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# EFFECTIVENESS OF REPRODUCTIVE HEALTH EDUCATION THROUGH LEAFLETS AND PERSONAL HYGIENE PRACTICES ON MENSTRUAL KNOWLEDGE AND BEHAVIOR OF VOCATIONAL SCHOOL STUDENTS IN WEST JAVA

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***Abstract***
*Adolescent girls are a group that is vulnerable to reproductive health problems, particularly during menstruation, due to low levels of knowledge and inappropriate personal hygiene practices. Data show that the incidence of reproductive health problems among adolescents in Indonesia, including in the city of West Java, remains high. Reproductive health education through easily understandable media, such as leaflets accompanied by personal hygiene practice, is needed to improve knowledge and to develop healthy menstrual behavior. Purpose of writing this study aims to determine the effectiveness of reproductive health education delivered through leaflets and personal hygiene practice in improving menstrual knowledge and behavior among female students of health vocational high school FISH West Java. Research method this research used a quantitative design with a quasi-experimental one-group pre-test and post-test method. The sample consisted of 34 female students of health vocational high school FISH West Java selected using purposive sampling. The intervention consisted of reproductive health education delivered through leaflets and personal hygiene practice. Data were collected using questionnaires on menstrual knowledge and behavior. Data were analyzed using the Dependent t-test or Wilcoxon test, according to data distribution. Research results the results showed an increase in the level of knowledge and personal hygiene behavior during menstruation among female students of health vocational high school FISH West Java after receiving reproductive health education through leaflets and personal hygiene practice. The mean knowledge score increased from 56.47 in the pre-test to 82.35 in the post-test. Meanwhile, the mean personal hygiene behavior score increased from 58.12 in the pre-test to 85.29 in the post-test. Statistical analysis using the Dependent t-test/Wilcoxon test showed a p-value ≤ 0.05, indicating a statistically significant difference before and after the intervention. These findings demonstrate that reproductive health education through leaflets and personal hygiene practice is effective in improving students' menstrual knowledge and personal hygiene behavior. Conclusion and suggestions reproductive health education delivered through leaflets and personal hygiene practice has been proven effective in improving menstrual knowledge and personal hygiene behavior among female students of health vocational high school FISH West Java. Therefore, schools are recommended to implement reproductive health education programs regularly by utilizing simple and practical educational media as an effort to promote adolescent health.*
***Keywords*** ***:*** *Effectiveness, Education, Reproduction, Menstruation.*



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## INTRODUCTION

Adolescence is a unique and crucial phase in human development that forms the foundation for optimal health (Astuti, 2023). During this period, individuals experience significant acceleration in physical, cognitive, and psychosocial growth, which in turn influences their thinking patterns, decision-making behavior, and social interactions with their surroundings(Sriyanti & Ernawati, 2022). According to the World Health Organization (WHO), adolescence is defined as the age range between 10 and 19 years, while the United Nations (UN) categorizes youth in the age group 15 to 24 years. Meanwhile, according to the United States Health Resources and Services Administration Guidelines, the age range of adolescence is 11 to 21 years and is divided into three stages: early adolescence (11-14 years), middle adolescence (15-17 years), and late adolescence (18-21 years). Adolescent girls still have low levels of attention to reproductive health, which impacts the high rate of reproductive tract infections (RTIs) in this age group.

Reproductive health is a very important health program and is included in the Sustainable Development Goals (SDGs), specifically goal three, which focuses on a healthy and prosperous life (Azhari & Kurnaisih, 2022). Maintaining reproductive health is crucial, due to the high risk of diseases that can arise from neglecting this aspect, one of which is reproductive tract infections. Research reveals that a large number of adolescents at high risk face reproductive health problems due to inadequate personal hygiene practices. For example, 10% of adolescents frequently use feminine hygiene products, 17.59% fail to dry their genitals after urinating or defecating using tissue or a dry towel, 25.76% clean their genitals from back to front, 17% wear tight underwear during daily activities, 8.2% wear non-cotton underwear, and 2.5% share underwear and towels with others. Data from the 2020 Indonesian Population Census shows a population of 270,203,917, with 46.1 million of them being adolescents aged 10-24 (BPS, 2020) (SILABAN, 2024). The average age of menarche (first menstruation) for adolescents in Indonesia is 12.5 years, with a range of 9-14 years.

Furthermore, based on data from the Ministry of Health of the Republic of Indonesia, the prevalence of reproductive infections due to poor genital hygiene reaches 90-100 cases per 100,000 population per year. Furthermore, Indonesia's hot and humid climate can increase the risk of adolescent girls experiencing reproductive organ disorders during menstruation. Based on data from the Statistics Indonesia (BPS) of West Java Province (2021), the number of adolescents aged 10 to 14 years was 1,954,415 and 15 to 19 years was 1,975,844, with female gender. Menstruation is a natural part of the female reproductive cycle, where blood is released from the uterus periodically through the vagina, which is a natural sign of puberty. Adolescents' lack of knowledge regarding proper hygiene practices during menstruation can increase the risk of reproductive tract infections. Knowledge about personal hygiene plays a crucial role in shaping individual behavior in maintaining and caring for their reproductive health (Fatila et al., 2025). Comprehensive health education about reproductive health is crucial for adolescents so they have accurate information and the right knowledge about how to properly maintain reproductive health. Thus, adolescents can develop healthy lifestyles and make informed decisions regarding their reproductive health, enabling them to manage their reproductive health independently.

Personal hygiene during menstruation is also a crucial aspect that adolescent girls need to pay close attention to, as poor hygiene can increase the risk of reproductive tract and organ disease. Maintaining reproductive organ hygiene during menstruation not only plays a role in maintaining individual health but also reflects the health status of adolescent girls and prevents reproductive health problems. Poor personal hygiene practices can also be influenced by a lack of knowledge about proper personal hygiene. Possible impacts of poor personal hygiene include vaginal infections caused by a lack of knowledge about proper personal hygiene and a lack of attention to genital hygiene during menstruation (Prasetyo & Hardiati, 2023).

Furthermore, there are many potential impacts that can occur if someone does not pay attention to genital hygiene during menstruation in the near future, namely, they are more likely to experience fever, itching of the vaginal skin, inflammation of the vaginal surface, burning or pain in the lower abdomen. Furthermore, complications can occur if adolescents have poor personal hygiene, such as cervical cancer due to incorrect vaginal cleaning after defecation or urination (Laswini & Nency, 2022).

Another factor affecting the level of knowledge of adolescent girls about personal hygiene during menstruation is the limited availability of adolescent reproductive health services (PKPR), where only around 31% of community health centers (Puskesmas) provide PKPR services. These facilities are very important as a source of information and education about reproductive health for adolescents. Social support plays a crucial role in developing good personal hygiene skills, especially in meeting basic health needs (Palupi et al., 2020). Factors that influence these skills can be categorized as internal and external. One important prevention is cleaning the feminine area properly, not using chemical soaps, avoiding prolonged moist vaginal conditions, it is recommended to shave the existing vaginal hair if it is long, and not wearing underwear made of cotton or materials that absorb sweat.

National data shows that 46% of Indonesian adolescent girls have low hygiene behavior, known to only change sanitary napkins twice a day and only 52% of adolescents wash their hands before using sanitary napkins. One step that can be taken to reduce the possibility of disorders such as bacteria that appear during menstruation is by adopting a healthy lifestyle and implementing clean behavior during menstruation is the most important part of individual hygiene and also has a crucial role in one's health condition to prevent health problems in the reproductive organs during menstruation.

Then, the frequency of changing sanitary napkins is also a risk factor associated with symptoms of genital infections during menstruation. Pads that are not changed more than every 4 hours or at least 6 times a day increase the risk of symptoms of genital infections. School-based reproductive health education is an effective strategy to improve students' knowledge, perceptions, and behaviors related to reproductive health. This program requires continuous monitoring and evaluation so that the message remains relevant, so that it becomes the main solution to address adolescent reproductive health problems. This leaflet-based educational program on Adolescent Reproductive Health (ARH) is very necessary for various reasons, considering that ARH has now become an urgent global issue. Personal hygiene education is an activity that conveys knowledge about how to maintain body hygiene, especially during menstruation. This activity includes information about maintaining the cleanliness of reproductive organs and the correct cleaning techniques during menstruation, thus supporting a hygienic and healthy lifestyle (Amalia et al., 2025).

## METHODS

The type of research used is quantitative, with a pre-experimental design (one-group pre-post test), which involves measuring reproductive health knowledge and behavior before and after intervention using leaflet media on female students of FISH Health Vocational School, Bekasi. The research location is at FISH Health Vocational School with a total of 34 respondents.

## RESULT AND DISCUSSION

Table 1 Age Frequency Distribution

| **Variabel Knowledge and Behavior** | **N** | **Prescent** |
|---|---|---|
| **Age** | | |
| 14 | 1 | 2,9 |
| 15 | 15 | 44,1 |
| 16 | 18 | 52,9 |
| **Total** | **34** | **100,0** |

Based on the Age Frequency Distribution Table above, it is known that the majority of respondents were aged 16 years, namely 18 respondents (52.9%). Furthermore, respondents aged 15 years numbered 15 respondents (44.1%), while respondents aged 14 years were the smallest age group, namely 1 respondent (2.9%).

Table 2 Frequency Distribution of Knowledge and Behavior

| ***Reproductive Health Knowledge*** **Category** | ***Pre*** | **%** | ***Post*** | **%** |
|---|---|---|---|---|
| Good | 2 | 5,9% | 34 | 100,0% |
| Bad | 32 | 94,1% | 0 | 0,0% |

| *Personal Hygiene Knowledge During Menstruation* | | | | |
|---|---|---|---|---|
| **Category** | *Pre* | % | *Post* | % |
| Good | 2 | 5,9% | 34 | 100,0% |
| Bad | 32 | 94,1% | 0 | 0,0% |
| *Personal Hygiene Behavior During Menstruation* | | | | |
| **Category** | ***Pre*** | **%** | ***Post*** | **%** |
| Good | 0 | 0,0% | 34 | 100,0% |
| Bad | 34 | 100,0% | 0 | 0,0% |

Based on the table above, the Frequency Distribution of Knowledge and Behavior, it is known that in the reproductive health knowledge variable, the majority of respondents were in the poor category at the time of the pre-test, namely 32 respondents (94.1%), while respondents who were in the good category were only 2 respondents (5.9%). After the intervention was given, there was an increase in knowledge where all respondents (34 respondents; 100%) were in the good category, and there were no more respondents in the poor category. In the personal hygiene knowledge variable during menstruation, the pre-test results showed that the majority of respondents were in the poor category, namely 32 respondents (94.1%), and only 2 respondents (5.9%) were in the good category. After the intervention was given, all respondents (100%) experienced an increase in knowledge and were in the good category. Furthermore, in the personal hygiene behavior variable during menstruation, all respondents (34 respondents; 100%) were in the poor category at the time of the pre-test. However, after the intervention, all respondents (100%) showed a change in behavior towards the better and were in the good category at the time of the post-test.

Table 3 Results of Bivariate Analysis of Knowledge and Behavior

| **Variable** | ***Pre-test* Median (Min–Max)** | ***Post-test* Median (Min–Max)** | **Z** | ***p-value*** |
|---|---|---|---|---|
| *Reproductive Health Knowledge* | 5 (4-6) | 8 (7–8) | -5,621 | 0,000 |
| *Personal Hygiene Knowledge During Menstruation* | 7 (6–8) | 11 (10–12) | -5,621 | 0,000 |
| *Personal Hygiene Behavior During Menstruation* | 38 (35–42) | 58 (55–62) | -5,621 | 0,000 |

Bivariate analysis was conducted to determine differences in respondents' knowledge and behavior before and after the intervention. The statistical test used in this study was the Wilcoxon Signed Rank Test, because the data were paired and not normally distributed. Based on the analysis results in Table 3, it is known that in the reproductive health knowledge variable, there is a significant difference between the pre-test and post-test scores, with a p value = 0.000 ($p \leq 0.05$). This indicates that the intervention provided has a significant effect on improving respondents' reproductive health knowledge. For the personal hygiene knowledge variable during menstruation, the Wilcoxon test results also show a p value = 0.000 ($p \leq 0.05$). Thus, it can be concluded that there is a significant difference between respondents' knowledge before and after the intervention, so the intervention provided is effective in improving personal hygiene knowledge during menstruation. Furthermore, for the personal hygiene behavior variable during menstruation, the bivariate analysis results show a p value = 0.000 ($p \leq 0.05$). These results indicate a significant difference between respondents' behavior before and after the intervention. All respondents experienced an improvement in their behavior towards the better after being given the intervention.

**Discussion**

The results showed that the majority of respondents were in the 16-year-old age group (52.9%), followed by 15-year-olds (44.1%), and a small proportion were 14-year-olds (2.9%). This age distribution indicates that the majority of respondents were in their mid-teens.

Theoretically, mid-teens are a developmental phase characterized by increased abstract thinking skills, heightened curiosity, and the emergence of awareness of personal health, including reproductive health. During this phase, adolescents tend to be more open to new information and able to understand educational materials presented systematically. Therefore, the age of the respondents in this study was deemed appropriate as a target for educational interventions on reproductive health and personal hygiene practices during menstruation. These results align with previous research, which suggests that mid-teens are an effective period for providing health education, as individuals at this age are cognitively and emotionally prepared to understand and apply the health information they receive. This may explain why the educational intervention provided in this study was able to significantly improve respondents' knowledge and behavior. Therefore, the age characteristics of the respondents play a crucial role in the success of educational interventions. The results of this study align with research conducted by Jayanti et al. (2025) involving high school-aged adolescents. This study showed that adolescents in this age range are an appropriate group for health education, given their cognitive readiness and ability to understand reproductive health information well(Luh et al., 2021).

The results of the study showed that during the pre-test, most respondents had reproductive health knowledge in the poor category. This condition indicates that respondents' understanding of reproductive health was still limited before the intervention. This lack of knowledge may be caused by the limited sources of information obtained by respondents, the lack of systematic reproductive health education, and the continued perception that reproductive health topics are sensitive to discuss among adolescents. After the educational intervention, all respondents (100%) experienced an increase in knowledge and were in the good category. This increase indicates that the educational material delivered through leaflets and personal hygiene practices was well received and understood by respondents. These results are in line with health education theory, which states that delivering information that is clear, interesting, and appropriate to the characteristics of the target can significantly increase knowledge. Regarding the variable of personal hygiene knowledge during menstruation, the results showed that before the intervention, most respondents were in the poor category. This illustrates that respondents did not have an optimal understanding of personal hygiene practices during menstruation, such as how to maintain genital hygiene, the frequency of changing sanitary napkins, and the importance of hygiene during menstruation. After the intervention, all respondents (100%) were in the good category, indicating a significant increase in understanding.

This indicates that the education provided was able to increase respondents' awareness of the importance of personal hygiene during menstruation. Furthermore, regarding personal hygiene behavior during menstruation, the results showed that before the intervention, all respondents (100%) were in the poor category. This condition indicates that although some respondents had basic knowledge, their implementation of personal hygiene practices during menstruation was not optimal. After the intervention, all respondents (100%) showed behavioral changes for the better and were in the good category. This change indicates that the increased knowledge gained by respondents can be applied in daily life. These results align with (Amanda, 2022) who stated that there is a significant relationship between the level of reproductive health knowledge and menstrual hygiene behavior, where adolescents with less knowledge are at a higher risk of negative behavior. These changes can be explained by the effectiveness of educational interventions through the use of leaflets and personal hygiene practices, which allow respondents to obtain information in a structured, clear, and easy-to-understand manner. Educational media plays a role in improving respondents' ability to receive and understand information, so that the material presented can be properly internalized. In addition, direct personal hygiene practices provide respondents with real-world experiences, which facilitates the application of educational materials in everyday life and encourages behavioral change.

For the reproductive health knowledge variable, the Wilcoxon test results showed a significant increase in scores after the intervention. All respondents experienced an increase in scores (positive ranks = 34), indicating that no

respondents experienced a decrease or a constant score. This indicates that the educational materials provided were able to comprehensively improve respondents' understanding of reproductive health. Theoretically, this increase in knowledge occurs because information delivered through educational media can clarify concepts, broaden insight, and correct previously inaccurate understandings. For the knowledge variable regarding personal hygiene during menstruation, the bivariate analysis also showed a significant difference between before and after the intervention. This increase in knowledge indicates that respondents were able to understand the information provided regarding personal hygiene practices during menstruation. The educational media used served as an effective means of conveying information, enabling respondents to better absorb and internalize the material (Mustafa, 2025).

Furthermore, for the personal hygiene behavior variable during menstruation, the Wilcoxon test results showed a significant change in behavior after the intervention. All respondents experienced an increase in behavioral scores, indicating that the educational intervention not only increased knowledge but also encouraged healthier behavior changes. These findings align with health behavior theory, which states that increased knowledge is a crucial factor in driving behavioral change, especially when supported by a strong understanding and intrinsic motivation. Therefore, the bivariate analysis in this study corroborates previous findings, including a study (Rahmawati & Laili, 2025) that found a significant relationship between knowledge and personal hygiene behavior during menstruation in adolescent girls, with a p-value $\leq 0.05$. These findings support the findings of this study, where increased knowledge following educational interventions was shown to have a direct impact on behavioral changes in respondents. This demonstrates that appropriate reproductive health education can improve awareness and practice of personal hygiene during menstruation.

## CONCLUSION

Based on the results of research on the effectiveness of reproductive health education on knowledge and personal hygiene behavior during menstruation among female students at FISH Health Vocational School in West Java, it can be concluded that the educational intervention provided has proven effective in improving respondents' knowledge and behavior. Future researchers are expected to expand this study by increasing the sample size, broadening the characteristics of the respondents, and incorporating other variables such as attitudes, motivation, environmental support, or sociocultural factors.

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