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The impact of health education on adolescents' understanding of reproductive health

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Abstract

Reproductive health education is an essential aspect of increasing adolescents' awareness and understanding of reproductive health, particularly in menstrual management and personal hygiene. This study aims to evaluate the impact of reproductive health education on the knowledge level of female adolescents. The research method used is quantitative, with a quasi-experimental design using the One Group Pretest-Posttest Design. The study population consisted of all female students in grades 7, 8, and 9 at SMP 2 Raha, totaling 286 students. A sample of 167 students was selected using the purposive sampling technique. Data were collected through a questionnaire that had been tested for validity and reliability. Data analysis was conducted using the Wilcoxon Signed Rank Test to examine differences in knowledge levels before and after education. The study results showed that before the education intervention, 47% of respondents had low knowledge levels, while 53% had good knowledge levels. After the intervention, there was a significant improvement, with 90% of respondents demonstrating good knowledge and only 10% remaining at a lower knowledge level. The average knowledge score increased from 17.320 to 19.610, with a p-value of 0.000, indicating a significant difference. These findings suggest that booklet and leaflet-based educational interventions are effective in improving adolescents' understanding of reproductive health. The study concludes that reproductive health education significantly contributes to enhancing adolescents' knowledge of reproductive health. Therefore, integrating reproductive health education into the school curriculum, along with support from healthcare professionals, is essential to ensure that adolescents receive accurate and adequate information.

Keywords: Reproductive health education; Knowledge level; Adolescents; Menstruation; Personal hygiene

1. Introduction

Adolescent reproductive health is a crucial aspect as it can affect their quality of life in the future. However, in Indonesia, adolescent reproductive health remains a serious issue. The high number of adolescents who lack an understanding of reproductive health indicates a deficiency in adequate education on this topic. The lack of information from families, schools, and society significantly contributes to adolescents' low understanding of their reproductive health [1]. Common reproductive health issues faced by adolescents include reproductive tract infections, unintended pregnancies, sexually transmitted diseases (STDs), and mental and emotional disorders. According to data from the World Health Organization (WHO), reproductive health problems account for approximately 33% of diseases experienced by women worldwide, with most of these issues occurring in adolescents [2]. A lack of understanding of reproductive health often triggers risky behaviors with negative impacts, such as promiscuity, drug abuse, and abortion [3].

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During adolescence, the body undergoes physiological, psychological, and social changes that affect reproductive health development. Menarche, the onset of menstruation in females, is a significant physical change and often marks the beginning of an understanding of reproductive health [4]. However, many adolescents are unprepared for these changes, especially if they do not receive adequate education about menstruation and its hygiene management. The 2017 Indonesian Demographic and Health Survey (SDKI) revealed that about 63% of adolescent girls in Indonesia lack sufficient knowledge about menstrual hygiene, putting them at risk of reproductive tract infections [5].

The importance of reproductive health education for adolescents is increasingly urgent. Their bodily changes can affect their daily lives physically, emotionally, and socially. WHO categorizes adolescents into several age phases: pre-adolescents (10–12 years), early adolescents (12–15 years), middle adolescents (15–18 years), and late adolescents (18–21 years) [6]. At each phase, adolescents require different educational approaches regarding reproductive health, particularly about the menstrual cycle, personal hygiene, and healthy sexual behavior. However, discussions about reproductive health are still considered taboo in Indonesia, both in families and schools. Data from UNICEF's 2023 Annual Report indicate that more than 60% of parents do not provide adequate education about menstruation to their daughters. As a result, adolescents often obtain information about menstruation and reproductive health from informal sources, such as peers or the internet, which may not always be accurate [7].

Schools play a vital role in providing proper reproductive health education. However, many schools in Indonesia lack a comprehensive reproductive health education program. In many schools, reproductive health and menstrual hygiene topics are only discussed in a limited manner and are not integrated into the curriculum. For example, a study conducted at SMP 2 Raha found that 73% of 15 interviewed female students did not know how to maintain personal hygiene during menstruation, and only 17% had sufficient understanding. This study revealed a significant knowledge gap among adolescents regarding reproductive health, particularly menstruation and its hygiene management [8].

The significance of reproductive health education is also evident from the negative impacts that may occur if adolescents do not receive the right knowledge. One common issue is discomfort or embarrassment during menstruation, which may cause female students to miss school or feel isolated. UNICEF data from 2015 revealed that about 1 in 6 female students in Indonesia were forced to miss school during menstruation due to discomfort or inadequate facilities. This contributes to high school absenteeism, ultimately disrupting their learning process and academic development [9].

Apart from physical issues, psychological impacts also frequently arise among adolescents who lack proper reproductive health education. Many adolescents feel anxious and afraid to talk about menstruation, increasing the risk of bullying at school [10]. Another study found that 39% of female students experienced menstruation-related bullying, either due to peer ignorance or social stigma. This situation worsens adolescents' mental and emotional conditions, potentially affecting their overall well-being [10].

Considering the various issues mentioned above, research focusing on the impact of reproductive health education on adolescents' understanding of menstrual hygiene and reproductive health is essential. This study aims to determine whether health education, provided through booklets, leaflets, or other methods, can enhance adolescents' awareness of the importance of maintaining personal hygiene during menstruation and managing their bodily changes correctly. As part of the research preparation, a preliminary survey was conducted at SMP 2 Raha to evaluate adolescents' knowledge of reproductive health, particularly menstrual hygiene. The preliminary survey involved interviewing 15 female students from grades 7 to 9 about their knowledge of reproductive health, including menstrual hygiene, the frequency of changing sanitary pads, suitable underwear materials, and the proper disposal of used sanitary pads. The survey results showed that 73% of these students did not know how to maintain personal hygiene during menstruation, while only 17% had sufficient understanding. Additionally, 87% of the students reported never changing their sanitary pads at school due to discomfort or a lack of adequate facilities.

This research also aims to contribute to improving the quality of reproductive health education in Indonesian schools, particularly at SMP 2 Raha. By providing proper and structured education, it is hoped that adolescents will have better knowledge about reproductive health, which will not only benefit their physical health but also build self-confidence and reduce bullying at school. This study is highly relevant and urgent, given the impact of low reproductive health knowledge on adolescents' physical, mental, and social well-being. By providing appropriate education, adolescents are expected to manage their reproductive health better, thereby preventing various potential health problems in the future and improving their overall quality of life.

2. Methods

This study employs a quantitative approach using a quasi-experimental method with a One Group Pretest-Posttest Design. In this design, the same group is tested before and after the intervention to evaluate changes that occur. The study population includes all female students in grades 7, 8, and 9 at SMP 2 Raha, totaling 286 students. Based on calculations using Slovin's formula, a sample size of 167 students was obtained. The sample was selected using purposive sampling, a technique in which samples are chosen based on specific criteria deemed relevant to the research objectives.

The research instrument used was a questionnaire designed to measure respondents' knowledge levels before and after receiving education on reproductive health. This questionnaire had been tested for validity and reliability to ensure accuracy in measuring the changes in students' understanding. The collected data were analyzed using univariate and bivariate analyses. Univariate analysis was used to describe the characteristics of respondents and data distribution, while bivariate analysis was conducted to examine the relationship between variables before and after the educational intervention. The statistical test used was the Wilcoxon Signed Rank Test, aimed at determining whether there was a significant difference in students' knowledge levels before and after receiving education [11].

3. Results

Table 1 Frequency Distribution of Respondents' Characteristics by Age

| Age | n | % |
|-------|-----|------|
| 12 | 8 | 5% |
| 13 | 60 | 36% |
| 14 | 89 | 53% |
| 15 | 10 | 6% |
| Total | 167 | 100% |

The table above shows the frequency distribution of respondents' characteristics based on age. Out of 167 respondents, the majority were 14 years old, with 89 respondents (53% of the total sample). This was followed by 13-year-olds, accounting for 60 respondents (36%). Meanwhile, 10 respondents (6%) were 15 years old, and the smallest group was 12-year-olds, with only 8 respondents (5%). Thus, most respondents in this study were between 13 and 14 years old.

Table 2 Frequency Distribution of Adolescent Knowledge Before and After the Intervention (n=167)

| Knowledge Level | n | % |
|-----------------|-----|-----|
| Pretest | | |
| Good | 88 | 53 |
| Poor | 79 | 47 |
| Total | 167 | 100 |
| Posttest | | |
| Good | 150 | 90 |
| Poor | 17 | 10 |
| Total | 167 | 100 |

The table above presents the frequency distribution of respondents' knowledge levels before and after the intervention (pretest and posttest) for a total of 167 respondents. Before the intervention, the majority had poor knowledge, with 79 respondents (47%), while 88 respondents (53%) demonstrated good knowledge. After the intervention, there was a

significant improvement. Most respondents, 150 (90%), showed good knowledge, while only 17 (10%) still had poor knowledge. This indicates that the intervention effectively improved the respondents' knowledge levels significantly.

Table 3 The Effect of Education on Adolescent Knowledge

| Variabel | N | Mean | SD | p-value |
|----------------|-----|--------|-------|---------|
| Pre-education | 167 | 17.320 | 1.550 | 0.000 |
| Post-education | 167 | 19.610 | 0.700 | |

This table illustrates the effect of education on adolescent knowledge based on data from 167 respondents. Before receiving education, the respondents' average knowledge score was 17.320 with a standard deviation of 1.550. The p-value of 0.000 indicates a highly significant difference in respondents' knowledge before the intervention. After receiving education, the average knowledge score increased to 19.610, with a lower standard deviation of 0.700. The p-value remaining at 0.000 suggests that this change was highly significant. These results demonstrate that the provided education successfully and significantly improved adolescent knowledge.

4. Discussion

The results of this study indicate that reproductive health education has a significant impact on increasing the knowledge of female students at SMP 2 Raha regarding menstrual management and personal hygiene during menstruation. This improvement is evident from the changes in the average knowledge scores between the pretest and posttest, as well as the distribution of knowledge levels before and after the educational intervention.

According to Table 1, the majority of respondents in this study were aged 13 to 14 years, accounting for 89% of the total respondents. This age group represents the early to middle adolescence stage, which, according to Santrock (2019), is a transitional period from childhood to adulthood, characterized by various biological changes, including menarche or the first menstruation.

A study conducted by Yoges et al. (2023) found that adolescent girls aged 12–15 often have limited knowledge about menstrual management, particularly in aspects of personal hygiene and choosing appropriate sanitary pads. The primary factors contributing to this lack of knowledge are the absence of formal and informal education from families and schools. Therefore, providing reproductive health education is essential to help adolescents develop a better understanding of their bodily changes and adopt healthier practices during menstruation [12].

The data in Table 2 show that before the educational intervention, 47% of respondents had low knowledge levels, while 53% had good knowledge levels. This finding suggests that although a majority of the students had some understanding of reproductive health, nearly half lacked adequate knowledge about key aspects of menstrual management.

These results align with a study by Holmes (2021), which found that a lack of access to accurate information about menstruation contributes to low knowledge levels among adolescents regarding reproductive health [13]. Additionally, research by Das et al. (2015) indicated that inadequate knowledge about menstrual hygiene can increase the risk of reproductive tract infections, such as bacterial vaginosis and urinary tract infections. Therefore, improving understanding of menstrual hygiene is a crucial step in maintaining the reproductive health of adolescent girls [14].

After receiving the educational intervention, there was a significant increase in respondents' knowledge levels. A total of 90% of respondents had good knowledge levels, while only 10% still had low knowledge levels. This improvement indicates that the educational methods used, such as counseling with booklets and leaflets, effectively enhanced students' understanding of the importance of menstrual hygiene. This finding is supported by a study by Kulju (2024), which stated that education using printed media and group discussions is effective in improving adolescents' comprehension of reproductive health [15].

According to Table 3, statistical analysis results show a highly significant difference between knowledge levels before and after education. The average knowledge score before the intervention was 17.320 with a standard deviation of 1.550, while after the intervention, it increased to 19.610 with a standard deviation of 0.700. A p-value of 0.000 indicates that this difference is highly significant, confirming that the educational intervention had a substantial impact on improving respondents' knowledge.

The decrease in standard deviation after the educational intervention suggests that respondents' understanding became more uniform, indicating that the educational material was successfully received and comprehended by nearly all participants. A study by Yuliasih (2025) also demonstrated that reproductive health education using visual media and booklets enhances adolescents' memory retention and facilitates their understanding of reproductive health concepts [16].

Furthermore, research by Rahmawatie et al. (2024) found that adolescents who received reproductive health education showed an 85% improvement in their understanding of the importance of menstrual hygiene compared to those who did not receive the education. This finding highlights that systematic, evidence-based educational programs can significantly increase reproductive health awareness among adolescent girls [17].

Based on the findings of this study, it can be concluded that a lack of knowledge about reproductive health before the educational intervention remains a major challenge among adolescent girls. Therefore, reproductive health education should be integrated into the school curriculum as part of adolescent health programs. Additionally, support from teachers, parents, and healthcare professionals is necessary to provide accurate and reliable information regarding menstrual management and personal hygiene during menstruation.

Beyond booklet- and leaflet-based educational interventions, more interactive learning methods such as group discussions, educational video screenings, or practical simulations on menstrual hygiene could also be implemented to enhance adolescents' understanding. Schools should also provide adequate sanitation facilities, including designated sanitary pad disposal bins, clean water, and comfortable changing rooms, to support proper menstrual hygiene practices in the school environment.

Additionally, the role of healthcare professionals such as midwives and community health workers is crucial in providing regular education to adolescent girls. A study by Parida et al. (2021) found that adolescent girls who received education directly from healthcare professionals tended to have a better understanding and were more likely to practice proper menstrual hygiene compared to those who obtained information only from the internet or peers. Therefore, collaboration between schools, parents, and healthcare professionals should be strengthened to ensure more effective and sustainable reproductive health education [18].

This study proves that the reproductive health education provided successfully increased adolescents' awareness and understanding of the importance of maintaining hygiene and health during menstruation. Future research can expand by involving more schools and incorporating a wider variety of educational methods to generate broader results and create a greater impact on improving the health and well-being of adolescent girls.

5. Conclusion

The results of this study indicate that reproductive health education has a significant impact on increasing adolescents' knowledge about menstrual management and personal hygiene during menstruation. Before the intervention, nearly half of the respondents had low knowledge levels, but after the intervention, there was a significant improvement, with the majority demonstrating good knowledge. Statistical analysis showed a highly significant difference in knowledge levels before and after education, with a p-value of 0.000. These findings confirm that an education-based approach using booklets and leaflets is effective in improving adolescents' understanding of reproductive health. Therefore, the integration of reproductive health education into the school curriculum, support from healthcare professionals, and the provision of adequate sanitation facilities are necessary to promote better menstrual hygiene practices among adolescent girls.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there is no conflict of interest in the publication of this research.

Author Contributions

All authors have made significant contributions to this research, including study design, data collection and analysis, and manuscript preparation. The authors also played a role in interpreting the research findings and refining the manuscript. All authors have reviewed and approved the final version of this article.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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