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## THE EFFECT OF THE MAKE A MATCH HEALTH EDUCATION MODEL ON ADOLESCENTS' SELF AWARENESS REGARDING GENITAL HYGIENE

Riska Wanda Seviani<sup>1)\*</sup>, Djudju Sriwenda<sup>2)</sup>, Anita Megawati Fajrin<sup>3)</sup>

<sup>1,2,3,4</sup>*Bachelor of Midwifery, Midwifery Department, Poltekkes Kemenkes Bandung, Bandung, Indonesia*  
*Email: riskawanda42@gmail.com*

### ABSTRACT

**Background:** The high incidence of vaginal discharge among adolescents in Indonesia is generally caused by poor genital hygiene practices and low self-awareness regarding reproductive health. Adolescents often perceive vaginal discharge as a normal issue and are reluctant to seek information or medical assistance. This study aimed to determine the effect of health education evaluation using the *Make a Match* model on adolescent girls' self-awareness about genital hygiene.

**Methods:** This research used a pre-experimental design with a one-group pre-test and post-test approach involving 30 female students at MTs Al Inayah, Bandung City, selected through total sampling. The intervention consisted of educational videos and a *Make-a-Match* card game. Data were collected using a self-awareness questionnaire and analyzed with the Wilcoxon test.

**Results:** The intervention resulted in a significant increase in self-awareness ( $p < 0.05$ ). These findings indicate that the *Make a Match* learning model is effective in enhancing adolescents' self-awareness, as it is interactive, enjoyable, and age-appropriate.

**Conclusion:** This model facilitates self reflection and strengthens adolescents' understanding of the importance of maintaining genital hygiene to prevent future reproductive health problems.

**Keywords:** adolescents, genital hygiene, health education, make a match, self-awareness

### INTRODUCTION

Adolescence is a critical period of human development characterized by physical, psychological, and social changes. According to the World Health Organization, adolescents are individuals aged 10–19 years. The transition from childhood to adulthood involves simultaneous hormonal, physical, and psychosocial changes that lead adolescents into puberty (WHO, 2024). In females, puberty is marked by the onset of menstruation, which commonly occurs at an average age of 12 years, with a normal range between 8 and 15 years (Wihdaturrahmah & Chuemchit, 2023).

During this period, hormonal maturation occurs due to increased secretion of gonadotropin-releasing hormone (GnRH) from the hypothalamus, followed by complex endocrine feedback mechanisms involving luteinizing hormone (LH) and follicle-stimulating hormone (FSH) (Batubara, 2016). Increased estrogen and estradiol production stimulate reproductive maturation and menstruation. Hormonal changes before menstruation may increase vaginal secretions (Ida Ayu, Desi Bintari, Idayani, & Damayanti, 2023; Sim, Logan, & Goh, 2020). Under normal conditions, vaginal discharge is clear, odorless, and does not cause discomfort. However, abnormal vaginal discharge characterized by yellowish, greenish, or grayish color, unpleasant odor, itching, erythema, edema, burning sensation, or dysuria may indicate pathological vaginal

discharge (M, Wisudawan, AZ, Prema Hapsari, & Arifin, 2023; Sim et al., 2020). The World Health Organization states that bacterial vaginosis, trichomoniasis, and candidiasis are among the most common causes of pathological vaginal discharge. Several studies reported a high prevalence of vaginal discharge among adolescent girls (WHO, 2021). Research in India found that 28% of women experienced vaginal discharge associated with candidiasis, particularly before menstruation (John et al., 2023). Another study in Riyadh reported that 85.1% of adolescents aged 11–20 years experienced abnormal vaginal discharge before menstruation, although most respondents considered it a normal condition that did not require medical attention (Alenizy et al., 2024).

In Indonesia, the exact prevalence of vaginal discharge among adolescents remains limited because many adolescents perceive it as a common and embarrassing condition, causing reluctance to seek healthcare consultation (Wiga Regilta & Sofiwati, 2021). A study conducted in Surabaya found that 83% of adolescents experienced vaginal discharge due to inadequate genital hygiene practices (Ramayanti, 2019). Similar findings were reported among Islamic boarding school students in Malang and Jombang, where poor personal hygiene, stress, inappropriate use of feminine cleansing products, and poor sanitation contributed to vaginal discharge incidence (Putri, 2019; Ramadhan, 2022).

Poor genital hygiene practices may increase the risk of reproductive health problems such as vaginitis, cervicitis, urinary tract infections, sexually transmitted infections, genital warts, and cervical cancer (M et al., 2023; Sim et al., 2020). Therefore, improving adolescents' awareness regarding genital hygiene is essential. Self-awareness is considered an important predictor of health behavior because individuals with good self-awareness can evaluate, monitor, and control their behavior. Previous studies suggested that self-awareness encourages behavioral change by increasing motivation for self-improvement and helping individuals understand the consequences of their actions (Solehati, Mambang Sari, & Rohimah, 2019). However, studies in Indonesia showed that although many adolescents realized that vaginal discharge caused discomfort, most of them did not take any preventive or treatment measures. Health education is one of the important promotive efforts to improve adolescents' awareness regarding reproductive health (Pesik, Mautang, & Mamujaja, 2024).

However, delivering reproductive health education requires educational methods that are interactive, engaging, and appropriate to adolescent developmental characteristics. Cooperative learning methods encourage students to actively participate in discussions and collaborative learning activities (Pesik et al., 2024). One cooperative learning method that can be applied is the Make-a-Match model. This learning model involves matching question and answer cards through educational games that encourage interaction, discussion, and active participation among students (Sugiman, Sumardiyono, & Marfuah, 2016). Previous studies demonstrated that the Make a Match model improved students' motivation, participation, memory retention, and learning outcomes (Tirtoni & Kurniawan, 2022).

According to Jean Piaget's cognitive development theory, adolescents aged over 11 years enter the formal operational stage, during which they develop abstract thinking, logical reasoning, self-reflection, and the ability to understand others' perspectives (Marinda, 2020). Therefore, interactive learning approaches involving games, group discussions, educational videos, and active participation are considered effective for adolescents (HUDA, 2022). The use of animated educational videos has also been shown to improve students' understanding and engagement by simplifying abstract concepts into attractive visual presentations (HUDA, 2022). Combining audiovisual media with interactive educational games may improve cognitive retention and encourage adolescents to apply health knowledge in daily life (Lubis, Lubis, & Syahril, 2019).

Although many studies have examined reproductive health education and cooperative learning methods, limited studies have explored the use of the Make a Match model to improve adolescents' self-awareness regarding genital hygiene. Therefore, this study aimed to determine the effect of Make a Match health education on adolescents' self-awareness regarding genital hygiene in Bandung City.

## RESEARCH METHOD

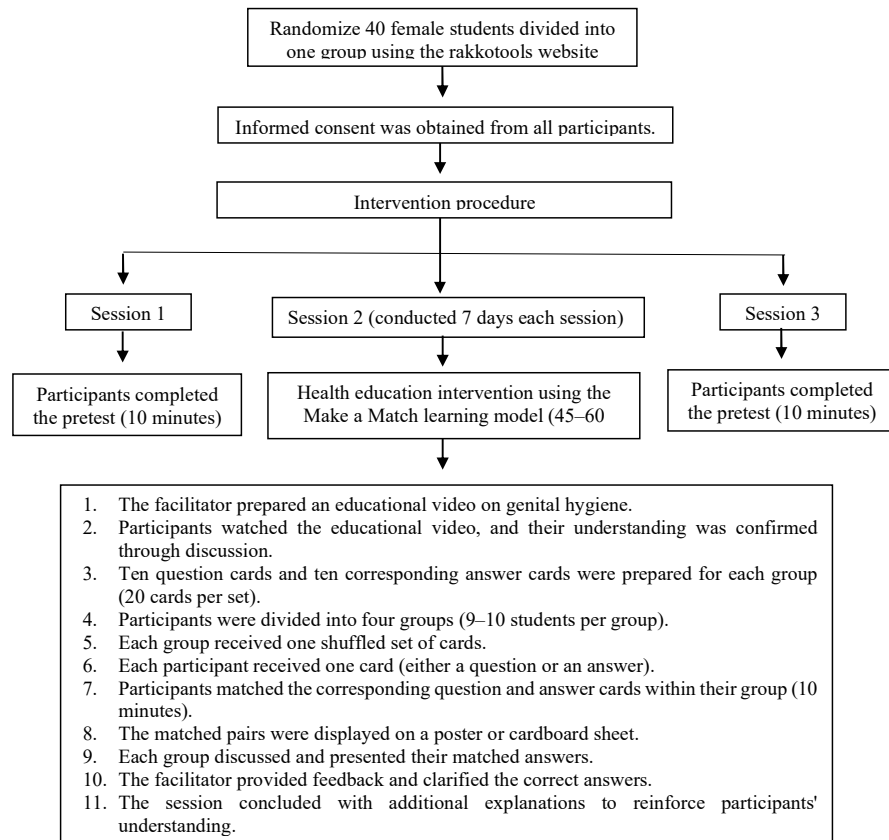
This study used a one-group pre-experimental design with pretest and posttest measures to evaluate changes in participants' outcomes before and after the intervention within the same group. Although no comparison or control group was involved, the pretest assessment allowed researchers to measure baseline conditions and analyze changes following the intervention. However, the absence of a comparison or control group limits the ability to attribute the observed changes solely to the intervention, as other factors such as maturation, external events, or test effects may have influenced the results.

This study was conducted at MTs Al Inayah Bandung in 2025. The study population consisted of adolescent girls enrolled at MTs Al Inayah Bandung. The required sample size was calculated using the formula for paired categorical analysis, yielding a minimum of 34 participants. After adding a 10% dropout rate, the final sample size was set at 38 and then rounded up to 40 participants. Participants were recruited using a total sampling technique and met the pre-determined inclusion and exclusion criteria. Total sampling was employed by including all participants who met the predefined inclusion criteria, thereby representing the entire accessible study population.

The inclusion criteria were female students aged 12–15 who had experienced menarche. The exclusion criteria were female students with disabilities. Participants were considered to have dropped out of school if they did not attend the health education intervention, became ill during the study, did not complete the pre-test or post-test assessments, or voluntarily withdrew from the study.

Self-awareness regarding genital hygiene was assessed using a structured questionnaire adapted and modified from previously published studies. The questionnaire consisted of 18 items representing two dimensions: self-contact (9 items) and choicefulness (9 items). Each item was rated on a four-point Likert scale ranging from 1 (never) to 4 (always), with higher scores indicating greater self-awareness. For descriptive analysis, self-awareness was categorized as high when the total score was above the mean for normally distributed data or above the median for non normally distributed data, and low when the score was below the corresponding cutoff. Content validity and construct validity were evaluated through a pilot study involving 50 respondents. Of the initial 23 items, 18 met the validity criterion ( $r > 0.284$ ,  $p < 0.05$ ) and were retained for the final questionnaire. The instrument demonstrated acceptable internal consistency, with a Cronbach's alpha coefficient of 0.713.

Data were analyzed using univariate and bivariate analysis. The Wilcoxon test was used to determine differences in self-awareness scores before and after the intervention, with a significance level of  $p < 0.05$ . Ethical approval for this study was obtained from the Research Ethics Committee in 2024 (Ethical Clearance No. 42/KEPK/EC/II/2024) before participant recruitment and data collection. The study was conducted in 2025 in accordance with the approved research protocol. The intervention process is illustrated in the diagram below:



## RESULTS

The results showed an increase in adolescents' self-awareness scores after receiving health education using the Make a Match model. Statistical analysis using the Wilcoxon test showed a significant difference between pretest and posttest scores ( $p < 0.05$ ).

Table 1. The difference in self awareness of genital hygiene before and after the intervention

Self Awareness	Pre		Post		p value
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	
High	19	47,5%	31	77,5%	0,000
Low	21	53,5%	9	22,5%	

Statistical analysis showed a significant difference in self-awareness before and after the intervention ( $p < 0.001$ ), indicating that the Make a Match health education model was effective in improving self-awareness regarding genital hygiene.

## DISCUSSION

The findings of this study demonstrated that Make a Match health education significantly improved adolescents' self-awareness regarding genital hygiene. The increase in self-awareness scores indicates that interactive and enjoyable educational methods can effectively enhance adolescents' understanding and awareness of reproductive health (Nasution, Nasrun, & Violina, 2022; Puspitasari, 2019).

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The Make a Match model encourages active participation, communication, and discussion among students. Adolescents tend to respond positively to learning activities that involve games and peer interaction because these methods are well-suited to their developmental stage. The use of educational videos also supported students' understanding by presenting information visually and attractively (Endang Astuningsih, 2023; Hikmandayani et al., 2023).

The results are consistent with previous studies reporting that cooperative learning methods improve students' motivation, learning outcomes, and active participation. The Make a Match model creates a fun learning environment that reduces boredom and increases students' engagement during educational sessions (Ayu, Sri, Suyantri, & Setiawan, 2016). Self-awareness is important in shaping healthy behavior because adolescents who are aware of reproductive health risks are more likely to practice proper genital hygiene. Increased self-awareness may encourage adolescents to evaluate their hygiene behavior and apply healthier practices in daily life (Ayu et al., 2016; D'Ailly & J.C, 2018). This study supports the importance of innovative educational methods in adolescent reproductive health promotion. Midwives and health educators may consider implementing Make a Match learning methods in school-based reproductive health programs.

This study has several limitations. The one-group pretest-posttest design is susceptible to threats to internal validity, including testing effects, maturation, and external influences, making it difficult to attribute the observed improvements solely to the intervention. In addition, the absence of a control group, the relatively small sample size, and the short follow-up period may limit the generalizability of the findings and the assessment of long-term intervention effects. Future studies should include larger samples, a control group, and longer follow-up periods to strengthen evidence of the intervention's effectiveness.

## CONCLUSION

Make a Match health education significantly improved adolescents' self-awareness regarding genital hygiene among adolescent girls at MTs Al Inayah Bandung. Interactive educational approaches combining games and audiovisual media can effectively support adolescent reproductive health promotion.

## RECOMMENDATIONS

Health workers, especially midwives, are expected to use interactive learning models, such as Make-a-Match, in adolescent reproductive health education programs. Future researchers are encouraged to conduct studies with larger samples and control groups to strengthen the evidence regarding the effectiveness of this educational method.

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