



THE RELATIONSHIP BETWEEN KNOWLEDGE, ATTITUDES, AND BEHAVIORS TOWARD GENITAL HEALTH

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ABSTRACT

Genital health is a fundamental component of reproductive health and significantly influences physical, psychological, and social well-being. However, the relationship between knowledge, attitudes, and behaviors toward genital health remains underexplored, particularly among male populations. The aim of the study was to examine the simultaneous relationship of knowledge and attitudes with behaviors in maintaining genital health among male. This cross-sectional analytical study involved 608 male respondents selected through purposive sampling. Data were collected using a structured questionnaire assessing knowledge, attitudes, and behaviors related to genital health. Descriptive statistics were used to summarize respondent characteristics, and associations between variables were analyzed using the Chi-square test with a significance level of $p < 0.05$. Most respondents demonstrated good knowledge (73.8%) and positive attitudes (88.8%) toward genital health. However, behavioral practice was divided between moderate (51.3%) and good (48.5%) categories. A significant association was observed between knowledge and behavior ($p = 0.007$) and between attitude and behavior ($p = 0.001$), indicating that higher knowledge and more positive attitudes were strongly associated with better genital health practices. Knowledge and attitudes are key determinants of genital health behavior. Interventions aimed at improving male genital health should integrate educational strategies that enhance knowledge while simultaneously fostering positive attitudes to achieve sustainable behavioral change.

Keywords: attitude; behavior; genital health; knowledge; reproductive health

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INTRODUCTION

Genital health is a critical component of reproductive health, contributing directly to an individual's physical, psychological, and social well-being (Vasconcelos et al., 2024). The World Health Organization (WHO) defines reproductive health as a state of "physical, mental, and social well-being in all matters relating to the reproductive system, its functions, and processes" (World Health Organization, 2025). This definition underscores that reproductive health encompasses not only the absence of disease but also the overall quality of life associated with maintaining optimal genital health. Untreated male genital conditions can increase the risk of HPV infection, chronic inflammation, wounds or lesions on the penis, and various sexually transmitted diseases, which in the long term can develop into pre-cancerous conditions and even penile cancer (Patra et al., 2025). The delay in recognizing and responding to genital health problems results in delayed early detection of various diseases, including HPV infection and penile cancer (Janes et al., 2023).

Penile cancer is a rare but serious malignancy in men, and one of the most important risk factors is human papillomavirus (HPV) infection. Approximately half of penile cancer cases are known to be associated with HPV infection, particularly HPV type 16. This suggests that HPV infection plays a significant role in the development of genital health problems in men (Muneer et al., 2024). The HPV vaccine is not only beneficial for women; it also provides significant protection for men. Administering the HPV vaccine to men has been shown to prevent HPV infection, genital warts, and reduce the risk of HPV-related cancers, including penile and anal cancer. In addition to

protecting men, vaccination also helps reduce the transmission of HPV to their sexual partners, thus providing broader public health benefits (Kamolratanakul & Pitisuttithum, 2021).

Among adolescents and young adults, genital health becomes increasingly important, as this population is undergoing rapid biological and psychosocial development (Kågesten & van Reeuwijk, 2021). Some studies indicate that individuals in this age group often possess insufficient knowledge regarding genital hygiene, which in turn contributes to inappropriate attitudes and suboptimal practices in maintaining reproductive organ health (Dungga & Ihsan, 2023; Laila & Zuraida, 2020). In many developing countries, including Indonesia, comprehensive sexual education has not been optimally integrated into formal curricula, resulting in information about genital health being obtained primarily from peers, social media, or other unreliable sources (Azijah et al., 2022). This situation creates a gap between factual knowledge and actual behaviors in maintaining reproductive health.

Within the theoretical framework of health behavior, knowledge serves as an initial determinant that shapes both attitudes and practices. The Health Belief Model (HBM) posits that health behaviors are influenced by perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, all of which are shaped by an individual's level of understanding or knowledge (Jones et al., 2015; Rosenstock, 1974). Therefore, the adoption of appropriate genital health practices requires adequate understanding of hygiene behaviors, basic anatomy, infection risks, and preventive measures.

Empirical studies have demonstrated that higher levels of knowledge regarding genital hygiene are associated with better practices in maintaining reproductive health. A review of the literature shows that women with higher levels of knowledge regarding genital hygiene are more likely to engage in appropriate daily hygiene practices, such as wearing cotton underwear, avoiding fragranced cleansers, and properly drying the genital area (Sukmawati et al., 2025). Similar findings have been reported in previous studies, which identified a significant association between knowledge and genital hygiene practices among adolescent girls (Aziz et al., 2024).

However, the relationship between knowledge and behavior is not always linear. Several studies indicate that even when individuals possess adequate knowledge, their behaviors do not necessarily align with recommended health practices (Alves, 2024). Previous studies found that although 63% of respondents possessed good knowledge about genital hygiene, only 42% consistently applied this knowledge in their daily lives. This indicates the presence of additional factor, such as: attitudes, social norms, risk perceptions, and access to information that influence behavior (Septiyana et al., 2023).

Attitude is a key component within behavior change theories. Behavior is influenced by intention, which is shaped by three factors: attitudes, subjective norms, and perceived behavioral control. Attitudes toward genital health may include beliefs that maintaining reproductive organ hygiene is essential for disease prevention, that certain practices are safe, or that genital care is an integral part of a healthy lifestyle (Jones et al., 2015). Several studies have shown that positive attitudes toward genital hygiene are associated with better hygiene practices. Previous research reported that positive attitudes toward genital care were significantly related to genital hygiene behaviors ($p < 0.05$). Such attitudes include perceptions of the importance of maintaining cleanliness during menstruation, beliefs that proper cleansing can prevent infections, and awareness of the risks associated with using unsafe cleansing products (Karahana et al., 2025). However, other studies indicate that attitudes do not always serve as strong predictors of behavior. In some cases, despite having positive attitudes, individuals' behaviors do not reflect those attitudes. This discrepancy may be influenced by social norms, limited supportive facilities, or insufficient education. Previous research found that although the majority of female students held positive attitudes toward genital health,

only 38% demonstrated good hygiene practices. These findings suggest that the attitude–behavior relationship is complex and shaped by various situational factors (Yuan et al., 2023).

Genital health behavior represents the tangible expression of an individual's knowledge and attitudes in daily life. Such behaviors include routines for cleansing the genital area, the use of appropriate underwear, pubic hair grooming practices, menstrual hygiene practices, and the use of specific hygiene products. Inappropriate behaviors may increase the risk of various health problems, including pathological vaginal discharge, fungal infections (candidiasis), skin irritation, bacterial vaginosis, and urinary tract infections (UTIs) (Chen et al., 2017). Previous studies have revealed that inadequate genital hygiene behaviors constitute a major risk factor for bacterial vaginosis among women of reproductive age. (Felix et al., 2020) In addition, washing the genital area from back to front has been shown to increase the risk of bacterial contamination from the rectum to the genital region (Mariani et al., 2021). Similar findings have been reported in earlier studies, which showed that poor genital hygiene practices were correlated with complaints of itching, unpleasant odor, and pathological vaginal discharge (Sirait & Posdo Simarmata, 2021). Among men, poor genital hygiene practices can lead to conditions such as balanitis, penile irritation, and an increased risk of sexually transmitted infections (Perkins et al., 2024). Therefore, examining the relationship between knowledge, attitudes, and behaviors is essential for identifying the factors that influence an individual's ability to maintain comprehensive genital health.

Although some studies have examined various aspects of reproductive health, research that specifically investigates the relationship between knowledge, attitudes, and behaviors toward genital health remains relatively limited. Most existing studies focus on broader aspects of reproductive health such as risky sexual behaviors, menstruation, and maternal health while specific variables related to genital hygiene remain underexplored (Hadımlı et al., 2024). Therefore, The aim of the study was to examine the simultaneous relationship of knowledge and attitudes with behaviors in maintaining genital health.

METHOD

Study design

This study employed a cross-sectional analytical design to examine the relationship between knowledge, attitudes, and behaviors toward genital health among men.

Participants and sampling

The study involved 608 male respondents who were selected using purposive sampling. Participants were recruited based on predefined inclusion and exclusion criteria to ensure relevance to the study objectives. Inclusion criteria were: (1) male individuals aged ≥ 10 years; (2) willing to participate in the study; and (3) able to read and complete the questionnaire independently. Exclusion criteria were: (1) participants who did not complete the questionnaire fully; and (2) participants with cognitive or communication difficulties that could affect questionnaire responses. All questionnaire items were valid ($p < 0.05$). The instrument demonstrated good reliability, with Cronbach's alpha values of 0.84 (knowledge), 0.81 (attitude), and 0.86 (behavior).

Data collection

Data were collected using a structured self-administered questionnaire consisting of sections on knowledge, attitudes, and behaviors related to genital health. The knowledge section assessed respondents' understanding of genital hygiene and health, the attitude section measured perceptions and beliefs, and the behavior section evaluated genital health practices. Responses were scored and categorized according to predetermined criteria.

Data analysis

Data were analyzed using statistical software. Descriptive statistics were used to summarize respondents' characteristics. The relationships between knowledge, attitudes, and behaviors toward genital health were analyzed using the Chi-square test, with a significance level set at $p < 0.05$.

RESULT

A total of 608 respondents participated in the study, the majority of whom were adults aged 19–59 years (99.3%). Most respondents were employees (52.5%), followed by students (16.4%) and entrepreneurs (15.5%). Regarding educational background, more than half held a bachelor's degree (53.1%), while 30.8% had completed senior high school. In terms of marital status, 56.6% were unmarried and 38.8% were married. Concerning genital health over the past three months, 60.4% of respondents reported being healthy and only 0.5% reported poor genital health. The majority of respondents demonstrated good knowledge (73.8%) and positive attitudes (88.8%) toward genital health. However, in practice, respondents were almost equally divided between moderate practice (51.3%) and good practice (48.5%), with only 0.2% reporting poor practices. (Tabel 1)

Table 1.
Characteristics of respondents (n = 608)

Variable	Category	n	%
Age	Adolescents (10–18 years)	4	0.7
	Adults (19–59 years)	604	99.3
Occupation	Driver	6	1.0
	Employee	319	52.5
	Civil servant	45	7.4
	Student	100	16.4
	Entrepreneur	94	15.5
	BUMN employee	13	2.1
	Teacher	15	2.5
	Police officer	2	0.3
	Construction laborer	9	1.5
	Farm laborer	5	0.8
Education level	Master's degree	28	4.6
	Bachelor's degree	323	53.1
	Diploma	70	11.5
	Senior high school	187	30.8
Marital status	Married	236	38.8
	Unmarried	344	56.6
	Widower	28	4.6
Genital health in the last 3 months	Healthy	367	60.4
	Fairly healthy	238	39.1
	Unhealthy	3	0.5
Knowledge of genital health	Good	449	73.8
	Moderate	133	21.9
	Poor	26	4.3
Attitude toward genital health	Good	540	88.8
	Moderate	59	9.7
	Poor	9	1.5
Behavior of genital health	Good	295	48.5
	Moderate	312	51.3
	Poor	1	0.2

Table 2 presents the cross-tabulation between respondents' knowledge levels and their practices toward genital health. Among respondents with good knowledge, the majority demonstrated good practices (236 respondents), while 212 respondents exhibited moderate practices and only one respondent reported poor practices. In the group with moderate knowledge, most respondents showed moderate practices (80 respondents), followed by good practices (53 respondents). Among those with poor knowledge, most respondents reported moderate practices (20 respondents), and

only a small proportion showed good practices (6 respondents). Statistical analysis revealed a significant association between knowledge and practices regarding genital health ($p = 0.007$), indicating that higher knowledge levels are associated with better genital health practices.

Table 2.
Cross-tabulation between knowledge and behaviors toward genital health (n = 608)

Knowledge level	Behaviors toward genital health			Total	p-value
	Good	Moderate	Poor		
Good	236	212	1	449	0.007
Moderate	53	80	0	133	
Poor	6	20	0	26	

Table 3 shows the relationship between respondents' attitudes and their practices toward genital health. Among respondents with good attitudes, most demonstrated good practices (280 respondents), while 259 respondents reported moderate practices and only one respondent reported poor practices. In the group with moderate attitudes, the majority exhibited moderate practices (45 respondents), whereas 14 respondents showed good practices. Among respondents with poor attitudes, most reported moderate practices (8 respondents), with only one respondent demonstrating good practices. Statistical analysis revealed a highly significant association between attitudes and practices toward genital health ($p = 0.001$), indicating that more positive attitudes are strongly associated with better genital health practices.

Table 3.
Cross-tabulation between attitudes and behaviors toward genital health (n = 608)

Attitude level	Behaviors toward genital health			Total	p-value
	Good	Moderate	Poor		
Good	280	259	1	540	0.001
Moderate	14	45	0	59	
Poor	1	8	0	9	

DISCUSSION

In the present study, the majority of respondents demonstrated high levels of knowledge and positive attitudes toward genital health, which were significantly associated with better health practices. Specifically, a large proportion of participants had good knowledge (73.8%) and positive attitudes (88.8%), while practice levels were distributed almost evenly between moderate (51.3%) and good (48.5%) categories. This finding is consistent with previous studies showing that higher levels of knowledge and more positive attitudes are strongly associated with healthier behaviors in men's sexual and reproductive health. Research focusing on male populations has demonstrated that men who possess better understanding of HPV infection and its health consequences are more likely to adopt preventive behaviors, including maintaining genital hygiene, seeking early medical consultation, and showing greater acceptance of HPV vaccination. These studies indicate a significant relationship between knowledge, attitude, and health practices among men, where improved knowledge contributes directly to positive behavioral changes and increased participation in disease prevention efforts (Preston & Darrow, 2019).

The significant associations observed in this study between knowledge and behavior ($p = 0.007$), and between attitude and behavior ($p = 0.001$) among male, underscore the importance of educational interventions in health promotion. Similar patterns have been documented in cross-sectional studies elsewhere. These findings are consistent with cross-sectional research indicating that individuals with greater awareness and understanding of HPV and its related health risks are more likely to engage in preventive behaviors, including vaccination and other protective health practices. For instance, surveys among male university students and other adult male populations have shown that higher levels of HPV knowledge are significantly associated with increased uptake

or intention to receive the HPV vaccine, underscoring how awareness and positive attitudes can translate into concrete health actions (Preston & Darrow, 2019).

Several mechanisms may explain the link between knowledge and practice. Knowledge provides the cognitive foundation necessary for individuals to understand the importance of health-preserving behaviors, while attitudes encompass evaluative and motivational elements that influence whether individuals choose to apply what they know. Studies have shown that better-informed individuals tend to perceive health risks more accurately and adopt preventive or protective behaviors more consistently than those with limited understanding. For instance, research focused on reproductive health Knowledge–Attitude–Practice (KAP) among rural adolescents in Indonesia found that misconceptions and limited access to health information acted as barriers to positive practice outcomes (Adjie et al., 2022).

Nevertheless, gaps between knowledge and practice remain evident. In this study, although over 70% of respondents had good knowledge, less than half demonstrated good practices, suggesting that knowledge is necessary but not always sufficient to drive behavior. This is aligned with findings from investigations into sexual health KAP among university students in China, where despite relatively high levels of knowledge, misconceptions regarding aspects of sexual health persisted, and specific practices were suboptimal, demonstrating the complex interplay between understanding, beliefs, and behavior (Yao et al., 2025).

The observed relationships emphasize the need for comprehensive health education programs that not only inform but also empower positive attitudes and reinforce practical skills. Educational strategies that integrate culturally appropriate messaging and behavior - change communication have been shown to improve not only knowledge and attitudes but also sustained changes in practice. Interventions such as curriculum - based sexual and reproductive health education, community outreach, and media campaigns can be effective, as evidenced by studies demonstrating improvements in both KAP scores after structured educational interventions (Oktaviani et al., 2024).

The significant association observed in this study between knowledge and genital health practices among male participants ($p = 0.007$) suggests that higher levels of understanding about genital health and related risks are linked to better health-protective behaviors. This finding is supported by research involving male populations that examines the relationship between knowledge and preventive health actions. For example, studies on HPV knowledge among men have shown that adequate understanding of HPV infection and its potential consequences influences health behavior intentions, such as willingness to receive HPV vaccination, indicating that knowledge is a key determinant of positive health practices in males. Specifically, male college students with greater awareness of HPV were more likely to express willingness to vaccinate, demonstrating that informed men are more inclined toward engaging in preventive measures. Similarly, research among male nurses revealed that although general HPV knowledge may be moderate, gaps in understanding about screening and vaccination programs can limit protective health behaviors, underscoring the importance of targeted education to enhance practices related to HPV prevention. These studies collectively reinforce the notion that increasing men's knowledge about HPV and genital health can translate into more consistent and proactive health behaviors, aligning with the patterns observed in the present research (Petrovic et al., 2011).

Similarly, research focusing on knowledge and genital hygiene among adolescents has shown that higher knowledge correlates with better hygiene practices. In investigations on genital hygiene behavior among adolescent, significant associations were found between levels of knowledge and hygiene practices, indicating that lack of awareness may hinder proper genital care (Pane et al., 2024). This is consistent with our results, where respondents with better knowledge were more

likely to engage in good practices. Moreover, research conducted on genital hygiene and general reproductive health highlights that lack of knowledge can contribute to inadequate practices, potentially leading to adverse health outcomes. For instance, studies have identified that insufficient knowledge about genital hygiene is associated with poor hygiene behaviors, which in turn may increase the risk of infections and other reproductive health issues (Istiani & Rokhmiati, 2021).

The findings of this study demonstrate a strong and statistically significant association between respondents' attitudes and their practices toward genital health among male ($p = 0.001$). This finding is consistent with research on HPV-related health behaviors in male populations, where positive attitudes toward preventive measures have been shown to correlate with improved health practices. For example, studies of college-aged men in the United States have demonstrated that positive attitudes about HPV vaccination and perceived behavioral control were significantly associated with greater intention and actual uptake of the HPV vaccine, suggesting that how men view the benefits and relevance of preventive actions influences their engagement in protective behaviors. Higher attitude scores have been linked to stronger intentions to vaccinate and better follow-through on recommended health actions, especially when men recognize the importance of prevention for themselves and their partners (Koskan et al., 2021). According to this theory, individuals who hold favorable evaluations of health behaviors are more motivated to perform and maintain those behaviors. In the present study, respondents with positive attitudes toward genital health demonstrated significantly better practices, supporting this theoretical framework.

Empirical evidence from recent studies further reinforces the role of attitude as a key driver of health behavior in male populations. For instance, research among Chinese male college students demonstrated that men with more positive attitudes toward HPV vaccination and greater trust in vaccination information were significantly more likely to express higher intention to recommend HPV vaccination, indicating that attitude directly influences preventive health intentions and potentially practice. In this study, sufficient knowledge and a positive attitude were shown to increase the intention to engage in HPV-related preventive actions (e.g., recommending vaccination) among male respondents ($p < .001$) (Wu et al., 2023). Similarly, studies involving male healthcare workers have found that attitudes toward HPV vaccination correlate with related practices, such as vaccine uptake or willingness to promote vaccination, suggesting that men's health attitudes can shape not only intention but also professional health behaviors (Doğan et al., 2024). These findings align with the results of the present study, which found a strong and statistically significant association between attitudes and genital health practices among male respondents ($p = 0.001$). Collectively, this evidence suggests that fostering positive attitudes toward genital health and HPV prevention may be critical to improving men's engagement in protective behaviors and early health-seeking practices.

Comparable results have also been observed in young adult populations. Mkpanam et al. (2022) reported that students in Nigeria who held favorable attitudes toward sexual health were significantly more likely to engage in safe and preventive practices. This pattern aligns with the present findings, indicating that the influence of attitude on health behavior remains robust across different cultural and demographic contexts. However, the presence of moderate practices among some respondents with positive attitudes indicates that attitude alone may not fully determine behavior. Behavioral performance is also shaped by external factors such as social norms, perceived behavioral control, access to healthcare services, and environmental support. Smith and Johnson (2023) emphasized that even when individuals hold positive attitudes, structural barriers and social influences may limit the consistent adoption of ideal health behaviors.

These findings highlight the importance of attitude-focused interventions in genital health promotion. Health education programs should not only improve knowledge but also actively foster positive attitudes through behavior-change communication, motivational counseling, and supportive

social environments. Strengthening attitudes alongside knowledge enhancement may substantially improve the sustainability of healthy genital practices.

CONCLUSION

This study demonstrates that knowledge and attitudes are significant determinants of genital health behavior among men. Respondents with higher levels of knowledge and more positive attitudes were consistently more likely to exhibit good genital health practices. Statistically significant associations were observed between knowledge and behavior ($p = 0.007$) as well as between attitude and behavior ($p = 0.001$), confirming that cognitive and affective factors play a crucial role in shaping health-related practices. Although most respondents possessed good knowledge (73.8%) and favorable attitudes (88.8%), behavioral outcomes were still divided between moderate and good practice categories. This finding indicates that knowledge and attitude alone are not always sufficient to ensure optimal behavior, and that additional social, environmental, and structural factors may influence the translation of awareness into consistent practice.

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