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Risk Factors of Sexual Behavior Related to Sexually Transmitted Infections among Male Adolescents in Sidoarjo Regency



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Abstract

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Risky sexual behavior among male adolescents contributes substantially to the increasing incidence of sexually transmitted infections (STIs). Understanding the associated determinants is essential for developing effective prevention strategies. This study analyzed factors associated with risky sexual behavior related to STIs among male adolescents in Sidoarjo Regency. An analytical cross-sectional study was conducted among the population of 10,980 and took 9,160 male adolescents aged 15–24 years in Sidoarjo Regency as the sample. Data were collected using structured questionnaires and analyzed using Chi-square tests with a significance level of 0.05. A total of 14.8% of respondents reported risky sexual behavior. Most respondents had poor knowledge (68.3%), negative attitudes (56.9%), perceived limited school involvement in reproductive health education (52.3%), and reported no peer influence (72.4%). Significant associations were found between risky sexual behavior and age ($p < 0.001$), education level ($p < 0.001$), knowledge ($p < 0.001$), attitudes ($p < 0.001$), peer influence ($p < 0.001$), and school role ($p = 0.025$). Risky sexual behavior among male adolescents is influenced by demographic, cognitive, and environmental factors. Strengthening comprehensive reproductive health education through schools and peer-based interventions is essential to reduce risky sexual behavior and prevent STIs.

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INTRODUCTION

Risky sexual behavior is one of the reproductive health hazards in adolescents today. Irresponsible sexual behavior can lead to a variety of health problems. Among the irresponsible sexual behaviors are sexual behaviors committed by adolescents outside of the legal marriage bond. Based on WHO data conducted in several developing countries, it is recorded that 40% of 18-year-old adolescent boys and 40% of 18-year-old adolescent girls have engaged in sexual relations without the marriage bond. In a 2018 Basic Health Research, it was found that 0.7% of adolescent girls and 4.5% of adolescent boys had sexual intercourse before marriage. ([World Health Organization, 2018](#)) ([National Population and Family Planning Board, 2018](#))

Sexually Transmitted Infections (STI) control is a top priority for WHO because it is one of the infections that ranks in the top 10 in developing countries, including Indonesia. The latest data from the WHO shows that more than 1 million people are diagnosed with STIs every day. STIs not only attack around the genitals but can appear and attack the eyes, mouth, and skin. If we have sexual intercourse with another person who has an STI, even just once, we can get a sexually transmitted infections. In 2020, the WHO estimates 374 million new infections with 1 in 4 STIs, chlamydia (129 million), gonorrhea (82 million), syphilis (7.1 million) and trichomoniasis (156 million). In addition, globally there are 39 million people living with Human Immunodeficiency Virus (HIV) and 630,000 died from HIV-related diseases worldwide in the WHO, 2022. 5 Data from the United Nations Population Fund (UNFPA) and WHO states that 1 in 20 adolescents' contract STIs every year ([Passe et al., 2022](#)). Adolescents and young adults aged 15-24 years make up 25% of the overall sexually active population but represent nearly 50% of new STI cases. More than one million people are infected with sexually transmitted diseases every day and an estimated 499 million cases of Sexually Transmitted Infections (STIs) occur each year. The adolescent and young adult group (aged 15-24 years) is the age group at highest

risk of contracting STIs. The number of STIs in Indonesia currently tends to increase, the number of cases of Human Immunodeficiency Virus (HIV) from year to year tends to increase. The Ministry of Health (Kemenkes) noted that the number of HIV cases in Indonesia is projected to reach 515,455 cases during January-September 2023. Of these, 454,723 cases or 88% have been confirmed by people with HIV (ODHIV) ([Novita et al., 2022](#)) ([Novita Haryanto et al., 2023](#)) ([Ministry of Health of the Republic of Indonesia, 2022](#)) ([Mandy & Hill, 2022](#)) ([MINISTRY of Health, 2024](#)) ([Ministry of Health, 2024](#)).

Adolescents are recognized as one of the populations most vulnerable to sexually transmitted infections (STIs). According to the World Health Organization (WHO), approximately 374 million new STI infections occur annually worldwide, including chlamydia, gonorrhea, syphilis, and trichomoniasis. Individuals aged 15–24 years account for nearly half of all new STI cases despite representing only one-quarter of the sexually active population. This situation highlights the urgent need for effective reproductive health interventions targeting adolescents to reduce STI transmission and its long-term consequences.

The level of tolerance of Indonesian adolescents to premarital sexual lifestyle or promiscuous sex appears to be higher. Many teenagers engage in premarital sex. When dating the opposite sex, sexual behavior made by adolescents is called premarital sex. According to survey data from the Indonesian Child Protection Commission (KPAI), 32% of adolescents in the age range of 14 to 18 years in Indonesia, especially those living in big cities, admitted to having premarital sex. A 2020 study on dating teens showed that 23% of respondents had had sexual intercourse, 33%-48% petted, 77%-88% kissed, and 92%-99% had held hands and hugged (touched) with girlfriends. Due to the high rate of free premarital sex in the city of Jakarta, 18.3% of adolescents in junior high and high school are prone to sexually transmitted diseases. ([Yuliana et al., 2024](#)) ([Yuliana Nur Kolifah et al., 2024](#)).

Adolescents' knowledge of sexual and reproductive health can put them at risk for problems such as out-of-wedlock pregnancies, early marriage, sexually transmitted infections and HIV/AIDS. The research showed that the level of knowledge of adolescents about Sexually Transmitted Diseases at Al-Ikhwan Sesait Islamic High School was dominated by respondents who had a low level of knowledge as many as 24 respondents (63.1%), who had a sufficient level of knowledge as many as 12 respondents (27.4%), while the lowest level of knowledge was good knowledge level as many as 4 respondents (10.5%). Based on the explanation above, the author is interested in researching factors related to risky sexual behavior of STIs in adolescent boys in Sidoarjo Regency. ([Pujiningsih & Kusumawardani, 2021](#)).

Although previous studies have identified several determinants of adolescent sexual behavior, most were conducted in limited school settings and primarily involved both male and female adolescents without specifically focusing on male adolescents as a vulnerable group for STIs. Furthermore, few studies have simultaneously examined demographic, cognitive, and environmental factors within a large community-based population. Therefore, this study provides novel evidence by comprehensively analyzing age, educational level, knowledge, attitudes, peer influence, and the role of schools as determinants of risky sexual behavior among 9,160 male adolescents in Sidoarjo Regency. The findings are expected to provide stronger evidence for developing targeted reproductive health interventions for male adolescents.

METHODS

This study employed an analytical cross-sectional design, namely independent and dependent variables were observed in the same time

period with the aim of determining the factors related to STIs- risking sexual behavior in adolescent boys in Sidoarjo Regency. This study was conducted in Sidoarjo Regency while the study period started from January 20, 2025 to September 25, 2025. The population in this study was 10.980 adolescents in Sidoarjo Regency. The sample in this study was some adolescent boys in Sidoarjo Regency aged 15-24 years as many as 9.160 adolescents. Primary data were collected using structured questionnaires. The data were analyzed using computerized statistical software tools to obtain statistical values in the form of tables from observation data through questionnaires. The data was then analyzed with Chi-square tests. This study was supported by an ethical review with no 0117-KEPKSHJ from the Ethics Committee of STIKes Husada Jombang.

RESULTS

The sexual behavior of adolescent boys in Sidoarjo Regency is not at risk of STIs, which is 85.2%. It is known that more than half of the adolescent boys in Sidoarjo Regency who became respondents were in the late adolescent age group (53.9%). If grouped based on the characteristics of the level of education, most of the adolescent boys in Sidoarjo Regency are highly educated (65.1%). In the education variable, there is a missing data of 5%. Most (68.3%) adolescent boys in Sidoarjo Regency have poor knowledge related to sexual behaviors at risk of STIs. More than half (56.9%) of adolescent boys in Sidoarjo Regency have negative attitudes related to sexual behaviors that are at risk of STIs. More than half (52.3%) of adolescent boys in Sidoarjo Regency consider their schools to be not a provider of reproductive health information. Most (72.4%) adolescent boys in Sidoarjo Regency do not feel the influence of peers in the formation of their sexual behavior.

Table 1. Overview of Sexual Behavior of Adolescent Boys in Sidoarjo Regency and Influencing Factors.

Variabel Sexual Behavior	Frequency (n)	Presentase (%)
At risk of STIs	1356	14.8
No risk of STIs	7804	85.2
Total	9160	100.0
Age		
Late Teens	4938	53.9
Early Adolescence	4222	46.1
Total	9160	100.0
Education		
High	5964	65.1
Low	3150	34.4
Total	9114	99.5
Missing	46	0.5
Knowledge		
Less	6253	68.3
Good	2907	31.7
Total	9160	100.0
Attitude		
Negative	5209	56.9
Positive	3951	43.1
Total	9160	100.0
The Role of the School		
Not Playing a Role	4787	52.3
Role	4373	47.7
Total	9160	100.0
Peer Influence		
There is an Influence	2525	27.6
No Influence	6635	72.4
Total	9160	100.0

Variables related to the sexual behavior of adolescent boys in Sidoarjo Regency were age (*P value* 0.00), education level (*P value* 0.00), knowledge (*P value* 0.00), attitude (*P value* 0.00), the role of schools as providers of reproductive health information (*P value* 0.025), and peer influence (*P value* 0.025)0.00). The variable that was not related to the sexual behavior of adolescent and adolescent boys in Sidoarjo Regency was residence (*P value* 0.836).

Sexually active adolescent boys are more at risk of STIs in their late teens (21.1%) than early adolescents (7.5%), and more highly educated (15.3%) than poorly educated (13.8%). Adolescent

boys who have less knowledge and sexual behavior are at risk of STIs (11.1%) than adolescent boys who are well-informed and sexually behaving are at risk of STIs (22.8%). Adolescent boys who behave negatively (24%) are more likely to have sexual behavior at risk of STIs than adolescent boys who behave positively (2.7%).

Adolescent boys who consider their schools to be providers of reproductive health information are more likely to engage in sexual behavior at risk of STIs (15.7%) than adolescent boys who consider their schools not to be providers of reproductive health information. Adolescent boys who felt the influence of peers as a shaper of their sexual

behavior were more likely to have sexual behavior at risk of STIs (37.0%) than adolescent boys who did not feel the influence of peers as a shaper of their sexual behavior (6.3%).

Table 2. The Relationship between Knowledge, Attitudes, Roles of Schools and Peer Influences with Sexual Behavior of Adolescent Boys in Sidoarjo Regency

Variabel	Sexual Behavior				Quantity		<i>P value</i>
	At risk of STIs		No risk of STIs				
	n	%	n	%	n	%	
Age							
Late Teens	1040	21.1	3898	79.8	4938	100	0.000
Early Adolescence	316	7.5	3906	92.5	4222	100	
Total	1356	14.8	7804	85.2	9160	100	
Education							
High	915	15.3	5049	84.7	5964	100	0.000
Low	434	13.8	2716	86.2	3150	100	
Missing					46	0.5	
Total	1356	14.8	7804	85.2	9160	100	
Knowledge							
Poor	694	11.1	5559	88.9	6253	100	0.000
Good	662	22.8	2245	77.2	2907	100	
Total	1356	14.8	7804	85.2	9160	100	
Attitude							
Negative	1250	24	3959	76	5209	100	0.000
Positive	106	2.7	3845	97.3	3951	100	
Total	1356	14.8	7804	85.2	9160	100	
The Role of Schools as Providers of Reproductive Health Information							
Not Playing a Role	670	14	4117	86	4787	100	0.025
Role	686	15.7	3687	84.3	4373	100	
Total	1356	14.8	7804	85.2	9160	100	
Peer Influence							
There is an Influence	935	37	1590	63	2525	100	0.000
No Influence	421	6.3	6214	93.7	6635	100	
Total	1356	14.8	7804	85.2	9160	100	

DISCUSSION

Overview of Sexual Behavior of Adolescent Boys in Sidoarjo Regency

Data shows that 1356 out of 7804 adolescent boys in Sidoarjo Regency behave at risk of STIs, namely *sexual intercourse*. These results are similar to the results of a study conducted in 2022, showing the results of 268 respondents, most of whom have good knowledge, namely 100 (37.3%)

respondents and have good behavior, namely 111 (41.4%) respondents, while based on the analysis test, a p-value of <0.05 was obtained, which means that there is a significant relationship between the level of knowledge about sexually transmitted infections (STIs) and adolescent free sexual behavior at Bebandem High School. In addition, the results of the study are also in line with this study that it was found that 9.4% of adolescents

behaved sexually unsafely. This figure is large enough for the proportion of sexual behavior. This action (risky sexual behavior, such as ([Sintiarini, 2022](#)) ([Pratiwi & Lestari, 2021](#)) *sexual intercourse*) should not be carried out by adolescents, especially those who are unmarried and still of school age. This action should only be done at the right time, namely after marriage and by not changing invalid partners. If not, then there is a risk of STI transmission.

The Relationship between Age and Sexual Behavior of Adolescent Boys in Sidoarjo Regency

Age is the respondent's lifetime in years rounded down or age at the time of the last birthday. Based on the results of the study, it is known that more than half of the adolescent boys who are respondents in the late adolescent age group (53.9%). The late adolescent age group was more sexually at risk of STIs (21.1%) compared to the early adolescent age group (7.5%). This is in line with the results of other studies in 2020 showing that variables related to premarital sexual behavior of adolescents at risk of STIs in male respondents were age ($p=0.047$), parental attitudes ($p=0.014$) and media access ($p=0.03$). The variable that most effects STIs-risking sexual behavior in male respondents is media access with an OR of 2.378, which means that male respondents with a high level of media access have a 2.3 times chance of engaging in STI-risky sexual behavior. This is also in accordance with the findings that in 2024 the highest prevalence of STIs occurs in adolescents and young adults due to risky sexual behavior. This needs to be taken seriously considering the long-term impact of STIs. ([Maulina & Alim, 2020](#)) ([Vatrisya et al., 2024](#)).

Overview of the Education Level of Adolescent Boys in Sidoarjo Regency

Education is a process of forming a person's speed intellectually and emotionally. Education is also defined as an effort to develop personality and abilities inside and outside school and lasts a lifetime of holiness. When grouped by educational

level characteristics, the majority of adolescent boys are highly educated (65.1%). In the education variable, there is ([Suciyantri et al., 2022](#)) a missing data of 5%. Highly educated adolescent boys are more sexually at risk of STIs (15.3%) compared to low-educated adolescent boys (13.8%).

The results of the study conducted in 2024 show that there is a significant relationship between the level of knowledge about sexually transmitted infections and premarital sexual behavior in adolescents at SMAN 84 West Jakarta. It is recommended to improve sexual education for adolescents through seminars or counseling for adolescents organized by the school in collaboration with the local health center. ([Lubis et al., 2024](#)).

The Relationship between Knowledge and Sexual Behavior of Adolescent Boys in Sidoarjo Regency

According to Bloom and Skinner, knowledge is a person's ability to re-express what he knows in the form of evidence of answers, either verbally or deaf, which is the stimulation of questions. Knowledge or cognition is the most important domain in shaping a person's actions (*overt behavior*). Knowledge measurement can be done by interviews or questionnaires that ask about the content of the material to be studied from the research subject or respondent. ([Adiputra, 2021](#)).

From the results of the descriptive analysis, it is known that adolescent boys with Poor knowledge (68.3%) are much more than adolescents with good knowledge (31.7%). This is due to several things including lack of information exposure, or information that exposes ineffective. In addition, well-informed adolescent boys are more sexually at risk of STIs compared to less-informed adolescent boys. In general, the better a person's knowledge, the lower his tendency to behave riskily. This statement is supported by the results of research conducted by Nurmaeni in 2023 with the results of research showing significant differences in the level of knowledge of adolescents before and after receiving health education. The p-value obtained was 0.000, which is smaller than the

significance level of 0.05 ($\alpha = 0.05$), which indicates that health education has a significant influence on increasing adolescents' knowledge about the dangers of premarital sexual behavior.

The Relationship between Attitudes and Sexual Behavior of Adolescent Boys in Sidoarjo Regency

Attitude is one of the domains that determines behavior. This statement is in accordance with the results of this study, which is stated in the results that adolescents who behave negatively are more at risk of STIs (24%) than adolescents who have a positive attitude (2.7%). Based on the results of the bivariate analysis, a ([Riska Dwi Candrawati Paramita, Kurnia Wiguna et al., 2023](#)) *p* value of 0.000 was obtained, which means that there is a significant relationship between attitudes and adolescent sexual behavior. This is in accordance with the results of the research conducted in 2024 with the result that attitudes have a *p*-value of less than 0.05 and a statistical *t*-value greater than 1.96 HIV/AIDS variables cannot reflect adolescents' attitudes because they have a *p*-value of 0.242 greater than 0.05 and a statistical *t*-value of 1.172 smaller than 1.96. So it can be concluded that sexuality and drugs reflect adolescent attitudes. Adolescents' positive attitudes can prevent risky sexual behavior and drug use. ([Ambarwati et al., 2024](#)).

Attitude represents an individual's evaluation and tendency to respond toward certain behaviors. According to the Theory of Planned Behavior, positive attitudes toward healthy sexual practices encourage adolescents to avoid risky behaviors, whereas permissive attitudes increase the likelihood of engaging in unsafe sexual activities. In the present study, adolescents with negative attitudes demonstrated a substantially higher proportion of risky sexual behavior (24.0%) compared with those with positive attitudes (2.7%). This finding indicates that attitudes strongly influence adolescents' behavioral intentions.

The significant association observed may be explained by adolescents' perceptions regarding premarital sexual relationships, condom use, and

perceived susceptibility to STIs. Adolescents with negative attitudes may underestimate the consequences of risky sexual behavior or perceive such behaviors as socially acceptable among peers. Consequently, these perceptions increase their vulnerability to STI transmission. These findings are consistent with previous studies reporting that positive attitudes toward reproductive health significantly reduce risky sexual behavior among adolescents. Therefore, interventions should focus not only on improving knowledge but also on reshaping adolescents' attitudes through interactive reproductive health education, counseling, and peer-group discussions.

The Relationship between the Role of School and the Sexual Behavior of Adolescent Boys in Sidoarjo Regency

School is one of the places where teenagers (who are still in school) spend quite a lot of time. About a third of the time in the day (except holidays) is spent at school. Therefore, schools are felt to be able to play a role/have a fairly important role as a provider of reproductive health information for adolescents. It does not have to be during class hours, this information can also be conveyed through extracurricular activities or other additional lessons. The school is an official educational institution, it is hoped that the school can play a role as a provider of comprehensive reproductive health information for students. This is because it is expected that the information can be accounted for from school institutions, so that students do not seek information from sources that cannot be accounted for and in an inappropriate way. Schools represent one of the most influential social environments during adolescence because students spend a considerable portion of their daily lives within educational settings. Consequently, schools have a strategic opportunity to provide comprehensive reproductive health education through formal curricula, extracurricular activities, school counseling services, and collaboration with healthcare professionals.

The results of the univariate analysis showed that more than half of adolescent boys did not feel

the role of schools as providers of reproductive health information (52.3%). It is suspected that this is due to the taboo of talking about sexual education and reproductive health. Even though it has been included in the curriculum, the implementation of sexual education and reproductive health is not considered to be effective and comprehensive enough. Teenagers who have curiosity will seek information from various sources whose truth cannot necessarily be accounted for. Half-baked knowledge is actually more dangerous for teenagers, because it challenges teenagers to experiment and can cause misperceptions. ([Rahayu et al., 2023](#)).

This is in line with the results of the research conducted in 2025 with the results of the study of a significant increase in the intervention group, from an average score of 16.37 to 25.27 after being given health education, with a p -value of 0.000 (< 0.05). Meanwhile, the control group saw only a small increase from 14.60 to 15.83. The conclusion of this study is that health education has a significant effect on increasing adolescent girls' knowledge about STDs, so educational interventions need to be implemented in an ongoing manner in schools. ([Syauqina Idzni & Yapkesi Sukabumi, 2025](#)).

In this study, more than half of respondents perceived that schools did not adequately provide reproductive health information. This perception may reflect limited implementation of comprehensive sexuality education, insufficient teacher preparedness, or persistent cultural barriers that discourage open discussions regarding sexual health. Consequently, adolescents may seek information from unreliable internet sources or peers, increasing the likelihood of misinformation and risky sexual practices. These findings are consistent with previous intervention studies demonstrating that school-based reproductive health education significantly improves adolescents' knowledge, attitudes, and preventive behaviors related to STIs. Therefore, strengthening school involvement remains an essential strategy for preventing risky sexual behavior among adolescents.

The Relationship between Peer Influence and Sexual Behavior of Adolescent Boys in Sidoarjo Regency

Peers are a group of teenagers whose values are embraced by other teenagers. Peers serve as a place for adolescents to share and often changes in adolescent behavior due to the transfer of behavior between peers. Peers as a reference group to relate to the social environment, where adolescents absorb norms and values that eventually become value standards that affect adolescents' personalities. Based on the results of the bivariate analysis, a ([Fariana et al., 2024](#)) ([Santrock, 2017](#)) p value of 0.000 was obtained, which means that there is a significant relationship between peer influence and adolescent boys' sexual behavior. This is in line with the research conducted in 2018 found that male and female respondents tended to have a strong peer role with a total of 42 male respondents and 37 female respondents and a $p > 0.05$ statistically no relationship between peer roles and gender. Sexual behavior in male and female respondents was mostly bad sexual behavior, namely in men as much as 70.3% and in women 54.7% and $p = 0.05$ and statistically there was a relationship between sex and sexual behavior. This is because adolescent boys in behavioral patterns tend to dare to engage in risky behaviors such as engaging in violence and criminality. Adolescent boys have different tipping points due to early self-pressure, stronger pressure to fulfill gender roles and strong peer roles. ([Wulandari & Kusuma, 2019](#)).

CONCLUSION

This study concluded that 14.8% of adolescent boys in Sidoarjo Regency engaged in risky sexual behaviors of STIs, especially in the form of sexual intercourse (*sexual intercourse*). The results of the analysis showed that there was a significant relationship between age factors, education level, knowledge, attitudes, peer influence, and the role of schools as providers of reproductive health information with these risky sexual behaviors.

Specifically, late adolescents (older age) and those with negative attitudes regarding reproductive health showed a higher tendency to engage in risky sexual behaviors. Although most respondents felt uninfluenced by peers, statistical results proved that peer influence remains a strong determining factor in the formation of adolescent sexual behavior. In addition, it was found that the lack of a role in schools in providing comprehensive information contributes to the high curiosity of adolescents which leads to risky trial and error behavior. Overall, the low level of knowledge (68.3%) and the dominance of negative attitudes (56.9%) among adolescent boys in Sidoarjo confirm the need for more effective and systematic educational interventions.

SUGGESTION

Based on the findings of this study, it is recommended that stakeholders, particularly schools and health institutions, strengthen comprehensive and sustainable reproductive health education programs targeting adolescent boys. Schools are expected to play a more active role as a reliable source of reproductive health information by integrating structured and evidence-based education into curricular and extracurricular activities. Additionally, collaboration between schools, parents, and healthcare providers is needed to create a supportive environment that promotes positive attitudes and behaviors. Future research is also encouraged to explore other potential factors such as media exposure, parental supervision, and socio-cultural influences that may influence risky sexual behavior among adolescents.

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CONFLICTS OF INTEREST

The author confirms that there are no conflicts of interest related to this research.

AUTHOR CONTRIBUTIONS

IYY contributes to research conceptualization, research design, data collection, formal analysis, and drafting of original articles. AM contributes to the development of methodologies, supervision, validation, and critical review of articles. ZS contributes to data interpretation, manuscript review, and editing. The U.S. contributes to oversight, provision of resources, and final approval of articles.

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