

Self-Efficacy as the Strongest Predictor of Adolescent Reproductive Health Behavior: A Health Belief Model Study among Vocational Students in Rural East Java

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ABSTRACT

Background: Adolescents enrolled in vocational high schools, especially in rural areas, are particularly susceptible to reproductive health risks due to limited knowledge, low perception of risk, and restricted access to reliable information. The health belief model presents a comprehensive theoretical framework to explain these behavioural determinants. This study explores the factors influencing reproductive health behaviour among vocational high school students in rural areas of East Java, Indonesia

Method: A school-based cross-sectional study design was used, with 150 students chosen through random sampling. Data were obtained through a structured questionnaire and subsequently analysed using Chi-square tests and multivariate logistic regression.

Result: The findings indicated that all constructs of the Health Belief Model—perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy—were significantly related to reproductive health behaviour ($p < 0.05$). Students with higher perceived susceptibility and perceived benefits, lower perceived barriers, and greater self-efficacy were more likely to engage in positive behaviours. In the adjusted analysis, self-efficacy emerged as the most dominant predictor ($OR = 3.85$; 95% $CI: 2.01-7.39$; $p < 0.001$). Perceived susceptibility, perceived benefits, perceived barriers, and cues to action remained independently associated, whereas perceived severity showed a relatively weaker effect. These findings highlight the critical role of cognitive and perceptual factors in shaping adolescents' reproductive health behaviour within vocational school settings. Interventions based on the Health Belief Model—particularly those aimed at enhancing self-efficacy and reducing perceived barriers—are essential for enhancing reproductive health outcomes among adolescents in underserved rural area.

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INTRODUCTION

Adolescents constitute a population group experiencing significant biological, psychological, and social transitions, including reproductive maturation, identity development, and expanded social engagement.(1) This transitional period heightens adolescents' vulnerability to risk behaviors such as premarital sex, unintended pregnancy, and STIs, with potential negative consequences for physical and mental health.(2) These risks are further amplified by limited knowledge, cultural norms that hinder open discourse on sexual topics, and restricted accessibility to appropriate sexual and reproductive health services for adolescents.(3)

Reproductive and sexual health of adolescents' well-being remains a major global public health concern. WHO reports that adolescents face various risks, such as unplanned pregnancies, infections transmitted through sexual contact, and risky sexual behaviors, primarily attributed to limited knowledge and insufficient access to reliable health data.(4) In addition, the UN Population Fund estimates that 21 million teenage girls aged 15–19 in low- and middle-income countries face pregnancy annually. It reflects a persistently high burden of high rates of adolescent pregnancy remains prevalent in low- and middle-income countries (LMICs). Most of which are unplanned and increase the risks to both maternal and infant health.(5) This condition indicates that adolescent

reproductive health issues still require serious global attention.

In Indonesia, the situation of adolescent reproductive health also reflects significant challenges. BKKBN data indicate that many adolescents still have limited knowledge of reproductive health and exhibit a tendency toward risky behaviors, including premarital sex and low contraceptive use.(6) This is further supported by reports from the Kementerian Kesehatan Republik Indonesia, which have documented a rising trend in cases in the adolescent population in recent years.(7) Numerous studies have shown that adolescents across different regions of Indonesia have limited knowledge and make low health service utilization in reproductive health, which contributes to poor reproductive health behaviors.(8) According to a Makassar study, almost 25% of adolescents used reproductive health services; knowledge, personal opinions, and peer and family support all showed strong correlations with service use.(9) Moreover, social, cultural, and educational environmental factors also influence how adolescents understand and respond to reproductive health issues.

Among the most commonly utilized models for explaining health practices are the health belief model (HBM). This model suggests that health behavior is influenced by multiple core determinants, the related variables include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. A substantial body of research indicates that these variables play a significant role in influencing adolescent reproductive health behaviors, especially in their decisions related to safe sexual practices. However, the influence of each construct may vary depending on the social context and the characteristics of the population studied. The HBM is widely recognized as among the most commonly applied theoretical models for explaining and predicting individual health behavior.(10) In this model, decisions to engage in or refrain from health-related actions are influenced by various essential psychological constructs, such as perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. These determinants play an important role in explaining why adolescents choose to engage in or refrain from risky reproductive health behaviors, particularly in school settings.(11)

There is still a small amount of research that specifically examines the factors influencing adolescent reproductive health behaviour in school-based settings using an HBM framework within the contextual setting of Jember, despite the fact that many studies have looked at adolescent reproductive health behaviours and Health

Belief Model (HBM) components across various regions in Indonesia, such as Jakarta, Gresik, Kediri, and Makassar. This location is especially crucial because social and cultural traits and health care accessibility can differ between areas, requiring locally grounded evidence to guide successful interventions. For instance, studies conducted in Jakarta have identified a significant association between perceived susceptibility and preventive actions related to premarital sexual behavior, while research in Gresik has shown that perceived severity and perceived barriers are also linked to such behaviors. However, these findings revealed variability in the influence of HBM constructs, underscoring the need for further investigation in diverse educational settings, including Jember as a distinct and context-specific study area .(11)

Adolescent reproductive health behaviors have implications that extend beyond physical health, influencing educational achievement, psychological well-being, and long-term quality of life.(12) Hence, identifying the factors that influence adolescents' productive health practices in school settings using the HBM is essential for designing more effective school-based health promotion programs. The findings of this study can serve as an evidence base for the development of school-based adolescent reproductive health programs, including education, counseling, and context-appropriate risk communication strategies. Furthermore, this research supports government and policymaker efforts to improve adolescents' quality of life by promoting positive reproductive health behaviors. Based on this reasoning, this research is intended to offer both scientifically and practically to the field of public health, with particular emphasis on adolescent reproductive health in Indonesia.(13)

Although numerous studies have explored factors influencing adolescents' reproductive health behavior, most have been conducted among general populations or general high school students, primarily in urban settings. This research specifically focuses on vocational school adolescents, particularly in rural areas, remains limited. In fact, vocational school students have distinct characteristics, such as a more practice-oriented educational focus, exposure to diverse social environments, and potentially different access to information compared to general school students. In addition, there continues to be lack of studies that comprehensively integrate all components of the Health Belief Model within a single multivariate analytical model. Vocational high school (SMK) students represent a unique adolescent subgroup characterized by earlier exposure to workplace environments, broader peer interactions, and increased

autonomy compared to general secondary school students. These contextual factors may heighten vulnerability to unhealthy reproductive health behaviors, including inadequate preventive practices against sexually transmitted infections, low use of adolescent sexual reproductive healthcare services, and suboptimal sexual health decision-making. Rapid digital media exposure and limited structured reproductive health education in vocational settings further exacerbate these risks.

Based on the identified research gap, this study offers novelty by conducting a more comprehensive analysis of the full set of constructs within the HBM in relation to adolescent reproductive health behavior among vocational school students in rural East Java. Unlike previous studies that tended to focus on only selected constructs or analyze them separately, this research integrates all HBM components into a single analytical model to provide a more comprehensive understanding of the psychosocial factors affecting adolescent behavior. Furthermore, by evaluating each construct's strength using multivariate analysis, this study goes beyond simply finding correlations between variables to discover the most significant predictor of teenage reproductive health behaviour. This method allows for a more thorough comprehension of the important elements that behavioural therapies should focus on. Therefore, the results of this study research are expected to contribute to a meaningful scientific contribution to the advancement of theory-based reproductive health education interventions that are more focused, contextual, and effective, and that are adapted T-aligned with the characteristics and needs of vocational school adolescents, particularly in rural settings.

METHOD

Participants and study design

This research used a quantitative cross-sectional approach to investigate factors affecting adolescent reproductive health. This research was analyzed using the HBM framework among vocational high school students in rural areas of East Java. Adolescents' reproductive health behavior served as the dependent variable, defined as a series of actions performed to maintain and promote reproductive health. These actions included avoiding risky sexual behaviors, maintaining genital hygiene, and seeking and using valid and reliable health information. This variable was measured using a structured questionnaire employing a 4-point Likert scale (1 = never to 4 = always). The overall score was derived by summing all items and then categorized into good and poor behavior based on the median value as the cut-off point, where scores $\geq$ median were classified as good behavior and

scores $<$ median were classified as poor behavior. Meanwhile, the independent variables consisted of the components of the HBM, namely perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action. Each construct was measured using several questionnaire items on a 4-point Likert scale. Scores for each construct were obtained by summing all items and then divided into high and low categories using the median as the cutoff point, where scores $\geq$ median indicated a high category and scores $<$ median indicated a low category.

The research instrument was a structured survey instrument developed based on the HBM and adapted from previously validated tools. Content validity was evaluated by experts in public health and reproductive health. Construct validity was assessed using Pearson correlation, while reliability was examined using Cronbach's alpha, with a threshold of ≥ 0.85 indicating acceptable reliability. The study population comprised all vocational school students in rural areas of East Java, totaling N respondents, with a final sample of 150 students. A proportionate stratified random sampling method was used to ensure that each grade level was adequately represented in the sample. Inclusion criteria consisted of active students in grades X and XI who were willing to participate and provided informed consent, while students in grade XII were excluded from the study.

Measurements and procedure

This study examined the relationship between independent and dependent variables. The study's independent variables were the components of the HBM, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy, whereas the dependent variable was adolescents' reproductive health behavior. Data were obtained using a structured questionnaire that had been validated and tested for reliability. The results indicated a significant Pearson correlation ($p = 0.01$) and high reliability (Cronbach's alpha = 0.85). Data collection involved direct administration of questionnaires to respondents after obtaining school authorization and all participants provided written informed consent. ethical clearance was also secured prior to data collection.

Statistical analysis and ethical clearance

The data were analyzed in multiple stages to ensure the accuracy of the findings. The first stage consisted of univariate analysis to summarize respondents' characteristics and the distribution of each variable. This was followed by bivariate analysis with the Chi-square test

to analyze the association between independent and dependent variables. Finally, multivariate analysis using multiple logistic regression was conducted to identify the primary determinants of adolescents' reproductive health behavior. Findings were reported as Odds Ratios (ORs) along with 95% Confidence Intervals (CIs), with a significance level set at $p < 0.05$. Ethical clearance for this study was granted by the Health Research Ethics Committee of Universitas dr. Soebandi (No. 008/KEPK/UDS/I/2024). For participants younger than 18 years, consent was collected from parents or legally recognized guardians. The study ensured respondent confidentiality, involved no coercion or discrimination, and fully adhered to established ethical research standards.

RESULT AND DISCUSSION

The demographic characteristics of the respondents were summarized in Table 1. Based on sex, most of the respondents were female (54.70%), while male accounted for 45.30%, indicating a relatively balanced distribution with a slight predominance of females. In terms of age, most the sample consisted of 18 years old (48.00%), subsequently followed by, 17 years old (38.70%) and 16 years old (13.30%). This pattern suggested that the sample was largely composed of late adolescents, who were typically at a more advanced stage of cognitive and psychosocial development. It might influence their understanding of reproductive health issues. Regarding educational level, most respondents were in grade XI (56.00%), while 44.00% were in grade X, reflecting a fairly

proportional distribution with a slightly higher representation of more senior students. Concerning the major sources of reproductive health information, the internet or social media was the most frequently reported source (34.70%), followed by peers (28.00%), parents (24.70%), and teachers (12.60%). These findings indicated that digital platforms and peer networks served a role prominent role in shaping adolescent development access to reproductive health information, whereas formal sources such as teachers were less frequently utilized. The research findings for respondent characteristics are show in Table 1.

Table 1. Characteristics of respondent

Variables	f	%
Sex		
Male	68	45.3
Female	82	54.7
Age		
16 years	20	13.3
17 years	58	38.7
18 years	72	48.0
Class		
X	66	44.0
XI	84	56.0
Primary source of information on reproductive health		
Internet/Social Media	52	34.7
Peers	42	28.0
Teachers	19	12.6
Parents	37	24.7
Total	150	100

Table 2. Description of health belief model variables and reproductive health behaviour

Variables	Reproductive Health Behavior				Total		P- value
	Good		Poor				
	f	%	f	%	f	%	
Perceived susceptibility							
High	70	46.6	22	14.6	92	61.2	0.018
Low	25	16.6	33	22.2	58	38.8	
Perceived seriousness							
High	80	53.5	28	18.4	108	71.9	0.002
Low	15	10.0	27	18.1	42	28.1	
Perceived benefits							
High	86	57.3	30	20.0	116	77.3	0.000
Low	9	6.7	25	16.0	34	22.7	
Perceived barriers							
High	15	10.0	34	22.6	49	32.6	0.036
Low	80	53.5	21	13.9	101	67.4	
Cues to action							
Yes	64	42.6	24	16.1	88	58.7	0.045
No	30	20.0	32	21.3	62	41.3	
Self-efficacy							
High	95	63.3	17	11.4	112	74.7	0.000
Low	14	9.3	24	16.0	38	25.3	

Table 3. Multivariate logistic regression analysis of HBM factors and reproductive health behaviour

Variable	OR	95% CI	P-value
Perceived susceptibility	2.10	1.15 – 3.85	0.018
Perceived seriousness	2.45	1.35 – 4.45	0.002
Perceived benefits	2.80	1.50 – 5.20	0.000
Perceived barriers	0.55	0.32 – 0.95	0.036
Cues to Action	1.85	1.01 – 3.40	0.045
Self-efficacy	3.85	2.01 – 7.39	0.000

The bivariate analysis assessing the association among the constructs of the Health Belief Model and adolescents' reproductive health behavior was presented in Table 2. The results indicated that all HBM constructs showed a significant association with reproductive health behavior ($p < 0.05$). Compared to those with lower perceived susceptibility (16.6%), those with higher perceived susceptibility were more likely to demonstrate good reproductive health behaviour (46.6%). On the other hand, a higher percentage of respondents with low perceived susceptibility (22.2%) than those with high perceived susceptibility (14.6%) exhibited negative behaviour. This association was statistically significant ($p = 0.018$), indicating that adolescents who believe they are more susceptible to dangers related to reproductive health were more inclined to practice healthy habits. In a similar vein, reproductive health behaviour was significantly correlated with perceived severity ($p = 0.002$). Respondents with high perceived severity demonstrated a higher proportion of good behavior (53.5%) than those with low perceived severity (10.0%). Conversely, poor behavior was more frequently observed among those with lower perceived severity (18.1%) compared to those with higher perceived severity (18.4%), underscoring the importance of recognizing the seriousness of reproductive health issues in shaping behavior. Perceived benefits demonstrated a strong and statistically significant association ($p = 0.000$). A majority of respondents with high perceived benefits exhibited good behavior (57.3%), whereas those with low perceived benefits were more likely to report poor behavior (16.0%). This indicated that adolescents who acknowledge the advantages of healthy reproductive practices are more inclined to adopt such behaviors.

In contrast, perceived barriers showed an inverse relationship with reproductive health behavior ($p = 0.036$). Respondents with higher perceived barriers were more likely to exhibit poor behavior (22.6%) than good behavior (10.0%), while those with lower perceived barriers demonstrated a higher proportion of good behavior (53.5%). This finding suggested that perceived obstacles might hinder adolescents from engaging in positive reproductive health practices. Cues to action were also

found to be significantly associated with behavior ($p = 0.045$). Respondents who reported receiving cues to action were more likely to demonstrate good behavior (42.6%) compared to those who did not (20.0%). Conversely, poor behavior was more common among respondents without such cues (21.3%) than among those who had them (16.1%). It indicated that internal or external triggers played a role in promoting healthy behaviors. Finally, self-efficacy was most strongly associated with reproductive health behavior ($p = 0.000$). Respondents with greater self-efficacy predominantly exhibited good behavior (63.3%), whereas those individuals with low self-efficacy were more likely to report poor behavior (16.0%). This highlighted that confidence in one's ability to perform healthy behaviors is a key determinant of adolescents' reproductive health practices. In summary, all components of the HBM were significantly associated with adolescents' reproductive health behavior, with self-efficacy and perceived benefits emerging as the most influential factors.

Multivariate analysis revealed that all constructs of the Health Belief Model were significantly associated with adolescents' reproductive health behavior ($p < 0.05$). The Odds Ratios (ORs) reflected the strength of the likelihood of engaging in positive reproductive health behavior for each variable. Self-efficacy emerged as the most influential predictor (OR = 3.85; 95% CI: 2.01–7.39; $p < 0.001$), indicating that adolescents with high self-efficacy were approximately 3.85 times more likely to demonstrate positive reproductive health behavior compared to those with low self-efficacy. Perceived benefits also showed a strong association (OR = 2.80; 95% CI: 1.50–5.20; $p = 0.001$). It was suggested that adolescents with higher perceived benefits were 2.8 times more likely to engage in healthy behaviors. Perceived severity demonstrated a significant effect (OR = 2.45; 95% CI: 1.35–4.45; $p = 0.002$). It indicates that a greater perception of seriousness increased the likelihood of positive reproductive health behavior by 2.45 times.

Perceived susceptibility showed a moderate association (OR = 2.10; 95% CI: 1.15–3.85; $p = 0.018$), while cues to action were also significantly related (OR = 1.85; 95% CI: 1.01–3.40; $p = 0.045$), suggesting that the presence of internal or external triggers enhances the likelihood of engaging in healthy behaviors. In contrast, perceived barriers were inversely associated with reproductive health behavior (OR = 0.55; 95% CI: 0.32–0.95; $p = 0.036$), indicating that higher perceived barriers reduce the likelihood of adolescents adopting positive reproductive health behaviors.

The findings related to the HBM variables indicated that self-efficacy was identified as the most

influential determinant of adolescents' reproductive health behavior, with an odds ratio (OR) of 3.85 (95% CI: 2.01–7.39; $p < 0.001$). According to this framework, self-efficacy was conceptualized as an individual's perceived ability to execute behaviors required to achieve specific health-related outcomes.(14) In the context of adolescent reproductive health, higher levels of self-efficacy have a critical contribution to promoting the implementation of healthy behaviors and decreasing engagement in reproductive health-related risks. This finding suggested that adolescents who possess greater confidence in their ability to manage and protect their reproductive health were more likely to demonstrate healthy behaviors. In line with this, adolescents with high self-efficacy were 3.85 times inclined to engage in healthy reproductive health behaviors compared to those reporting lower levels of self-efficacy.

The results were consistent with Harahap et al. (2023), who demonstrated that the Health Belief Model effectively improved adolescents' knowledge and self-efficacy in reproductive health. Likewise, a study by Herlina and Virgia (2023) showed that the same approach can enhance adolescents' self-efficacy in maintaining reproductive health.(15) Adolescents with a high level of self-efficacy were generally more capable of resisting peer pressure to engage in premarital sexual activity, making informed decisions regarding reproductive health—including the use of contraceptives and regular health check-ups—and managing emotions and stress that may influence decisions related to sexual behavior.(16) Adolescents with high self-efficacy were able to avoid premarital sexual behavior. High self-efficacy enabled them to regulate their emotions and make wiser decisions related to reproductive health.(17) Self-efficacy played a mediating role in the relationship between sexual education and awareness of sexually transmitted disease (STD) prevention among adolescents. Adolescents with high self-efficacy were more likely to apply the knowledge gained from sexual education in real-life practices, such as condom use and regular health check-ups.(18)

The results showed that respondents generally reported high levels of perceived susceptibility. The Health Belief Model, created in the 1950s by Irwin M. Rosenstock and associates, offered a framework for comprehending and forecasting health-related behaviours through personal beliefs and perceptions. According to this paradigm, a person's assessment of their likelihood of contracting a specific illness was known as perceived susceptibility. Perceived susceptibility in the context of adolescent reproductive health refers to the degree to which teenagers are aware of the consequences of engaging in risky sexual behaviour, such as STIs, unintended pregnancies, or other

reproductive health problems (2). If adolescents have a low perception of susceptibility, they are more likely to ignore preventive efforts or healthy behaviors.

Conversely, adolescents who perceive themselves as vulnerable or at high risk are more inclined to adopt preventive behaviors, including contraceptive use, maintaining reproductive hygiene, and participating in reproductive health education.(19) A study by Wulansari et al. (2019) found that after reproductive health education was provided. There was a significant increase in students' perception of susceptibility to pathological vaginal discharge, which was followed by an improvement in preventive behaviors. This emphasized that enhancing the perception of susceptibility can encourage adolescents to be more vigilant and take preventive steps in maintaining their reproductive health.(20) Increasing the perception of susceptibility through education can encourage adolescents to delay sexual intercourse, avoid risky behaviors, use contraceptive methods, and enhance awareness of reproductive health.(7)

Perception of benefits and severity also showed a significant relationship with adolescent reproductive health behavior. Both the perception of benefits and severity are important factors in promoting healthy reproductive behavior.(21) Perceived advantages in the HBM refer to a person's conviction that engaging in particular behaviour can successfully lower the likelihood or severity of a medical condition. Perceived benefits played a crucial role in encouraging preventive behaviours in the context of this study on adolescent reproductive health, such as using contraception, getting regular checkups, and abstaining from risky sexual conduct.(22) Research showed that a high perception of benefits is positively correlated with increased preventive behaviors regarding reproductive health risks. For example, adolescents who believe that using contraception can prevent unwanted pregnancies were more likely to adopt such behavior. Adolescents who were aware of the advantages of maintaining reproductive health and understand the seriousness of the consequences of risky behavior tended to be more cautious in their actions.(2)

High perceptions of susceptibility and seriousness increase the likelihood of adolescents using reproductive health services.(23) Furthermore, adolescents with higher perceived benefits were 2.42 times more likely to utilize reproductive health services compared to those with lower perceived benefits. Strengthening perceptions of benefits through proper education can be an effective strategy to improve adolescent reproductive health behaviors. Educational programs that emphasize the concrete advantages of healthy behaviors, such as preventing sexually transmitted infections or unwanted

pregnancies, can enhance adolescents' motivation to adopt these behaviors.(1)

Perceptions of impediments and cues to action were critical determinants of adolescent reproductive health behaviors. Perceived barriers—such as embarrassment or fear of asking questions—constitute significant impediments to accessing reliable reproductive health information. Based on the HBM framework, perceived hindrances are defined as individuals' beliefs regarding obstacles that may prevent them from undertaking recommended health actions.(24) In the context of adolescent reproductive health, perceived barriers may encompass factors such as feelings of shame, insufficient knowledge, limited access to health care services, and restrictive social norms that discourage healthy behaviors. Elevated perceptions of barriers can decrease the likelihood that adolescents will adopt positive reproductive health practices. For instance, adolescents who experienced shame or fear social judgment may be less inclined to seek reproductive health information or utilize related services.(25) Conversely, lower perceived barriers may facilitate adolescents' proactive engagement in maintaining their reproductive health. When adolescents perceived fewer obstacles, they were more likely to seek relevant information, access health care services, and adopt positive reproductive health behaviors.(26)

Adolescents who encountered barriers—such as feelings of embarrassment or limited access to information—were more likely to exhibit less healthy reproductive behaviors. These obstacles may hinder their efforts to seek essential information or utilize available health care services, thereby adversely affecting their reproductive health.(9) Conversely, cues to action—such as support from parents or teachers—can motivate adolescents to adopt healthier reproductive health behaviors. Access to information through parents can enhance adolescents' knowledge about reproductive health. Additionally, access to information from various media is significantly associated with adolescents' reproductive health behaviors.(27)(28)

The study findings indicated that a proportion of respondents demonstrated low levels of cues to action. According to the Health Belief Model, cues to action are triggers or stimuli that lead people to take actions that promote their health. These stimuli could be reminders that promote the adoption of healthy habits, personal experiences, or educational materials. Adolescents' reproductive health behaviors may be adversely affected by inadequate cues to action. When adolescents were exposed to limited triggers—such as inadequate media information, lack of school-based education, or minimal support from

parents and peers—they may be less likely to adopt preventive measures against reproductive health risks.(29) Cues to action have a significant influence on the formation of reproductive health behaviors among adolescent girls, where environmental prompts and health-related information can encourage them to take more positive steps in maintaining their reproductive health. Adolescents who were exposed to more cues were more likely to demonstrate positive reproductive health practices. Conversely, a lack of cues may result in adolescents being unaware of the importance of preventive measures, such as using contraception or undergoing regular health check-up.(26)

To improve adolescents' reproductive health behaviors, it is important to strengthen cues to action through various approaches, including health education by providing accurate and relevant information through school curricula and outreach programs,(30) social media and public campaigns by using platforms popular among adolescents to disseminate health messages; support from parents and peers by encouraging open communication about reproductive health within families and peer groups; and improve access to health services by strengthening awareness, motivation, and engagement in preventive health-seeking behaviors ensuring that adolescents have easy access to reproductive health services, such as counseling and regular check-ups.(31) Health education based on the Health Belief Model has been shown to be effective in improving adolescents' knowledge and reproductive health behaviors by increasing perceived susceptibility and severity, strengthening perceived benefits, reducing perceived barriers, and enhancing self-efficacy in maintaining reproductive health.(32)

Theoretically, self-efficacy is understood as an individual's confidence in their ability to perform certain behaviors, including avoiding risky sexual activities. In the context of adolescence, this belief is particularly crucial, as adolescents are in a developmental stage characterized by vulnerability to social pressure, identity exploration, and environmental influences. When adolescents possessed strong self-efficacy, they were more inclined to resist negative peer pressure, make healthy decisions, and maintain protective behaviors related to reproductive health. These findings were supported by previous research demonstrating that self-efficacy is significantly associated with adolescent sexual behavior and, in multivariate analyses, exerts the strongest influence on reproductive health behavior. This implied that adolescents with greater self-efficacy are far more likely to engage in after sexual behaviors compared to those with lower levels of self-efficacy.(33) Furthermore, the Health Belief Model Study

indicated that self-efficacy is a key determinant alongside other components such as perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action.

However, in several studies, self-efficacy consistently emerged as the most robust predictor of behavior, as it was directly related to an individual's ability to translate intentions into action rather than merely forming perceptions. Higher levels of self-efficacy among adolescents are associated with stronger behavioral control and decision-making capacity. Self-efficacy is not only influences intentions but also actual behaviors. Adolescents with high self-efficacy are better able to resist peer pressure, refuse risky sexual behaviors, and seek accurate health information. In contrast, those with low self-efficacy are more likely to be influenced by their social environment, including permissive norms toward premarital sexual activity.(34) In rural settings such as East Java, access to reproductive health education is often limited, making internal factors such as self-efficacy more influential than external factors.

The relatively homogeneous social environment also leads adolescents to rely more heavily on their personal beliefs when determining their behavior. Self-efficacy is also closely associated with emotional and informational support. Studies have shown that, in addition to self-efficacy, emotional support significantly influences adolescent sexual behavior. This suggested that self-efficacy does not operate in isolation but is shaped through interactions with the social environment. According to the public health perspective, self-efficacy functions as a protective factor against various reproductive health risks, including unintended pregnancy and STIs. Global literature further indicates that the dimension of "confidence," including self-efficacy, has the potential to serve as a protective factor for adolescent reproductive health outcomes.(35)

CONCLUSION

According to this study, among teenagers enrolled in vocational high schools, there is a substantial correlation between reproductive health behaviour and all of the primary components of the HBM. When it came to encouraging healthy behaviours, self-efficacy was the most prevalent notion among those studied. These results highlight the significance of lowering perceived obstacles that teenagers may face and boosting their confidence in carrying out preventive health behaviours. Well-organized, theory-based interventions can lead to such improvements. Therefore, the implementation of health education programs grounded in the Health Belief Model is crucial for

more effectively improving reproductive health behaviors and outcomes within this adolescent sample.

Conflict of Interest

The authors declare no conflicts of interest, financial or otherwise, that may have influenced the study design, analysis, or interpretation of the findings.

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