

The Effect of Health Education Using Booklet Media on Improving Knowledge and Attitudes Regarding Vulva Hygiene Among Adolescents

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Abstract: Vulva hygiene is an effort to maintain the cleanliness of the external genital area of women. Lack of care can cause vaginal discharge, which is an abnormal discharge from the vagina that can smell and cause itching. In Indonesia, 90% of women have experienced vaginal discharge, and 60% of them occur in adolescent girls. This study aims to determine the effect of booklet media on the knowledge and attitudes of adolescent girls about vulva hygiene in preventing vaginal discharge. This study used a quantitative approach with a quasi-experimental design of the pretest-posttest type with a control group. The sample consisted of 80 adolescent girls selected through purposive sampling techniques. The data collection instrument was a questionnaire, and data analysis was carried out using the t-test. The results of the study showed that health education using booklet media about vulva hygiene significantly increased the knowledge and attitudes of adolescent girls, as evidenced by a p value <0.05 for both variables. Health education delivered through booklet media is more effective in increasing the knowledge and attitudes of adolescent girls compared to the use of Power Point media.

Keywords: adolescents, attitude, knowledge, leucorrhea, vulva hygiene

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Introduction

Reproductive health was an important issue that persisted throughout the human life cycle. The Indonesian government fully supported the provision of information and counseling as part of reproductive rights to access comprehensive reproductive health services. Reproductive health programs in Indonesia targeted all adolescents as a strategic group vulnerable to various health problems, including reproductive health issues. According to the World Health Organization, the majority of the world's population were adolescents aged between 10 and 19 years, with an estimated number reaching around one billion people (World Health Organization, 2020). Adolescence was a transitional period between childhood and adulthood, during which individuals experienced significant physical, psychological, and social changes. As the nation's next generation, adolescents played a vital role in development, yet they also remained vulnerable to various social and health problems, such as unwanted pregnancy, sexually transmitted infections, and vaginal discharge (Akbar et al., 2023).

Vaginal discharge (leukorrhea) was one of the most common reproductive health problems experienced by adolescent girls. Its prevalence was very high globally, with around 75% of women experiencing vaginal discharge at least once in their lives, and 45% of them experiencing it recurrently (Melina, 2021). Vaginal discharge could be caused by fungal infections such as *Candida albicans*, bacterial infections, or poor hygiene (Munnaya, 2021). Although often considered a mild disturbance, untreated discharge could lead to serious complications including infertility, ectopic pregnancy, and even serve as an early symptom of cervical cancer (Yulfitria, Aticheh, & Primasari, 2015). In Indonesia, this condition was highly common, especially among adolescent girls, partly due to the tropical climate and inadequate personal hygiene habits (Nurhayati, 2013). Abnormal vaginal discharge often occurred due to adolescent girls' lack of knowledge regarding the importance of maintaining genital hygiene, including proper vulva hygiene practices (Dwiwardini, Kartini, & Komariah, 2020).

Health education served as a key intervention to improve knowledge and shape adolescents' health behavior, particularly in maintaining reproductive organ hygiene. Health education that was delivered systematically and tailored to adolescents' characteristics was believed to encourage behavior change toward healthier practices (Notoatmodjo, 2012). WHO emphasized that the ages between 10 and 14 were a golden period to instill responsible and healthy reproductive behavior (World Health Organization, 2020). One form of health education intervention was counseling using educational media that were easily understood and well-received by adolescents (Marisa, 2020).

Booklets were simple printed media that effectively conveyed health messages by combining text and illustrations, making them easy for readers to understand. This medium was suitable in settings with limited access to digital technology, such as Islamic boarding schools (Wanodya & Farid, 2017). Previous studies showed that providing health information through booklets could increase knowledge and motivate healthy behaviors (Indah, 2022). Booklets reached adolescents in an interactive, informative, and flexible way, and could be reused in independent learning processes (Puspitaningrum, Agushyana, Mawarni, & Nugroho, 2017). Therefore, booklets were considered relevant educational media to enhance understanding of vulva hygiene practices among adolescents in Islamic boarding schools (Nungky, 2021).

Attitude was a person's response or reaction toward an object or information, based on their knowledge and experience. In the context of reproductive health, adolescent girls' attitudes toward vulva hygiene practices were strongly influenced by the information they received and their understanding of potential health risks (Nur'aini, 2016). A positive attitude toward genital hygiene played an essential role in preventing vaginal discharge and maintaining overall reproductive health (Alviatusyamsiah, Yanti, & Ulfah, 2024). However, based on a preliminary study conducted at Fawaidulhikmah Islamic Boarding School, it was found that most adolescent girls did not yet have an appropriate attitude toward vulva hygiene practices, as reflected in their insufficient hygiene habits (Putri, 2020). This highlighted the urgency of implementing health education that not only aimed to increase knowledge but also to shape sustainable healthy attitudes (Nurrohmatun & Juliani, 2021).

This study aimed to analyze the effect of health education using booklet media on improving knowledge and attitudes regarding vulva hygiene among adolescent girls at Fawaidulhikmah Islamic Boarding School. The findings of this research were expected to contribute to the development of effective and contextual reproductive health education strategies for adolescents in similar environments.

Method

This study was a quantitative research employing a quasi-experimental design using a pretest-posttest with control group design. This design was used to determine the effect of health education through booklet media on improving knowledge and attitudes regarding vulva hygiene among adolescents. The study involved two groups: an intervention group that received health education using booklet media and a control group that received health education using PowerPoint media.

The study was conducted at Fawaidulhikmah Islamic Boarding School in Banten. The research took place from January to February 2025.

The population in this study consisted of all adolescent girls at Fawaidulhikmah Islamic Boarding School. The sampling technique used was purposive sampling, with a total sample of 80 adolescent girls. The sample was divided into two groups: 40 adolescents in the intervention group and 40 adolescents in the control group. The selection of participants was based on specific inclusion and exclusion criteria, such as age range and availability to participate in all stages of the research.

The instrument used in this study was a closed-ended questionnaire that had passed validity and reliability testing. The questionnaire consisted of two sections: a knowledge questionnaire on vulva hygiene (in the form of multiple-choice questions) and an attitude questionnaire (using a Likert scale). The questionnaires were administered to the respondents before and after the health education intervention to measure changes in knowledge and attitudes.

This study had passed the ethical feasibility review by the Health Research Ethics Committee of the Polytechnic of the Ministry of Health in Bandung. The researcher also obtained a letter of permission from the boarding school and informed consent from all participants. All stages of the study were carried out by upholding research ethics principles, such as respecting participants' autonomy, providing honest information, and maintaining the confidentiality of respondents' personal data.

The data collected were analyzed quantitatively using paired t-tests to determine the differences in knowledge and attitude scores before and after the intervention within each group. In addition, independent t-tests were used to compare the results between the intervention and control groups. The results were considered statistically significant if the p-value was less than 0.05. All data processing was conducted using the latest version of the SPSS statistical software.

Result and Discussion

This study was conducted at Fawaidulhikmah Islamic Boarding School in Banten. The total number of respondents in this study was 80 adolescent girls aged 16–20 years who experienced pathological vaginal discharge and met the predetermined inclusion and exclusion criteria. This study only analyzed the characteristics of the respondents based on age groups, as presented in Table 1.

Table 1. Respondent Characteristics by Age Group

Characteristics	Research Groups				Total	
	Intervention Group		Control Group		n	%
	n	%	n	%		
Age						
16 years	10	25.0%	8	20.0%	18	22,5%
17 years	14	35.0%	9	22.5%	23	28,7%
18 years	8	20.0%	20	50.0%	28	35%
19 years	6	15.0%	2	5.0%	8	10%
20 years	2	5.0 %	1	2.5%	3	3,75%

The respondents in this study were divided into two groups: the intervention group and the control group. Based on the data on respondent characteristics (Table 1), the majority of adolescent girls in the intervention group were 17 years old, totaling 14 individuals (35.0%), while in the control group, the majority were 18 years old, totaling 20 individuals (50.0%). In general, both groups fell into the category of late adolescence, which includes individuals aged 15–19 years—a stage characterized by rapid development in physical, cognitive, social, and emotional aspects. At this stage, adolescents had the ability to think abstractly, absorb new information, and begin forming their identities and healthier lifestyle habits (Akbar, Ongkai, Suryana, & Abdurrahmansyah, 2023). All respondents (100%) in this study were also reported to have experienced vaginal discharge, with most of them stating that they had pathological discharge, most likely caused by fungal, bacterial, or viral infections (Yulfitria, Aticeh, & Primasari, 2015). This finding indicated that vaginal discharge was a common issue among adolescent girls, particularly in Islamic boarding school environments, which carried risk factors such as a humid climate and suboptimal hygiene practices (Nurhayati, 2013; Dwiwardini, Kartini, & Komariah, 2020).

Table 2. Distribution of Adolescents' Knowledge Before and After Receiving Health Education

Variable	N	Minimum Value	Maximum Value	Mean	(SD)	Mean Difference
Booklet Media						
Before	40	10	55	33.63	11.982	39.74
After	40	45	100	73.37	13.077	
PPT Media						
Before	40	10	70	39.88	15.586	27.24
After	40	35	90	67.12	13.199	

The results of the study showed that respondents' knowledge regarding vulva hygiene increased significantly after receiving health education. Based on Table 2, the intervention group, which received education using booklet media, experienced an increase in the average knowledge score from 33.63 before the intervention to 73.37 after the intervention, with a difference of 39.74 points. This improvement demonstrated the effectiveness of booklet media in delivering information in a comprehensive and engaging manner. The booklet allowed adolescents to reread the material

independently, reinforcing memory retention and enabling them to explore the topic at their own learning pace (Fitri, 2023). These findings were in line with Bloom's theory as cited in Notoatmodjo (2012), which stated that knowledge was acquired through experience and sensory perception, and that educational media such as booklets played a role in strengthening this process through simple visual and verbal messages. This result was supported by studies conducted by Wanodya and Farid (2017), as well as Nungky (2021), which proved that booklets were effective in enhancing adolescents' understanding of reproductive health.

The control group, which received education using PowerPoint media, also showed an increase in knowledge from an average score of 39.88 to 67.12 (a difference of 27.24 points). Although this increase was statistically significant, its effectiveness was lower than that of the booklet group. This could be attributed to the limited accessibility of PowerPoint, which could only be accessed during the session and did not support repeated learning. Presentation media such as PowerPoint tended to be momentary and were less effective in supporting long-term information retention (Pertiwi, 2018). These results were consistent with findings by Amanda et al. (2024), which showed that although PowerPoint could improve knowledge, its effectiveness was not as high as that of printed media.

Table 3. Distribution of Adolescents' Knowledge Before and After Receiving Health Education

Variable	N	Minimum Value	Maximum Value	Mean	(SD)	Mean Difference
Booklet Media						29.17
Before	40	42	64	53.35	5.241	
After	40	65	100	82.52	9.462	
PPT Media						19.45
Before	40	42	64	53.40	6.147	
After	40	48	91	72.85	9.833	

The increase in knowledge was also followed by an improvement in attitude. Based on Table 3, in the intervention group, the attitude score increased from 53.35 to 82.52 (a difference of 29.17 points), while in the control group, it increased from 53.40 to 72.85 (a difference of 19.45 points). This change indicated that booklet media not only delivered information but also effectively shaped individuals' readiness to respond positively to health issues. According to Nur'aini (2016), attitude was the result of internalizing information that individuals perceived as relevant and important. The appealing design of the booklet, the use of easily understood language, and the concise, informative content made this medium effective in influencing the affective and conative dimensions of adolescents' attitudes (Indah, 2022; Wanodya & Farid, 2017).

Table 4. The Effect of Health Education Using Booklet and PowerPoint (PPT) Media on Knowledge Improvement

Group	Pre-Test		Post-Test		Mean Different	P-Value * (Sig.2tailed)
	Mean	SD	Mean	SD		
Booklet Media	33.63	11.982	73.33	13.077	6.250	0.037
PPT Media	39.88	15.586	67.12	13.199		

Furthermore, the results of the Independent Sample t-Test in Table 4 showed a difference in knowledge scores between the booklet group and the PowerPoint group, with mean scores of 73.38 and 67.13, respectively. The p-value of 0.037 ($p < 0.05$) indicated a significant difference, which meant that booklet media was statistically more effective in increasing adolescent girls' knowledge regarding vulva hygiene. This study was in line with the findings of Zulaekah (2012) and Setyawati (2022), which

demonstrated that booklets supported self-directed learning and effectively enhanced information retention.

Table 5. The Effect of Health Education Using Booklet and PowerPoint (PPT) Media on Attitude Improvement

Group	Pre-Test		Post-Test		Mean Different	P-Value * (Sig.2tailed)
	Mean	SD	Mean	SD		
Booklet Media	33.63	11.982	73.33	13.077	6.250	0.037
PPT Media	39.88	15.586	67.12	13.199		

Likewise, the results presented in Table 5 showed a significant difference in attitudes between the two groups. The booklet group had a mean score of 82.52, while the PowerPoint group had a mean score of only 72.85, with a p-value of 0.000. This indicated that the booklet media was more effective in shaping adolescent girls' attitudes toward vulva hygiene practices. According to Green's theory as cited in Notoatmodjo (2007), attitude was one of the predisposing factors that influenced health behavior. When information was delivered through media that suited the needs and characteristics of adolescents, the likelihood of attitude change increased. Booklets allowed for a reflective learning process, as they could be reread at any time, reinforcing understanding and emotional engagement with the topic being addressed (Nur'aini, 2016; Yulfitria et al., 2020).

Based on these findings, it could be concluded that booklets had advantages not only in delivering information but also in facilitating the internalization of values and the formation of attitudes. The design of the booklet, which considered the literacy level of the target audience, included supportive illustrations, and used communicative language, played a significant role in its effectiveness (Puspitaningrum et al., 2017). This study supported the findings of Alviatussyamsiah, Yanti, and Ulfah (2024), which showed that booklets were capable of raising adolescents' awareness of healthy living practices, particularly in the area of reproductive health.

In addition to its practical contributions, this study also had implications for health education policy in Islamic boarding schools. Booklets could serve as independent learning materials integrated into supplementary education programs, whether in the form of extracurricular activities or health training. This was highly relevant given the limited access to digital technology in pesantren environments. Along with the improvement in adolescents' knowledge and attitudes, it was expected that there would be a reduction in the incidence of pathological vaginal discharge and an improvement in the quality of reproductive health from an early age.

However, this study had limitations in terms of the relatively short duration of the intervention, which made it difficult to assess long-term behavioral change. Further research using a longitudinal design was strongly recommended to evaluate the retention of knowledge and attitudes over time. Additionally, the involvement of external factors such as environmental support and personal experience also needed to be explored further to strengthen the effectiveness of print-based reproductive health education programs.

Conclusion

Based on the results of the study on health education using booklet media to improve adolescent girls' knowledge and attitudes regarding vulva hygiene at Fawaidulhikmah Islamic Boarding School in Banten, the following conclusions were drawn :

1. There was an increase in the average knowledge score of adolescent girls before and after receiving health education using booklet media, with a post-test average score of 73.38 and a p-value of 0.037.
2. There was an increase in the average knowledge score of adolescent girls before and after receiving health education using PowerPoint media (PPT), with a post-test average score of 67.12 and a p-value of 0.037.

3. There was an increase in the average attitude score of adolescent girls before and after receiving health education using booklet media, with a post-test average score of 82.52 and a p-value of 0.000.
4. There was an increase in the average attitude score of adolescent girls before and after receiving health education using PowerPoint media (PPT), with a post-test average score of 72.85 and a p-value of 0.000.
5. There was a difference in the average knowledge scores of adolescent girls after receiving health education using booklet and PowerPoint media. The post-test average knowledge score in the booklet group was 73.38, while in the PowerPoint group it was 67.12.
6. There was a difference in the average attitude scores of adolescent girls after receiving health education using booklet and PowerPoint media. The post-test average attitude score in the booklet group was 82.52, while in the PowerPoint group it was 72.85.

Therefore, it could be concluded that health education delivered through booklet media was more effective in improving adolescent girls' knowledge and attitudes compared to the use of PowerPoint media.

Authors' Contribution

All authors contributed equally to every aspect of this research, from the initial study design and data collection to the analysis, interpretation, manuscript preparation, and critical revisions. All authors have read and approved the final version for submission.

Conflict of Interests Statement

The authors declare no conflict of interest.

Data Availability

The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Informed Consent

Written informed consent was obtained from the participants.

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