primary school students' knowledge, attitudes, and self-efficacy in preventing sexual violence. However, most studies still use pre-experimental designs without control groups, or only deliver material in a conventional manner (Wahyuni et al., 2023). Therefore, this study uses a quasi-experimental design with a control group to assess the effectiveness of animated video education more validly.

The results of a preliminary study conducted at MA Darul Ulum Purwogondo on 11 August 2024. Through interviews conducted by the researcher with five female students at the MA, four students experienced vaginal discharge, three of whom often experienced clear white discharge almost every day and one experienced vaginal discharge after menstruation. Three students did not fully understand the purpose and impact of poor vulva hygiene. Three students did not know the correct way to clean the vulva.

Nurses play the role of educators in providing nursing care, where they have the authority to provide information about health in general, especially to adolescents in schools regarding the health of vital organs or vulva hygiene. Based on these phenomena and research gaps, the researchers were interested in conducting a study to measure the effect of education using animated videos on vulva hygiene on adolescents' knowledge of reproductive health.

MATERIALS AND METHODS

This study used a quantitative design with a *quasi-experimental* approach, specifically *a pre- and post-test with control group design*. The study was conducted at MA Darul Ulum Purwogondo, Jepara Regency, Central Java Province, from August to October 2024. This study

aimed to determine the effect of education using animated videos on vulva hygiene on adolescent girls' knowledge of reproductive health.

The population in this study consisted of all 50 female students in the 11th grade social studies class at MA Darul Ulum Purwogondo. The sampling technique used was total sampling, so that the entire population was used as the sample. The sample was then divided proportionally into two groups: an intervention group of 25 students and a control group of 25 students. The instrument used in this study was a questionnaire on vulva hygiene knowledge, which was compiled by the researcher. The questionnaire consisted of 10 closed questions in a Guttman scale format (yes/no answers) covering the aspects of definition, purpose, benefits, and techniques of vulva hygiene care. The score categories were classified as good (76–100%), fair (56–75%), and poor (<56%). The instrument validity test was conducted on 30 respondents at MA Sabilul Ulum Mayong Jepara, with a calculated correlation value of between 0.384 and 0.589, and a table value of 0.413. The instrument was declared valid if the calculated value was greater than the table value. The reliability test produced a Cronbach's Alpha value of 0.686, indicating that the instrument is reliable.

The intervention provided was education using interactive animated videos developed independently by researchers, with content and language tailored to the level of understanding of female madrasah aliyah students. The animated videos were approximately 4 minutes long and were concise, informative, and interesting in order to maintain the participants' concentration during the educational activities. The videos were presented in simple, communicative Indonesian. The material presented in the animated video included the definition of vulva hygiene, which is maintaining the cleanliness of the external genitalia in women; the objectives and benefits of maintaining vulva hygiene, including the prevention of reproductive tract infections, pathological vaginal discharge, and increased self-confidence; proper vulva hygiene techniques, such as how to clean the vulva from front to back; using clean water and unscented soap, and the recommendation to change underwear at least twice a day, and the adverse effects of not maintaining vulva hygiene, such as irritation, abnormal vaginal discharge, and the risk of urinary or reproductive tract infections. This intervention was delivered directly by the researcher to the intervention group. The activity was conducted in a classroom using a projector and speakers so that all participants could watch the video together. After the video was played, there was a short question and answer or discussion session to clarify the participants' understanding of the material that had been presented.

Meanwhile, the control group was not given any educational intervention and only took the pre-test and post-test at the specified times. This was done to determine the difference in knowledge scores between the group that received education through animated videos and the group that did not receive any treatment.

Education using interactive animated videos was provided in a single session to all participants in the intervention group. The education session lasted approximately 15–20 minutes, consisting of a 4-minute video screening, a 5–10-minute question and answer session and discussion, and a post-test immediately after the education session. The implementation of education in a single session was chosen based on considerations of time efficiency and suitability with the school activity schedule. Although it was only given once, the material in the video was designed to be concise, easy to understand, and capable of having an impact on increasing the respondents' knowledge.

Data analysis was performed using a *paired sample t-test* to examine differences before and after intervention within a single group, as well as *an independent t-test* to compare results between groups. Previously, a normality test using Kolmogorov-Smirnov showed that the data was normally distributed ($p > 0.05$), allowing parametric analysis to be used.

This study has obtained ethical clearance from the Health Research Ethics Committee of the Faculty of Health Sciences, Muhammadiyah University of Kudus, with ethical registration number: "Number: 367/Z-7/KEPK/UMKU/VII/2025".

RESULTS AND DISCUSSION

Table 1. Respondent Characteristics Based on Age (N=50)

Age Group	Mean	Median	Minimum	Maximum
Intervention Group	16.36	16.00	16	17
Control Group	16.60	17	16	17

From 50 respondents, it was found that the average age of the intervention group was 16 and the average age of the control group was 17.

Table 2. Average Knowledge Before and After *Vulva Hygiene* Education Intervention in Female Adolescents at Ma Darul Ulum Purwogondo in the Intervention Group (n=50)

Knowledge Level	N	Minimum	Maximum	Mean	Standard Deviation
Pre-test	25	1	2	5.20	1.979
Post-test	25	2	10	6.92	1.847

Based on Table 2 above, it shows that before the students were given vulva hygiene video education, the average knowledge before the intervention was 5.20, and after the vulva hygiene education intervention was given, the average knowledge of the students was 6.92. All respondents in the intervention group experienced an increase in knowledge scores after being given education.

Table 3. Average Knowledge Before and After *Vulva Hygiene* Education for Female Adolescents at Ma Darul Ulum Purwogondo in the Control Group (n=50)

Knowledge Level	N	Minimum	Maximum	Mean	Standard Deviation
Pre-test	25	2	6	4.80	1.291
Post-test	25	0	9	4.64	2.039

Based on Table 3 above, it shows that before the students were given education, the average knowledge before the intervention was 4.80 with a standard deviation of 1.291, and after the educational intervention was given, it was found that the average knowledge of the students was 4.64 with a standard deviation of 2.039. Based on the research results, the group that did not receive educational intervention showed no increase in knowledge and even experienced a decrease in post-test scores.

Table 4. Results of the Normality Test for the Intervention Group and Control Group (N=50)

Variable	Group	P	Description
Intervention Group	Before	0.190	Normal
	After	0.122	Normal
Control Group	Before	0.068	Normal
	After	0.147	Normal

Based on the results of the normality test using Shapiro-Wilk, it is known that all data from both groups (intervention and control), both before and after treatment, have a p-value > 0.05. Therefore, it can be concluded that the data are normally distributed .

Table 5. Differences in Reproductive Health Knowledge Among Adolescent Girls Before and After Intervention in the Intervention Group and Control Group

Group	Knowledge	Mean	Mean Difference	SD	SE	t	DF	P Value	n
Intervention	Pre-test	5.20	1.72	1.979	0.396	4.34	24	<0.001	25
	Posttest	6.92		1.847	0.369				25
Control	Pre-test	4.80	0.16	1.291	0.258	0.62	24	0.54	25
	Post-test	4.64		2.039	0.408				25

In the intervention group, the results of the paired t-test in Table 5 show a significant difference between knowledge before and after education with t = 4.34, df = 24, p-value = <0.001, with average knowledge increasing from 5.20 to 6.92. These results indicate that the increase in knowledge in the intervention group is statistically significant. Meanwhile, in the control group, the results of the paired t-test in Table 4.5 show no increase in knowledge before and after with t = 0.62, df = 24, p-value = 0.54. The average knowledge decreased slightly from 4.80 to 4.64, indicating that the change in knowledge in the control group was not statistically significant.

Table 6. The Effect of *Vulva Hygiene* Animation Video Education on Adolescents' Knowledge of Reproductive Health

Group	Mean	SD	SE	N	P value
Intervention	6.92	1.847	0.369	25	0.00
Control	4.64	2,039	0.408	25	

Based on Table 6, the average knowledge of students who received education was 6.92 with a standard deviation of 1.847, while for students who did not receive education, the average knowledge was 4.64 with a standard deviation of 2.039. The statistical test results obtained a p-value of 0.00, which means <0.05, so Ho is rejected and Ha is accepted. Therefore, it can be concluded that there is a significant difference in the change in answers between the intervention group and the control group.

DISCUSSION

This study aims to determine the effect of education using animated videos on vulva hygiene on improving adolescent girls' knowledge of reproductive health at MA Darul Ulum Purwogondo. The results show that there was a significant increase in knowledge in the intervention group after being given education using animated videos. Before the intervention, the average knowledge score of the respondents was 5.20 (SD = 1.979), which increased to 6.92 (SD = 1.847), with a p-value < 0.001. This indicates that the increase in knowledge did not occur by chance but was due to the intervention provided. Animated video media has

proven to be effective in conveying complex information in an interesting and easy-to-understand manner. The ability of this media to combine visual and audio elements provides a strong learning stimulus, especially for adolescents with an audiovisual learning style. These findings are reinforced by (Mohebi et al., 2022), which shows that visual media-based education increases adolescents' knowledge to a good level of 85.56%. Additionally, (W. N. Sari et al., 2024) also stated that interactive animated videos help explain abstract concepts in a more concrete manner, while (Utami et al., 2023) reported that the use of interactive animation-based learning media significantly increased interest in learning social studies subjects compared to conventional lecture models.

Conversely, the control group that did not receive intervention showed a decrease in knowledge from an average score of 4.80 (SD = 1.291) to 4.64 (SD = 2.039), with a p-value of 0.54, indicating no significant change. This decline was likely due to a lack of learning stimuli, limited access to information, and the absence of engaging educational methods. (NUR INDAH RAMADHAN, 2023) stated that without systematically designed education, adolescents tend to have low levels of knowledge about reproductive organ hygiene. Furthermore, (Adila et al., 2020) states that without education, most adolescents have insufficient knowledge about personal hygiene, including vulva hygiene. Meanwhile, (Yuliasih et al., 2025) emphasises that without education, the lack of education about personal hygiene results in low knowledge among adolescents and increases the risk of reproductive health problems.

The comparison between the intervention and control groups showed a significant difference, reinforcing the conclusion that educational animated videos have a major influence on improving adolescents' knowledge. Research by Umami et al. (2020) supports this by showing an increase in knowledge from 3.9% to 61.8% after video-based education was provided. Additionally, (Fitri Natalia, 2022) demonstrates that animated videos are proven to be effective in significantly improving adolescents' knowledge and attitudes. Education through animated videos also provides concrete visual simulations on how to properly clean the vulva, the types of soap that are safe to use, and the effects of poor hygiene, so that the message can be conveyed in a more realistic and easily accepted manner by adolescents (Triamanda et al., 2022).

This study has several strengths, including the use of innovative educational media tailored to the characteristics of adolescents, as well as results that show a significant increase in knowledge and are supported by relevant literature. However, this study also has limitations, namely that the education and measurement were only carried out in one day, so the long-term impact could not be observed, and the location of the study was limited to one school, so the results cannot be generalised. Furthermore, the use of a self-designed questionnaire, despite having been tested for validity and reliability, still has limitations in measuring knowledge comprehensively.

Based on these results, it can be concluded that animated videos are an effective educational medium for improving adolescent girls' knowledge of vulva hygiene. Therefore, it is recommended that visual media such as animated videos be integrated into reproductive health education programmes both in schools and in adolescent health care facilities. This medium can also serve as an innovative strategy for presenting sensitive material in an engaging and easily understandable manner, as well as helping to reduce the reproductive health information gap among adolescents.

CONCLUSION

This study concluded that animated video media proved effective in increasing adolescent girls' knowledge about vulva hygiene. The average knowledge score in the intervention group increased from 5.20 (SD = 1.979) to 6.92 (SD = 1.847) with a p-value < 0.001, indicating a significant difference. In contrast, the control group experienced a decline from 4.80 (SD = 1.291) to 4.64 (SD = 2.039) with a p-value = 0.54. Thus, this media can be utilised in reproductive health promotion programmes by nursing staff, particularly in conveying sensitive material in an interesting and easily understandable manner to adolescents. Furthermore, subsequent research could include attitude and behaviour variables to evaluate comprehensive changes after education. Schools are expected to integrate reproductive health education into counselling activities using interactive media such as animated videos. For health workers, especially nurses, the results of this study can be used as a basis for developing more innovative, informative health promotion programmes that are in line with the characteristics of today's adolescents.

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