Kesmas

Volume 20
Issue 1 *February 2025*

Article 3

2-28-2025

Adolescent Reproductive Health Promotion for Senior High School Students

Niken Meilani
Poltekkes Kemenkes Yogyakarta, Yogyakarta, nikenbundaqueena@gmail.com

Sunarru Samsi Hariadi
Universitas Gadjah Mada, Yogyakarta, sunarru_sh@ugm.ac.id

Fransiskus Trisakti Haryadi
Universitas Gadjah Mada, Yogyakarta, trisakti-h@ugm.ac.id

Recommended Citation

Meilani N , Hariadi SS , Haryadi FT , et al. Adolescent Reproductive Health Promotion for Senior High School Students. *Kesmas*. 2025; 20(1): 15-23
DOI: 10.7454/kesmas.v20i1.2007
Available at: https://scholarhub.ui.ac.id/kesmas/vol20/iss1/3

Meilani *et al. Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*. 2025; 20 (1): 15-23
DOI: 10.7454/kesmas.v20i1.2007

Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)

Adolescent Reproductive Health Promotion for Senior High School Students

Niken Meilani[1]*, Sunarru Samsi Hariadi[2], Fransiskus Trisakti Haryadi[2]

[1]Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia
[2]Extension and Development Communication Study Program, Universitas Gadjah Mada, Yogyakarta, Indonesia

Abstract

Adolescence is a vulnerable period to reproductive health problems, especially regarding issues of sexuality. Healthy adolescent behavior is needed to achieve the SDGs targets by 2030. This study aimed to analyze personal factors such as attitudes, perceptions, and self-efficacy, as well as environmental factors like family, school, friends, community, and social media's role in adolescent reproductive health behavior and health promotion models. This quantitative analysis was conducted using the survey method with 326 respondents at 32 senior high schools, involving 159 male and 167 female adolescents, as samples taken through a multistage random sampling technique. This study used a questionnaire that was pre-tested for validity and reliability. Data were analyzed using path analysis. The results showed that adolescent perceptions, attitudes, self-efficacy, and the role of parents and social media positively influenced reproductive health behavior. The role of parents is the most influential variable among female adolescents. Social media directly affects male adolescents' behavior and indirectly influences female adolescents. This study recommends integrating social media campaigns with parental involvement to enhance reproductive health literacy. Moreover, health interventions should be sex-specific and consider different ways through which social media influence adolescents.

Keywords: efficacy, model, parents, social media, sexuality

Introduction

Adolescence, typically defined as the period between the ages of 10 and 19, is a transitional phase marked by significant physical, psychological, and social changes unique to each individual.[1] Adolescents experience rapid physical, emotional, cognitive, moral, social, and psychological changes that render them vulnerable to reproductive health problems.[1] During this period, there are threats such as death, diseases, and injuries; however, this period is also a critical time for laying a good health foundation.[1]

Adolescents face some threats related to their reproductive health. There are three main threats to adolescents: sexuality, HIV/AIDS, and drug abuse.[1] National data showed that in 2018, an estimated 1,220,900 adolescents in Indonesia were married before aged 18 years.[2] Early marriage is closely related to unwanted pregnancies and risk problems during pregnancy, childbirth, and the postpartum period and can contribute to maternal mortality.[3] Other data have shown that adolescents are at the greatest risk of HIV infection. Almost half of the new HIV cases worldwide are adolescents aged between 15-24 years.[4]

In Indonesia, the percentage of HIV cases among adolescents aged between 15-19 years in 2019 was 2.9% and increased significantly in 2022 was 3.8%.[5,6] Data from the National Narcotics Agency indicate a concerning rise in drug abuse among Indonesian adolescents. In 2019, the national prevalence of drug use among 15-24-year-olds was 2.3%, indicating a significant increase from previous years.[7] The growing issue of drug abuse or addictive substance use among adolescents, which can have detrimental effects on their reproductive health and overall well-being.[7]

Yogyakarta is a densely populated region in Indonesia. Population growth and limited land in urban areas cause the development of dense and slum areas and pose a high risk for sexual health problems. Adolescents living in dense areas were more likely to have a higher risk of risky sexual behavior.[8] A previous study in Yogyakarta showed that 11.6% of adolescents were engaged in high-risk sexual activities, including swiping or attaching genitals, caressing or touching

Correspondence* *Niken Meilani, Poltekkes Kemenkes Yogyakarta, Department of Midwifery, Yogyakarta, Indonesia, Email: niken.meilani@poltekkesjogja.ac.id.*

Received : May 31, 2024
Accepted : January 22, 2025
Published: February 28, 2025

sensitive body areas (genital, thighs, or breast), and lip-kissing, and 88.4% engaged in low-risk sexual activities, such as holding hands, hugging, and embracing, as well as brief kissing (lips-cheeks, lips-forehead, or lips-lips).[8]

Females who engage in premarital sex may face the risk of parental disapproval, loss of personal and family reputation, and social ostracism, especially if there is an unwanted pregnancy that can lead to death.[9] The factors influencing reproductive health behavior include personal and environmental factors. Personal factors include perception, knowledge, attitudes, norms, efficacy, and lifestyle, while external factors include negative influences from friends, family, and risky environments.[10] Among the personal factors shown in a previous study, perceived problem severity influences preventive behavior regarding reproductive health.[11] Attitudes have also been shown to influence adolescent health behaviors. Adolescents who have a positive attitude towards reproductive health behave positively in maintaining and improving their level of reproductive health.[12] Self-efficacy also plays a role in shaping promotive behavior.[13]

Environmental factors have been shown to influence adolescents' promotive behavior.[14] Peer relationships and sexual development are closely connected, highlighting the significant impact of various environmental factors on both the choice of social companions and the timing of sexual maturation in adolescents.[15] Consequently, it is essential to explore additional environmental variables that may influence these patterns, such as the quality of parent-child relationships, parenting practices, particularly parental attitudes toward adolescent sexuality, religious beliefs, and characteristics of neighborhoods and schools, among others.[15] The role of family, close friends at home and school, and the wider adolescent community are crucial for adolescents.[11]

Adolescents belonging to Generation Z (born after 1995) have grown up with widespread access to the internet and technology. This constant exposure to and use of internet facilities can present unique challenges to adolescent behavior. About 95% of internet users worldwide who access social media are adolescents for the things they should not access.[16] For example, 24% of adolescents admitted using the internet to interact with strangers, and 14% accessed pornographic content.[17] Social media can provide positive and negative impacts without parental supervision, like a double-edged sword. It has been empirically proven that social media influences adolescent sexual behavior.[18]

Health promotion is the most ethical, effective, efficient, and sustainable approach to achieving good health. Health promotion aims to change behavior towards healthy behavior to achieve optimal health.[19] Healthy behavior may manifest as energy to enhance health through promotional, preventive, and educational initiatives.[20] Health promotion should be adapted to the characteristics of male and female adolescents because they have different brain structures and hormones that influence their behavior.[21]

Health promotion aims to increase knowledge, strengthen attitudes, and create healthy behavior to achieve optimal health.[17] Adolescent reproductive health encompasses a state of physical, mental, and social well-being concerning the reproductive system, its functions, and processes.[21] The expected promotive behavior is that adolescents can carry out personal hygiene behaviors regarding genitals, menstrual health, and the early detection of sexually transmitted diseases. Adolescents are required to engage in preventative behaviors about risky activities and to obtain and comprehend knowledge about adolescent reproductive health as a foundation for their actions. Adolescent reproductive health literacy is characterized by individual initiatives to acquire information regarding reproductive health, serving as a foundation for behaviors enacted through both promotional and preventive measures.[21]

Despite the recognized importance of health promotion in adolescent reproductive health, there remains a significant gap in understanding the sex-based specific factors that influence adolescents' reproductive behaviors and how health promotion models can be tailored to address these differences. Many existing studies have focused on the factors influencing adolescent reproductive health without specifically examining how these factors and their impact might vary between males and females. This lack of sex-based specific understanding could lead to the development of generic health promotion programs that may not adequately address the unique needs and challenges faced by male and female adolescents.

To strengthen the theoretical foundation of this study and address this gap, the field theory and Health Belief Model (HBM) were used as a guiding framework. Lewin's field theory combines individual and social dynamics to explain the processes that drive social change.[22] The HBM suggests that individuals' beliefs about health threats, perceived benefits of taking action, and self-efficacy in performing those actions are key determinants of health behaviors.[23] By applying the field theory and HBM within a sex-based specific context, this study explored how males and females differ in their perceptions of reproductive health threats, their perceived benefits of engaging in healthy behaviors, their self-efficacy in carrying out those behaviors, and the influence of the environment. This nuanced understanding will contribute to

developing more effective, sex-based specific health-promotion interventions.

Method

This study used a quantitative, descriptive-analytical method that applies the survey method approach. Conducted in the Special Region of Yogyakarta Province between April and November 2022, this study involved 326 senior high school students (159 males and 167 females) from 32 selected schools. The sample size was determined using Hair's rule, and the total number of high school students (57,916) was obtained from the Special Region of Yogyakarta Province's Development Planning Board. A multistage random sampling technique was used to select participants in the three stages. Stage 1 involved listings of 69 public senior high schools in the district, including complete urban and rural areas. Stage 2 determined the proportion of senior high schools in each district and chose the school randomly using an online lottery system; thus, 32 senior high schools were selected. Stage 3 comprised a list of students in the selected school and six randomly selected female and male students in each school.

The dependent variable measured in this study was adolescent reproductive health behavior, and the independent variables were personal and environmental factors that influence reproductive health. Data were collected through structured interviews with a questionnaire instrument tested for validity and reliability. Construct validity was assessed using factor analysis based on Kaiser Meyer Olkin (KMO) measures, and Average Variance Extracted (AVE) was also examined with values >0.5, indicating adequate construct validity. Instrument validity was assessed using Corrected Item-Total Correlation (CITC), and values >0.5 were considered acceptable. Reliability was evaluated using Cronbach's alpha, with a threshold of >0.7 deemed acceptable. The questionnaire covered nine key topics corresponding to the study variables and categorized them into personal and environmental factors. Personal factors included adolescents' perceptions of threats to reproductive health, attitudes towards reproductive health, and self-efficacy in facing reproductive health challenges. Environmental factors included the role of parents, schools, friends, community, and social media.

The dependent variable in this study was reproductive health behavior, which included promotive, preventive, and literacy behavior, measured using the summative rating Likert scale of 5 with the following categories: never, rarely, sometimes, often, and very often. The independent variables included: 1) adolescents' perceptions of threats to adolescent reproductive health consisting of perceptions of severity and vulnerability were measured using a 5-point Likert scale with the following categories: not at all dangerous, not dangerous, somewhat dangerous, dangerous, and very dangerous; 2) adolescents' attitudes towards reproductive health were measured using a 5-point Likert scale with the following categories: strongly disagree, disagree, unsure, agree, and strongly agree; 3) adolescents' efficacy in facing the threat of reproductive health problems, which included magnitude, generalizability, and strength of belief was measured using a 5-point Likert scale with the following categories: completely not sure, not sure, doubtful, sure, and completely sure; 4) the role of parents; and 5) and the role of social media was measured using a 5-point Likert scale with the following categories: never, rarely, sometimes, often, and very often. The maximum score was 100 for each variable. Data analysis was conducted using frequency distribution to describe the characteristics of the respondents and path analysis to examine the direct and indirect effects of personal and environmental factors on adolescent reproductive health behavior.

Results

This study involved 326 students, including 159 males and 167 females studying in the 11th grade, with a mean age of 16.3 years (Table 1). Adolescent reproductive health behavior was measured using 23 questions with details of 6 questions to identify promotive behavior, 11 questions to identify preventive behavior, and 6 questions regarding reproductive health literacy behavior. Health behavior encompasses human behavior in maintaining and improving health, based on good knowledge and understanding of behavior in preventing or avoiding disease or cause of disease (preventive), and seeking to improve health (promotive) as a whole in the category often.

This study revealed that the participants' reproductive health behavior was good. However, 14.4% of adolescents were never, rarely, and sometimes engaged in promotive, preventive, and reproductive health literacy behaviors. Several behaviors need to be improved, including breakfast habits; cleaning and drying the genitals using a towel or tissue after defecating; paying attention to or observing fluid discharge from the vagina/penis; avoiding dating; avoiding access to pornography; avoiding smoking; looking for, understanding, and applying information about adolescent reproductive health; can distinguish between information about reproductive health that is true and what information is a hoax; and

discussions with parents/teachers/health workers.

Table 1. Characteristics of Respondents

Variable	Male Adolescents (n=159)		Female Adolescents (n=167)		Total (n=326)	
	F	%	f	%	f	%
Age						
Youngest/Minimum		15		15		15
Oldest/Maximum		19		18		19
Mean		16.4		16.2		16.3
Major						
Science	100	62.9	86	51.5	186	57.1
Social science	59	37.1	81	48.5	140	42.9
Participation in the Student Council						
Yes	33	20.8	40	24	73	22.4
No	126	79.2	127	76	253	77.6
Participation in Other Organizations						
Yes	83	52.2	93	55.7	176	54
No	76	47.8	74	44.3	150	46

Personal factors such as risk perception, attitudes, and self-efficacy reflect individual characteristics that influence behavior. Environmental factors encompassed external influences, such as parental, school, peer, community, and social media exposure. Table 2 presents the mean scores for each variable, offering insights into how these factors contribute to adolescents' reproductive health behaviors.

Table 2. Mean Scores for Personal and Environmental Factors

Variable	Male Adolescents		Female Adolescents	
	Mean	Category	Mean	Category
Perception	80.96	Very dangerous	85.35	Very dangerous
Attitude	76.57	Agree	79.2	Agree
Self-efficacy	76.49	Sure	80.47	Completely sure
Role of parents	61.42	Often	66.07	Often
Role of schools	62.50	Often	64.59	Often
Role of friends	52.13	Sometimes	61.8	Often
Role of community	42.69	Sometimes	47.86	Sometimes
Role of social media	54.09	Sometimes	61.95	Often

Based on the item questionnaire analysis, it was found that females had higher average scores than male adolescents in some questions. The differences regarding the following questions (1) pay attention to or observe the discharge from the vagina/penis; 2) avoid kissing your friend/girlfriend; 3) protect yourself by avoiding sexual relations; 4) avoid access to pornography; 5) avoid smoking; 6) avoid using steam; 7) understand all information obtained about reproductive health; 8) discussion with your parents/teachers/health workers if there is lack of information about reproductive health.

Path analysis examined various factors' direct and indirect effects on adolescent reproductive health behavior. The initial analysis indicated that school, friends, and community roles did not significantly influence the dependent variable. Therefore, these three variables were excluded from the final path analysis model to ensure model fit and parsimony. The resulting model, depicted in Figure 1, focuses on the key personal and environmental factors contributing to adolescent reproductive health behavior. The results of the path analysis of male and female adolescents' reproductive health behaviors are presented in Table 3.

The model of reproductive health behavior was derived from path analysis involving male and female adolescents. The variables mutually influencing reproductive health behavior were the perception of self-vulnerability, attitude, efficacy, and the role of parents and social media. Five variables influenced reproductive health behavior in male adolescents, sorted based on the path coefficient's magnitude: self-efficacy, attitude, role of parents and social media, and perception. For female adolescents, four variables influenced reproductive health behavior, sorted based on the path coefficient's magnitude, including the role of parents, attitude, efficacy, and perception.

Table 3. Reference Value and Obtained Value of Fit Models

Indicator	Reference Value	Scores	
		Males	Females
RMSEA	Close to 0	0.000	0.000
GFI	Close to 1	1.000	1.000
AGFI	Close to 1	1.000	0.998
TLI	≥0.9	1.030	1.038
NFI	≥0.9	1.000	1.000
CMI/DF	<2	0.003	0.041
X^2-Chi-Square	Small	0.003	0.041
Probability	>0.05	0.956	0.840
Normality	-2.58 < cr < 2.58	1.618	2.150

Notes: RMSEA = Rootmean Square Error of Approximation; GFI = Goodfit of Fit Index; AGFI =Adjusted Goodness of Fit Index; TLI = Tucker Lewis Index; NFI = Normed Fix Index; CMIN/DF = Chi-square minimum divided by degrees of freedom.

The difference in the models formed between males and females was the influence of the role of social media. In males, the model shown in Figure 1 shows that the role of social media directly influences behavior. In contrast, the role of social media indirectly influences behavior, but it influences it through self-efficacy in shaping behavior for female adolescents. These models served as a base for developing health promotion to improve adolescent behavior, especially in promotive, preventive, and reproductive health literacy determinations.

Figure 1 shows that these variables structurally influence each other on the reproductive health behavior of both male and female adolescents. The magnitude of the influence can be seen in the value of the path coefficient (p) or Standardized Regression Weights (in AMOS), whose magnitude ranges between 0–1 (a value closer to 0 or zero), indicating that the influence is weaker. In contrast, a value close to 1 (one) is stronger. Path analysis showed the influence of variables, such as-perception, attitude, self-efficacy, the role of parents, and social media, as presented in Table 4.

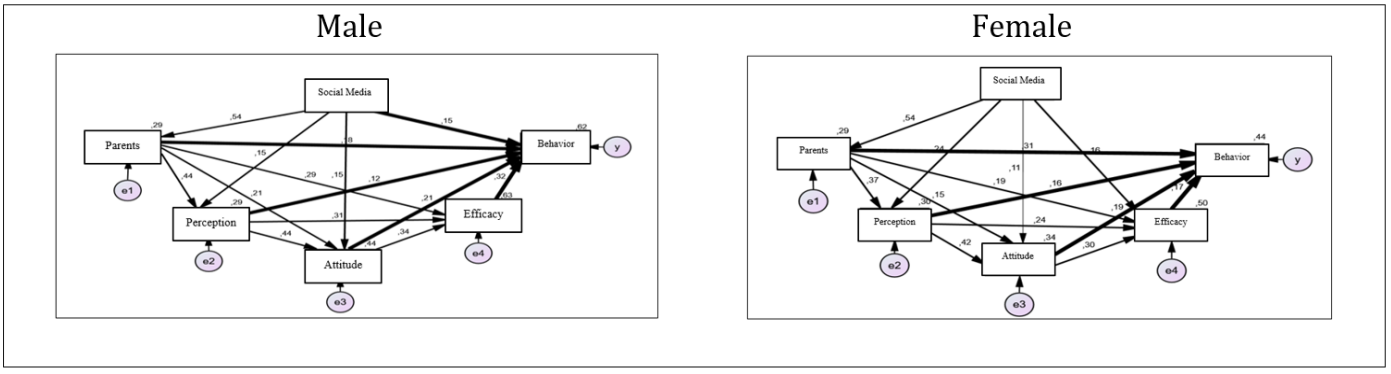

Figure 1. Reproductive Health Behavior Model for Male and Female Adolescents

The model of reproductive health behavior was derived from path analysis between male and female adolescents. Variables mutually influencing reproductive health behavior were the perception of self-vulnerability, attitudes, efficacy, parents' role, and social media's role. Five variables influenced reproductive health behavior in male adolescents, arranged in an orderly manner based on the magnitude of the path coefficient, were self-efficacy (0.318), attitudes (0.209), the role of parents (0.179), the role of social media (0.148), and perception (0.118). In contrast, four variables that influenced reproductive health behavior in female adolescents, ranked by the magnitude of the path coefficient, were the role of parents (0.314), attitudes (0.182), efficacy (0.172), and perception (0.155).

Table 4 shows that the personal factor that has an indirect influence is the perception variable. Apart from directly influencing behavior, it also indirectly influenced attitudes, followed by efficacy and behavior. Environmental factors indicated that the role of parents directly affected the reproductive health behavior of male adolescents, with an influence value of 0.179, and female adolescents, with an influence of 0.314. Apart from having a direct influence, parents' role also had an indirect influence through perceptions, attitudes, and self-efficacy. The influence of social media as an environmental factor differed between male and female adolescents. In male adolescents, social media directly influenced behavior, with a large influence of 0.148, and it also influenced the role of parents, perceptions, attitudes, and efficacy of adolescents. In female adolescents, social media did not have a direct influence on behavior but rather indirectly through parents (0.542), perception (0.245), and efficacy (0.160).

Table 4. Influence of Variables in the Path Analysis Model of Reproductive Health Behavior in Male and Female Adolescents

Influencing Variables	Male			Female		
	Influenced Variables	The Power of Influence	Probability (P)	Influenced Variables	The Power of Influence	Probability (P)
Perception	Behavior	Behavior	0.090*	Behavior	0.155	0.045***
	Efficacy	Efficacy	***	Efficacy	0.243	***
	Attitude	Attitude	***	Attitude	0.419	***
Attitude	Behavior	Behavior	0.003***	Behavior	0.185	0.014***
	Efficacy	Efficacy	***	Efficacy	0.304	***
Self-efficacy	Behavior	Behavior	***	Behavior	0.172	0.033***
Role of parents	Behavior	Behavior	0.009***	Behavior	0.314	***
	Efficacy	Efficacy	***	Efficacy	0.185	0.006***
	Attitude	Attitude	0.006***	Attitude	0.153	0.057*
	Perception	Perception	***	Perception	0.371	***
Role of social media	Behavior	Efficacy	0.013***	Efficacy	0.160	0.019***
	Attitude	Attitude	0.032***	Attitude	0.111	0,152ns
	Perception	Perception	0.058*	Perception	0.245	0.002***
	Parents	Parents	***	Parents	0.542	***

Notes: ***= p-value <0.05; *= p-value = 0.05-0.1; ns: no significant, p-value >0.1

Discussion

This study revealed that perceptions shown to influence efficacy in both male and female adolescents. Perception had the strongest influence on attitude. It is a very important cognitive aspect in humans that allows them to know and understand the world around them.[24] Meanwhile, perceived severity/seriousness is a person's assessment of an illness or health problem, which also determines behavior.[22] A previous study also stated that perceived severity influences preventive behavior regarding reproductive health.[11] The results confirmed a previous study that cognitive aspects influence adolescent literacy behavior in efforts to prevent unwanted pregnancies.[25]

The cognitive aspect of behavior influences adolescent behavior in efforts to increase reproductive health levels or promote behavior.[9] Adolescents with supportive and warm parents are more likely to express conflict and seek guidance and assistance openly.[26] A strong parent-child relationship fosters a sense of belonging, enabling adolescents to internalize social, cultural, and behavioral norms by adapting to accepted patterns. When parents understand and appropriately address their adolescents' needs, they can serve as positive role models. By helping children internalize societal rules and norms, parents can play a crucial role in steering them away from engaging in risky behaviors.[26]

This study also highlighted that social media significantly influenced adolescent reproductive health behavior, with notable differences in its impact on male and female adolescents. For males, social media directly affected behavior; for females, it influenced behavior indirectly through self-efficacy. Enhancing sex-based sensitive strategic communication is essential to optimize social media's role in health interventions and promotion.[27] This involves conducting a thorough context analysis, formulating clear objectives, identifying target audiences, and integrating sex-based considerations into the design of messages and the selection of communication channels.[27]

Adolescent social interactions occur predominantly through digital media. Theoretical frameworks that acknowledge sex differences in interpersonal functioning offer insights into why the impact of digital media on well-being differs between male and female adolescents.[28] Female adolescents are more likely to engage in close, one-on-one friendships, whereas male adolescents are often socialized in groups. Female adolescents prioritize social relationships and popularity during adolescence, and their friendships are generally more intimate. Consequently, female adolescents' moods are more strongly affected by interpersonal events than male adolescents. Overall, social integration appears to be more critical for female adolescents' mental health because of cultural and evolutionary factors. This is based on the psychological impacts of heavy use, such as social comparisons and body image concerns. Interventions targeting female adolescents can promote body positivity campaigns and use influencers to model healthy behaviors and self-acceptance.[29] However, male adolescents could incorporate health messages into gaming platforms or apps or use gamification techniques to make health education more engaging.[28]

This study showed that attitudes influenced efficacy and behavior among male and female adolescents. A previous study indicated that adolescents with a favorable attitude toward reproductive health would likely engage in behaviors that enhance and sustain their reproductive health.[10] This study proved that attitudes influenced reproductive health behavior, especially preventing risky sexual behavior.[10] Confirming the results of previous research, which stated that attitudes are one of the personal factors that influence premarital sexual behavior in school adolescents.[26] A study in

Indonesia has also stated that attitudes influence behavior in improving adolescent health status or promotive behavior.[13] Previous study showed that male adolescents with an agreeable attitude were found to have a higher likelihood of engaging in risky sexual behaviors associated with STIs.[30]

Self-efficacy influenced the reproductive health behavior of male adolescents, with an influence of 0.318. Self-efficacy also influenced adolescent female adolescents' behavior, with an influence value of 0.172. The influence of efficacy on behavior was stronger in male than female adolescents. In this study, self-efficacy was the variable with the strongest direct influence on reproductive health behavior compared to other variables in male adolescents. Self-efficacy is defined as self-confidence, which is the ability to organize and carry out a series of actions necessary to achieve desires and success.[31] Self-efficacy is the self-confidence to perform adequately, achieve goals, and overcome obstacles. Self-efficacy empowers individuals to have confidence in their abilities and to handle challenging or stressful situations effectively.[31] Adolescents who have high self-efficacy can prevent promiscuous sexual behavior.[11]

The impact of parental roles was the most significant factor affecting female adolescents compared to other variables. It also proved to influence self-efficacy and perceptions among male and female adolescents. The role of parents is important in shaping children's behaviors.[32] Parents can foster norms, perceptions, attitudes, and behaviors in adolescents.[11] This study's results aligned with a previous study stating that communication between parents and adolescents influences preventive behavior in reproductive health.[11] Female adolescents carried out more communication about sexuality with their mothers.[33] Adolescents who communicate well with their parents have less access to pornography.[34] Another study also explains that the involvement of parents, combined with collaboration between teachers and adolescents, plays a crucial role in reducing risky sexual behaviors and preventing sexually transmitted infections.[35]

Several analyses related to the role of social media and self-efficacy have been conducted using theoretical exploration. First, physiological factors pertain to examining physical differences, such as differences in the function and structure of the brains of men and women. There are three things related to this physiological factor. First, the structural function of the male brain is more connected with several areas of the brain for carrying out physical actions; for females, it is closely related to various cognitive and emotional functions.[36] The structure of the male brain, the prefrontal cortex, grows slower in adolescent boys than in female adolescents.[36] This condition frequently prompts men the same age as women to act impulsively and recklessly, neglecting to assess the consequences or effects thoughtfully.[36] Men's brains have more activity in the visual processing area than women's, which occurs in processing feelings, attention, and memory. Thus, males are more interested in influencers or social media that offer more visual processes than females.[36]

Second, psychological factors examine the differences in the psychological roles of men and women in responding to certain things. Psychologically, men often emphasize the existence of strong power and agency. At the same time, women, apart from considering themselves, also consider other people's opinions or desires to be greater than their own opinions or desires. Therefore, this influences men's and women's behavior, especially in responding to various things, including social media.[37]

Third, the influence of a culture formed in society and sexual double standards among males and females. This study showed that males responded directly to social media behavior; in contrast, females processed it through efficacy, which could also be caused by the culture that develops in society. Some cultures in society cause men to respond more spontaneously to things and not think or feel the impact as different from that of women.[38] In society, males are often expected to be sexually active and dominant and take the lead in initiating (hetero)sexual activities. In contrast, females are typically viewed as sexually reactive, submissive, and passive. Traditionally, men have also been afforded greater sexual freedom than women have. This double standard leads to unequal treatment when men and women exhibit similar sexual behaviors.[38] For instance, approximately 50% of women experience slut-shaming compared with only 20% of men.[38] These traditional societal expectations regarding sexual behavior contribute to sex differences in risky sexual behaviors, such as men having more sexual partners and women being less likely to request or insist on condom use.[38] In other cases, women receive more negative labels if they leave the house at night than men.[39] The double standards men and women develop in society also influence their behavior. There were differences in behaviors and factors related to adolescent reproductive health between male and female adolescents; thus, health promotion must be developed.

The strengths of this study included its comprehensive analysis of personal and environmental factors, which provided a holistic understanding of adolescent reproductive health behavior. Additionally, the large sample size of 326 respondents from 32 senior high schools enhanced the robustness of the findings. Using pre-tested questionnaires with validated and reliable instruments further strengthens the study's credibility. Another notable strength was the sex-

specific insights that differentiate male and female adolescents, enabling targeted recommendations for health promotion. However, the study was limited by its geographic scope, as it was conducted only in the Special Region of Yogyakarta Province, which restricts the generalizability of its findings to other regions or countries. A potential bias may arise from adolescents underreporting or exaggerating their behaviors owing to social desirability or fear of judgment. Strategies, such as ensuring confidentiality, were implemented to reduce response bias and encourage honest reporting.

Conclusion

This study analyzes reproductive health behavior among male and female adolescents, offering recommendations for health promotion. While most high school students in Yogyakarta demonstrate good reproductive health behavior, some of them still need improvement in promotive and preventive behaviors and health literacy. Personal factors, including perceptions, attitudes, and self-efficacy, influence adolescent behavior, while environmental factors, such as parental roles and social media, play a crucial role. Sex differences reveal that parental involvement is more significant for females, whereas self-efficacy shapes male adolescents' behavior, with social media having both direct and indirect effects. This study emphasizes the need for sex-based specific interventions, integrating social media campaigns with parental involvement and fostering collaboration between parents, schools, and social media platforms to enhance reproductive health education.

Abbreviations

HBM: Health Belief Model.

Ethics Approval and Consent to Participate

This study was approved by the Poltekkes Kemenkes Yogyakarta Ethics Commission (e-KEPK/POLKESYO/0530/VI/2022). Informed consent was obtained from the students and teachers involved in this study.

Competing Interest

The authors declare that no significant competing financial, professional, or personal interests might have affected the performance or presentation of the work described in this manuscript.

Availability of Data and Materials

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Authors' Contribution

NM, SSH, and FTH contributed to the design and implementation of the research. NM did the data analysis; SSH and FTH supervised. NM, SSH, and FTH were involved in manuscript preparation, content, and administration. All the authors discussed the results and contributed to the final manuscript.

Acknowledgment

The authors would like to thank all participants, the students, the head of senior high school in the Special Region of Yogyakarta Province, and all enumerators for their cooperation and support on this study. Special gratitude goes to Dr. Chris Sugihono, STP., MP., for his invaluable contributions as a proofreader and peer reviewer, enhancing the clarity and quality of this paper.

References

1. World Health Organization. Adolescents health. Geneva: World Health Organization; 2021.
2. Muntamah AL, Latifiani D, Arifin R. Pernikahan dini di Indonesia: Faktor dan peran pemerintah (perspektif penegakan dan perlindungan hukum bagi anak). Widya Yuridika. 2019; 2 (1): 1-12. DOI: doi.org/10.31328/wy.v2i1.823.
3. World Health Organization. Maternal mortality. Geneva: World Health Organization; 2024.
4. World Health Organization. HIV and AIDS. Geneva: World Health Organization; 2024.
5. Kementerian Kesehatan Republik Indonesia. Profil Kesehatan Indonesia Tahun 2020. Jakarta: Kementerian Kesehatan Republik Indonesia; 2021.
6. Kementerian Kesehatan Republik Indonesia. Profil Kesehatan Indonesia Tahun 2022. Jakarta: Kementerian Kesehatan Republik Indonesia; 2023.
7. Badan Narkotika Nasional Republik Indonesia. Penggunaan Narkotika di Kalangan Remaja Meningkat. Jakarta: Badan Narkotika Nasional Republik Indonesia; 2019.
8. Rosida L, Martha E, Besral. Residential density, parents' sexual activity and teenage sexual behavior in Yogyakarta. Kesmas. 2016; 10 (3): 134–139. DOI: 10.21109/kesmas.v10i3.949.
9. Kaczkowski W, Swartout KM. Exploring gender differences in sexual and reproductive health literacy among young people from refugee backgrounds. Cult Health Sex. 2020; 22 (4): 369–384. DOI: 10.1080/13691058.2019.1601772.
10. Triyanto E, Prabandari YS, Yuniarti KW, et al. Identification factors affecting adolescent's reproductive health behavior: A qualitative study. Bali Med J. 2019; 8 (3): 852. DOI: 10.15562/bmj.v8i3.1539.
11. Noegroho A, Hariadi SS, Priatamtama PW. Faktor-faktor pengaruhi perilaku kesehatan reproduksi remaja Kabupaten Banyumas. J Kawistara. 2015; 5 (1): 57–66. DOI: 10.22146/kawistara.6404.
12. Je M, Ju HO, Lee J. Factors affecting reproductive health promotion behavior among late-adolescent girls in South Korea: A cross-sectional descriptive study. Child Youth Serv Rev. 2020; 118: 105347. DOI: 10.1016/j.childyouth.2020.105347.

13. Purwaningsih P, Indarwati R, Wahyuni HM. The impact of self-efficacy in preventing sexual behavior among adolescents. Indones J Community Health Nurs. 2019; 4 (1): 17-22. DOI: 10.20473/ijchn.v4i1.12354.
14. Kholifah SN, Yumni H, Minarti, et al. Structural model of factors relating to the health promotion behavior of reproductive health among Indonesian adolescents. Int J Nurs Sci. 2017; 4 (4): 367–373. DOI: 10.1016/j.ijnss.2017.10.001.
15. Clark DA, Durbin CE, Heitzeg MM, et al. Adolescent sexual development and peer groups: Reciprocal associations and shared genetic and environmental influences. Arch Sex Behav. 2021; 50: 141–160. DOI: 10.1007/s10508-020-01697-9.
16. Elkatmış M. Examination of social media usage habits of generation Z. Front Psychol. 2024; 15: 1370823. DOI: 10.3389/fpsyg.2024.1370823.
17. Landry M, Turner M, Vyas A, et al. Social media and sexual behavior among adolescents: Is there a link? JMIR Public Health Surveill. 2017; 3 (2): e28. DOI: 10.2196/publichealth.7149.
18. Hakim SN, Raj AA, Prastiwi DFC. Remaja dan internet. In: Prosiding SEMNAS Penguatan Individu di Era Revolusi Informasi; 2017.
19. Reitz SM. Health promotion theories. In: Boyt Schell BA, Gillen G, Scaffa ME, Cohn ES, editors. Willard & Spackman's Occupational Therapy. 12th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2018. p. 574-587.
20. Sarafino EP, Smith TW. Health psychology: Biopsychosocial interactions. 7th ed. New Jersey: John Wiley & Sons, Inc.; 2020.
21. Wierenga LM, Bos MGN, Schreuders E, et al. Unraveling age, puberty and testosterone effects on subcortical brain development across adolescence. Psychoneuroendocrinology. 2018; 91: 105–114. DOI: 10.1016/j.psyneuen.2018.02.034.
22. Anuar H, Shah SA, Gafor H, et al. Usage of Health Belief Model (HBM) in health behavior: A systematic review. Malays J Med Heal Sci. 2020; 16 (6): 201–209.
23. Raskind IG, Shelton RC, Comeau DL, et al. A Review of Qualitative Data Analysis Practices in Health Education and Health Behavior Research. Heal Educ Behav. 2019; 46 (1): 32–39. DOI: 10.1177/1090198118795019.
24. Green EC, Murphy EM, Gryboski K. The health belief model. In: Sweeny K, Robbins ML, Cohen LM, editors. The Wiley Encyclopedia of Health Psychology. New Jersey: John Wiley & Sons, Inc.; 2020. DOI: 10.1002/9781119057840.ch68.
25. Santisouk P, Hansana V, Thanh Huong N. Pregnancy health literacy among teenagers in Kaysone district, Savannakhet Province, Lao PDR. Glob Health Action. 2020; 13 (sup2). DOI: 10.1080/16549716.2020.1791412.
26. Ha T, Van Ryzin MJ, Elam KK. Socialization processes within adolescents' relationships with parents and peers predicting couples' intimate partner violence in adulthood: A social learning perspective. Dev Psychopathol. 2023; 35 (1): 204–217. DOI: 10.1017/S0954579421000602.
27. Birchall J. Gender sensitive strategic communications interventions. Brighton, UK: Institute of Development Studies; 2018.
28. Twenge JM, Martin GN. Gender differences in associations between digital media use and psychological well-being: Evidence from three large datasets. J Adolesc. 2020; 79 (1): 91–102. DOI: 10.1016/j.adolescence.2019.12.018.
29. Savickaitė R, Dijkstra JK, Kreager D, et al. Friendships, Perceived Popularity, and Adolescent Romantic Relationship Debut. J Early Adolesc. 2020; 40 (3): 377–399. DOI: 10.1177/0272431619847530.
30. Helda H, Muchlisa N. Attitudes Concerning Sexual Behavior towards Risky Sexual Behavior of Sexual Transmitted Infections among Male Adolescents in Indonesia. Kesmas. 2021; 16 (2): 1–6. DOI: 10.21109/kesmas.v16i2.4845.
31. Burger K, Samuel R. The role of perceived stress and self-efficacy in young people's life satisfaction: A longitudinal study. J Youth Adolesc. 2017; 46: 78–90. DOI: 10.1007/s10964-016-0608-x.
32. Noorman MAJ, den Daas C, de Wit JBF. How Parents' Ideals are Offset by Uncertainty and Fears: A Systematic Review of the Experiences of European Parents regarding the Sexual Education of Their Children. J Sex Res. 2023; 60 (7): 1034–1044. DOI: 10.1080/00224499.2022.2064414.
33. Meilani N, Hariadi SS, Haryadi FT. The source of adolescents reproductive health information and dating behavior among senior high school students. Dis Prev Public Health J. 2023; 17 (1): 55–62. DOI: 10.12928/dpphj.v17i1.7165.
34. Meilani N, Setiyawati N, Barasa SO. Factors related pornographic access behaviour among high school students in Yogyakarta, Indonesia. Malays J Public Health Med. 2020; 20 (2): 123–130. DOI: 10.37268/mjphm/vol.20/no.2/art.801.
35. El Kazdouh H, El-Ammari A, Bouftini S, et al. Perceptions and intervention preferences of Moroccan adolescents, parents, and teachers regarding risks and protective factors for risky sexual behaviors leading to sexually transmitted infections in adolescents: Qualitative findings. Reprod Health. 2019; 16: 138. DOI: 10.1186/s12978-019-0801-y.
36. Brizendine L. Female Brain. 3rd ed. Jakarta: Phoenix Publishing Project; 2024.
37. Carlson DL, Soller B. Sharing' s more fun for everyone? Gender attitudes, sexual self-efficacy, and sexual frequency. J Marriage Fam. 2018; 81 (1): 24-41. DOI: 10.1111/jomf.12524.
38. Endendijk JJ, Deković M, Vossen H, et al. Sexual double standards: Contributions of sexual socialization by parents, peers, and the media. Arch Sex Behav. 2022; 51: 1721–1740. DOI: 10.1007/s10508-021-02088-4.
39. Ratri SR. Standar Ganda Gender dalam Keluarga [Undergraduate Thesis]. Jakarta: UIN Syarif Hidayatullah Jakarta; 2019