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Correlations between Knowledge, Attitude, Personal Values, Traumatic Experiences, and Risky Sexual Behavior among Indonesian Adolescents

Dewi Novitasari Suhaid, Mitra Kadarsih, Virginia Anastasya

[1)]Midwifery Program, School of Health Sciences of Sint Carolus, Jakarta, Indonesia

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ABSTRACT

Background: Sexually transmitted infections (STIs) remain a major public health concern among adolescents, with risky sexual behavior contributing to ongoing transmission and adverse sexual and reproductive health outcomes. Although knowledge, attitudes, personal values, and traumatic experiences have been identified as factors related to adolescent sexual behavior, evidence examining these factors simultaneously among Indonesian adolescents remains limited. This study aimed to examine the associations of knowledge, attitudes, personal values, and traumatic experiences with risky sexual behavior among Indonesian adolescents.

Subjects and Method: A cross-sectional study was conducted among 189 adolescents. Participants were recruited using multistage probability sampling technique. The dependent variable was risky sexual behavior. The independent variables were knowledge of STIs, attitudes toward reproductive health, personal values, and traumatic experiences. Data were collected using a structured self-administered questionnaire. Responses were categorized based on Rasch model analysis. Correlation between variables were analyzed using the Product Moment Pearson are test, and multivariat analysis used multiple regression linier. Statistical significance was set at $p<0.05$.

Results: A total of 189 adolescents participated in the study, and 55.1% were classified as having risky sexual behavior. Multiple linear regression analysis showed that traumatic experience was positively associated with sexual behavior (b= 0.15; 95% CI= 0.01 to 0.29; p= 0.049). No significant associations were found between knowledge (b= 0.10; 95% CI= −0.04 to 0.24; p= 0.162), attitude (b = −0.03; 95% CI = −0.40 to 0.34; p = 0.882), personal value (b= 0.07; 95% CI= −0.50 to 0.65; p = 0.803), and sexual behavior.

Conclusion: Attitudes toward reproductive health, personal values, and traumatic experiences were significantly associated with risky sexual behavior among Indonesian adolescents, whereas knowledge of STIs was not. These findings indicate that psychosocial factors should be considered alongside knowledge in understanding risky sexual behavior among adolescents.

Keywords: Knowledge, Attitudes, Personal Values, Traumatic Experiences, Sexual Behavior

Correspondence:
Dewi Novitasari Suhaid. School of Health Sciences of Sint Carolus. Jl. Salemba Raya No 41, Jakarta, Indonesia. Email : dewinovitasarisuhaid@gmail.com

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BACKGROUND

Sexually transmitted infections (STIs) remain a major public health challenge worldwide, particularly among adolescents and young adults. Adolescence is a developmental period characterized by rapid biological, psychological, and social changes that may increase vulnerability to risky sexual

behavior, thereby contributing to adverse sexual and reproductive health outcomes. Globally, more than one million curable STIs are acquired every day, with an estimated 374 million new infections of chlamydia, gonorrhea, syphilis, and trichomoniasis occurring annually. Most infections are asymptomatic, allowing continued transmission and delaying timely diagnosis and treatment (WHO, 2022). In addition, approximately 15 million girls aged 15–19 years give birth annually, nearly four million adolescents undergo unsafe abortion, and almost 100 million adolescents are estimated to acquire curable STIs each year, underscoring the substantial burden of sexual and reproductive health problems among young people (WHO, 2024).

Risky sexual behavior is widely recognized as one of the primary drivers of STI transmission. Individuals engaging in unprotected vaginal, oral, or anal sexual intercourse, particularly with multiple partners, are at increased risk of acquiring STIs, including chlamydia, gonorrhea, syphilis, and human papillomavirus (HPV) infection (Lubis et al., 2024). Beyond increasing susceptibility to STIs, unsafe sexual practices are associated with infertility, adverse pregnancy outcomes, cervical cancer, and an elevated risk of Human Immunodeficiency Virus (HIV) infection. In Indonesia, STIs continue to represent an important public health concern. Data from the Jakarta Statistics showed that reported STI cases reached 20,583 in 2021, following 16,679 cases in 2020 and 23,470 cases in 2018 (Statistics Indonesia, 2022). Furthermore, national surveillance data indicated that HIV cases remain concentrated among the productive-age population, while adolescents aged 15–19 years accounted for 3.1% and young adults aged 20–24 years for 17.7% of reported HIV cases during January–March 2022 (Ministry of Health of the Republic Indonesia, 2022). These findings indicate that Indonesian adolescents continue to face substantial sexual and reproductive health risks, emphasizing the need to better understand the factors contributing to risky sexual behavior.

Previous studies have shown that risky sexual behavior is influenced by multiple individual and psychosocial factors. Knowledge regarding STIs may improve adolescents' awareness of disease prevention, however, knowledge alone may not necessarily translate into healthy sexual behavior. Attitudes toward sexual and reproductive health, personal values, and social norms also influence decision related to sexual practices. Moreover, traumatic experiences, including sexual violence, abuse, or coercion, may adversely affect psychological well-being, interpersonal relationships, and subsequent sexual decision-making, thereby increasing vulnerability to risky sexual behavior. A previous study conducted among Indonesian adolescents reported significant associations between knowledge, attitudes, and risky sexual behavior (Supriyanto et al., 2023, Aima and Erwandi, 2023, Destira et al., 2026).

National survey data further indicate that adolescents' knowledge of STIs remains inadequate. The 2017 Indonesian Demographic and Health Survey reported that 68.8% of adolescents aged 15–19 years and 55.7% of young adults aged 20–24 years had insufficient knowledge regarding STIs (Statistics Indonesia, 2017). Similarly, a preliminary assessment conducted at one senior high school in Jakarta found that six out of ten students were unable to correctly identify STIs, suggesting persistent gaps in adolescents' sexual and reproductive health literacy. Limited knowledge may reduce adolescents' ability to recognize STI risk factors and adopt preventive behaviors;

however, cognitive factors alone may be insufficient to explain sexual behavior, as psychosocial experiences and personal values are also likely to contribute. Therefore, this study aimed to examine the associations of knowledge of STIs, attitude, personal values, and traumatic experiences with risky sexual behavior among Indonesian adolescents.

SUBJECTS AND METHOD

1. Study Design

A cross-sectional study was conducted from November to December 2025 at an Senior High School in Jakarta. The study examined the associations of knowledge of sexually transmitted infections (STIs), attitude, personal values, and traumatic experiences with risky sexual behavior among adolescents.

2. Population and Sample

The target population comprised adolescents enrolled in government senior high schools in South Jakarta, Indonesia, with an estimated population of 300 students. The minimum required sample size was calculated using the Slovin formula with a 5% margin of error, resulting in a sample size of 192 participants. Participants were selected using a multistage probability sampling technique. First, cluster sampling was applied by grouping students according to their classes, and the required number of participants was proportionally allocated to each class. Subsequently, simple random sampling was performed within each class using computer-generated randomization based on students' attendance numbers until the required sample size was achieved. The inclusion criteria were Grade 10 students who were willing to participate, had parental or guardian consent, and were present during data collection.

3. Study Variables

The dependent variable was risky sexual behavior. The independent variables were knowledge of sexually transmitted infections (STIs), attitudes toward reproductive health, personal values related to sexual behavior, and traumatic experiences.

4. Operational Definition of Variables

Risky sexual behavior was defined as adolescents' engagement in behaviors that increase the likelihood of acquiring sexually transmitted infections and was categorized into risky and non-risky sexual behavior based on questionnaire scores.

Knowledge of STIs referred to participants' understanding of STI transmission, prevention, symptoms, and consequences, categorized as high or low.

Attitudes toward reproductive health referred to adolescents' evaluations and perceptions regarding sexual and reproductive health issues and were categorized as supportive or non-supportive.

Personal values referred to adolescents' beliefs and principles related to sexual behavior and decision-making and were categorized as protective or non-protective.

Traumatic experiences referred to self-reported exposure to psychologically distressing or traumatic events, including experiences of violence or abuse, and were categorized as yes or no.

5. Study Instruments

Data were collected using a structured self-administered questionnaire. The questionnaire consisted of six sections: socio-demographic characteristics (6 closed-ended questions); knowledge of sexually transmitted infections (STIs) (10 true/false questions); attitudes toward reproductive health (15 items rated on a Likert scale); personal values related to sexual behavior (16 items rated on a Likert scale); traumatic experiences (5 dichotomous questions with yes/no responses); and sexual behavior (15

dichotomous questions with yes/no responses). The questionnaire required approximately 30 minutes to complete. Prior to the main study, the questionnaire was pilot-tested among 30 adolescents with characteristics comparable to those of the study participants. Content validity was reviewed by experts, while construct validity was evaluated using the Pearson product-moment correlation test.

6. Data analysis

Bivariate analysis between independent variables and sexual behavior were examined using the Pearson Product-Moment correlation coefficient. The analysis was conducted using person measure (logit) scores generated from the Rasch measurement model. Multiple linear regression analysis was conducted to examine the independent associations of knowledge of STIs, attitudes toward reproductive health, personal values regarding sexual behavior, and traumatic experiences with risky sexual behavior while controlling for the effects of other variables. Statistical significance was determined at a two-tailed p-value of <0.05.

7. Research Ethics

The study was conducted in accordance with the ethical principles for research involving human participants. Written informed consent was obtained from all participants prior to data collection. Participation was voluntary, and participants were informed of their right to withdraw from the study at any time without consequences. Anonymity and confidentiality were maintained throughout the study by ensuring that no personally identifiable information was collected or disclosed. Ethical approval was obtained from the Health Research Ethics Committee of STIK Sint Carolus, Jakarta, Indonesia (No. 180/-KEPPKSTIKSC/XI/2025), which was granted on 4 November 2025

RESULTS

1. Sample Characteristics

A total of 192 Grade 10 students were recruited for the study. Three questionnaires with incomplete responses were excluded, resulting in 189 participants included in the final analysis. The characteristics of the study participants are presented in Table 1.

Table 1. Sample characteristics

Characteristics	Category	Frequency	Percentage
Religion	Islam	177	93.6%
	Catholic	2	1.1%
	Protestant	7	3.7%
	Prefer not to answer	3	1.6%
Ethnicity	Javanese	83	43.9%
	Betawi	56	29.6%
	Sundanese	18	9.5%
	Others	30	15.9%
	Prefer not to answer	2	1.1%
Sex	Female	100	52.9%
	Male	86	45.5%
	Prefer not to answer	3	1.6%
Relationship status	Single	138	73%
	Dating	24	12.8%
	Situasional (without commitment)	11	5.8%
	Other	3	1.5%
	Prefer not to answer	13	6.9%
Attraction	Opposite-sex	133	70.4%

Characteristics	Category	Frequency	Percentage
	Same-sex	5	2.6%
	Both-sexes	9	4.8%
	No reported	42	22.2%
Knowledge	Adequate (< 64.64)	100	52.9%
	Good (≥ 64.64)	89	47.1%
Attitude	Supportive (≥ 57.79)	109	57.7%
	Non-supportive (< 57.79)	80	42.3%
Personal value	Protective (≥ 49.39)	100	52.9%
	Non-protective (< 49.39)	89	47.1%
Traumatic experience	Yes (≥ 27.86)	110	58.2%
	No (< 27.86)	79	41.8%
Sexual behavior	Risky (≥ 38.20)	104	55.1%
	non-risky (< 38.20)	85	44.9%

Based on these cut-off scores, slightly more than half of the participants demonstrated adequate knowledge of sexually transmitted infections (52.9%). Similarly, supportive attitudes toward reproductive health (57.7%) and protective personal values (52.9%) were reported by approximately half of the participants, indicating relatively balanced distributions across these psychosocial characteristics. More than half of the participants (58.2%) reported higher levels of traumatic experiences. In addition, risky sexual behavior was reported by 55.1% of the participants, indicating that more than half of the adolescents in this study were classified as engaging in behaviors associated with increased sexual health risks.

A total of 189 adolescents participated in this study. The study population was relatively balanced by sex, with female participants accounting for 52.9% of the sample. Most participants reported being single (73.0%), whereas approximately one in five adolescents reported being in a romantic relationship or another form of intimate relationship. In terms of sexual attraction, the majority reported attraction to the opposite sex (70.4%), while 7.4% reported attraction to the same sex or both sexes, and 22.2% did not report any sexual attraction. The respondents predominantly consisted of Muslim adolescents (93.6%) and was ethnically diverse, with Javanese and Betawi representing the two largest ethnic groups.

2. Multivariate analysis

Table 4 presents the results of the multiple linear regression analysis. Knowledge was positively associated with sexual behavior (b= 0.10, 95% CI= -0.04 to 0.24, p= 0.162). Attitude showed a negative regression coefficient (b= -0.03, 95% CI= -0.40 to 0.34, p= 0.882), whereas personal value showed a positive regression coefficient (b= 0.07, 95% CI= -0.50 to 0.65, p= 0.803). Traumatic experience was positively associated with sexual behavior (b= 0.15, 95% CI= 0.00 to 0.30, p = 0.049).

Table 2. The Result of Multiple Linear Regression Analysis

Independent variables	b	95% CI		p
		Lower Limit	Upper Limit	
Knowledge	0.10	-0.04	0.24	0.162
Attitude	-0.03	-0.40	0.34	0.882
Personal value	0.07	-0.50	0.65	0.803
Traumatic experience	0.15	0.00	0.29	0.049

N observations = 189

Independent variables	b	95% CI		p
		Lower Limit	Upper Limit	
Adj R Square = 0.047 p = 0.034				

DISCUSSION

Knowledge and Sexual Behavior

This study found no significant association between knowledge of STIs and sexual behavior among adolescents. Although knowledge is considered an important component of sexual and reproductive health literacy, adequate knowledge alone may not necessarily translate into safer sexual behavior. Adolescents' sexual decision-making is influenced by multiple factors beyond cognitive understanding, including peer norms, emotional regulation, family supervision, and access to reliable reproductive health information. Consequently, possessing adequate knowledge does not always result in the adoption of protective sexual practices. These findings are consistent with previous studies conducted among Indonesian adolescents, which reported no statistically significant association between STI knowledge and risky sexual behavior (Rozana et al., 2023).

These findings are also consistent with nationally representative data from Indonesia. An analysis of the 2015 Global School-based Student Health Survey (GSHS) found that although adolescents generally demonstrated awareness of sexual and reproductive health issues, knowledge alone did not adequately protect risky sexual behavior. Instead, behavioral outcomes were more strongly influenced by interpersonal relationships, substance use, peer influences, and psychosocial vulnerabilities. These findings suggest that educational interventions focusing solely on increasing STI knowledge may have limited effectiveness unless they are integrated with strategies addressing adolescents' social and emotional enviroments (Rizkianti et al., 2020).

The unsignificant relationship may also reflect the complexity of adolescent behavior, in which knowledge represents only one component of behavior change. Behavioral theories suggest that knowledge alone is often insufficient to produce behavioral modification without supportive environmental and psychosocial factors (Rock et al., 2003). This finding also aligns with the Theory of Planned Behavior (TPB), which posits that knowledge influences behavior indirectly through attitude, subjective norms, and perceived behavioral control, rather than directly (Ajzen, 1991). According to TPB, even when adolescents possess adequate knowledge, their behavioral intentions and ultimately their actions are more strongly shaped by perceived social pressures and their sense of control over the behavior. The findings also resonate with Social Cognitive Theory, which emphasizes that knowledge acquisition must be accompanied by self-efficacy building experiences and supportive environmental conditions to translate into behavioral change. In the Indonesian context, where cultural and religious norms strongly influence adolescent sexuality, knowledge may be cognitively present but behaviorally overridden by competing social influences, emotional needs, or lack of access to condoms and reproductive health services (Albarracin et al., 2001, Eggers et al., 2016).

Attitude and Sexual Behavior

The non-significant relationship between reproductive health attitudes and sexual behavior illustrates the classic attitude

behavior gap documented extensively in social psychology. According to the Prototype Willingness Model, adolescent risk behaviors are often not the result of deliberate, reasoned decision making (as TPB assumes) but rather reactive responses to social situations and emotional states. This model distinguishes between reasoned path behaviors (planned, intentional) and social reaction path behaviors (spontaneous, situation-driven), with the latter being particularly relevant for adolescent sexual behavior (Borges, 2021).

The findings support the view that attitudes may interact with broader contextual and interpersonal factors rather than directly influencing behavior. For instance, an adolescent may hold supportive attitude toward condom use but fail to use condoms in the heat of the moment due to peer pressure, partner expectations, or emotional arousal. This discrepancy is especially pronounced in collectivistic cultures like Indonesia, where maintaining harmony in relationships may override personal attitude (Asiah et al., 2021, Cadely et al., 2020).

Recent evidence from Indonesian adolescents similarly demonstrates that favorable attitudes towards sexual and reproductive health do not always translate into safer sexual practices. This discrepancy may arise because adolescents frequently make decisions within emotionally charged situations where peer expectations, romantics relationship, and situational pressures override previously held attitude. Therefore, interventions should strengthen not only positive attitudes but also adolescents' behavioral skills, communication abilities, and self-efficacy to negotiate safer sexual practices (Ashari et al., 2025).

Inconsistent findings across studies, some identifying attitudes as significant predictors while others finding no independent association, suggest that the attitude and behavior relationship is moderated by factors such as age, gender, relationship context, and cultural norms. Future research should examine these moderating variables to clarify when and for whom attitudes predict sexual behavior (Borges, 2021, Syam et al., 2023).

Personal Values and Sexual Behavior

The lack of significant association between personal values and sexual behavior underscores the developmental vulnerability of adolescence, during which identity formation and social acceptance often take precedence over internalized moral standards. According to Erikson's Psychosocial Development Theory, adolescents are in the identity and role confusion stage, where peer relationships and social belonging become paramount. During this period, the desire for social acceptance may override personal values, particularly in domains as socially sensitive as sexuality (Cadely et al., 2020, Ibnu et al., 2020, Borges, 2021).

This finding aligns with Social Development Theory, which posits that adolescent behavior is shaped by the interaction between individual characteristics and social bonding processes. When adolescents have weak bonds to conventional institutions (family, school, religion) but strong bonds to deviant peer groups, personal values may be insufficient to prevent risk taking behaviors (Smith et al., 2007). The Indonesian context, with its strong emphasis on communal values and religious teachings, may create particular tension between internalized values and external pressures, especially when adolescents lack supportive adult guidance.

Previous studies similarly suggest that adolescents' sexual behaviors are influenced by a combination of psychological, relational, and environmental determinants

rather than by personal beliefs in isolation. This multidimensionality calls for interventions that address not only individual values but also the social contexts in which adolescents make sexual decisions (Borges, 2021).

These findings also indicate that personal values may operate indirectly rather than exerting a direct influence on sexual behavior. Value-based decision making is likely mediated by family communication, parental monitoring, peer norms, and perceived behavioral control. Consequently, interventions aiming to strengthen adolescents' personal values should be complemented by supportive family environments and comprehensive sexuality education that facilitates the translations of personal beliefs into healthy behavioral choices (Rosyida et al., 2025).

Traumatic Experience and Sexual Behavior

Traumatic experience was the only variable independently associated with sexual behavior in the multivariable analysis. Adolescents with higher traumatic experience scores tended to report higher sexual behavior scores after adjustment for knowledge, attitudes, and personal values. Traumatic experiences, including sexual abuse, emotional violence, or other adverse childhood experiences, may affect emotional regulation, self-esteem, interpersonal relationships, and risk perception, which subsequently influence sexual decision making. These findings are consistent with previous literature demonstrating that exposure to traumatic or adverse experiences increases adolescents' vulnerability to risky sexual behavior. Psychological distress following trauma has been associated with reduced self-protective behaviors, inconsistent condom use, multiple sexual partners, and increased susceptibility to sexually transmitted infections (Seth et al., 2009, Ibnu et al., 2020, Cadely et al., 2020).

Trauma Theory posits that adverse experiences disrupt normative emotional and neurobiological development, leading to difficulties in emotion regulation, impulse control, and risk assessment. Adolescents with trauma histories may engage in risky sexual behavior as a form of self-medication to alleviate psychological distress, numb emotional pain, or regain a sense of control. The finding that 58.2% of participants reported traumatic experiences highlights the pervasiveness of this issue and its potential contribution to the high prevalence of risky sexual behavior (55.1%) (Werner et al., 2019, Banks et al., 2021).

Problem Behavior Theory (PBT) provides a comprehensive framework for understanding why trauma exposed adolescents are more likely to engage in risky sexual behavior. According to PBT, various risk behaviors (substance use, delinquency, risky sex) cluster together as manifestations of an underlying latent trait, unconventionality, characterized by weak social bonds, negative attitudes toward conventional institutions, and association with deviant peers. Traumatic experiences can erode social bonds (particularly to family and school), increase emotional distress, and push adolescents toward deviant peer groups, thereby increasing the likelihood of multiple risk behaviors including risky sex (Smith et al., 2007).

From an Attachment Theory perspective, traumatic experiences particularly those involving caregivers or trusted adults can disrupt secure attachment formation, leading to insecure attachment styles (anxious or avoidant). Adolescents with insecure attachment may use sexual behavior as a means of seeking validation, intimacy, or control in relationships. Anxiously attached adolescents may engage

in sexual behavior to maintain relationship closeness, while avoidantly attached adolescents may use sex to maintain emotional distance while achieving physical intimacy (Dillard and Beaujolais, 2019; Borges, 2021).

Sexual Script Theory suggests that individuals learn culturally approved scripts for sexual behavior through socialization experiences. Traumatic experiences, particularly sexual abuse, can distort these scripts by normalizing coercive or risky sexual scenarios, leading adolescents to perceive such behaviors as acceptable or expected. This may explain why trauma exposed adolescents report higher rates of risky sexual behavior even after controlling for knowledge, attitudes, and values (Borges, 2021).

The presents findings also have important implications for adolescents sexual and reproductive health programs in Indonesia. Trauma-informed approaches should be integrated into school-based health promotion and reproductive health services. Early identifications of adolescents who have experienced violence, abuse, or other adverse childhood experiences may enable timely psychological support, thereby reducing subsequent engagement in risky sexual behaviors. Integrating trauma screening with comprehensive sexuality education may therefore represent a more effective preventions strategy than knowledge-based education alone (Banks et al., 2021, Bae et al., 2022).

While originally developed for LGBTQ+ populations, Minority Stress Theory can be extended to understand how trauma creates a form of stigmatized identity that increases vulnerability to risk behaviors. Adolescents with trauma histories may experience chronic stress, shame, and social isolation, which in turn increase reliance on maladaptive coping strategies including risky sexual behavior (Banks et al., 2021).

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest. The funding institution had no role in the study design, data collection, analysis, or interpretation, manuscript preparation, or the decision to submit the article for publication.

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