

Reducing Adolescents Risky Sexual Behavior In Urban And Rural Settings: What Should We Prioritize?

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ABSTRACT

Risky sexual behavior (RSB) among adolescents poses significant health hazards, including sexually transmitted infections (STIs) and unintended pregnancies. Understanding the factors influencing RSB is crucial for developing effective interventions. This study explores the correlation between factors (age, gender, media exposure, peer pressure, community figures, parental guidance, and perception of SAD (Smoking, Alcohol, and Drugs)-related lifestyle) and RSB among high-school adolescents. A cross-sectional comparative method involved 244 urban and 182 rural adolescents aged 15 to 19 years (mean = 16.8 years, SD = 1.2) from Tomohon City and Minahasa Regency. Data were collected via questionnaires. Significant correlations were found between RSB and factors such as age, urban residency, and perception of SAD-related lifestyle. Older age ($\beta = 0.259$, $p < 0.001$) and urban residency ($\beta = 0.297$, $p < 0.001$) were linked to higher RSB, while being female ($\beta = -0.214$, $p < 0.001$) and a negative perception of SAD-related lifestyle ($\beta = -0.263$, $p < 0.001$) reduced RSB. Logistic regression identified age (OR = 1.916, B = .650, Sig. = .001), influence of community figures (OR = .882, B = -.125, Sig. = .001), and rural location (OR = .312, B = -1.166, Sig. = .003) as key factors. Surprisingly, peers, media, and parents did not significantly affect RSB. The study highlights the importance of age, community figures, and lifestyle on RSB, recommending targeted interventions involving community figures and promoting healthier lifestyles against smoking, alcohol and drugs, particularly in urban areas.

KEYWORDS: Adolescents, Sexual Behaviour, Rural, Urban, Risk Factors

1. Introduction

Behavior refers to the actions or reactions of an individual in response to external or internal stimuli, which do not occur spontaneously. It includes how these responses are internally coordinated, observable, measurable, and range from simple to complex activities (1). We defined 'risky sexual behaviour' using the Sexual Risk Survey (SRS) by Turchik & Garske (2), which was adapted to the Indonesian context by previous researchers. This definition includes behaviors such as kissing, touching genital areas, and engaging in sexual intercourse, which can lead to unwanted pregnancies and sexually transmitted infections (STIs). This definition aligns with international standards, which typically categorize risky sexual behaviors as those that increase the likelihood of negative health outcomes, such as STIs and unintended pregnancies and unintended pregnancies (3). All of these present significant health hazards, including HIV/AIDS, sexually transmitted diseases (STDs), unplanned pregnancies, cervical carcinoma, and psychological health concerns (3–6). Frequent contact with others' genitals and participation in sexual intercourse are actions that can facilitate the transmission of pathogens such as Chlamydia, gonorrhea, and trichomoniasis, thereby elevating the risk of STIs (7). Conversely, embracing and hand-holding are generally deemed safe sexual behaviors among adolescents (8). These actions, although intimate, do not present the same degree of risk as activities such as premarital sexual intercourse. Comprehending the varying levels of risk associated with diverse behaviors aids in emphasizing the significance of concentrating on more high-risk activities to effectively alleviate the public health ramifications on adolescents. Adolescents and young adults, who are more predisposed to frequently alter sexual partners and may lack proficiency in safer-sex practices, are particularly susceptible to these infections.

Adolescence, delineated by the World Health Organization as the age range from 10 to 19, constitutes a pivotal developmental epoch. This period is marked by significant physical, emotional, and social changes, making adolescents particularly vulnerable to engaging in RSB due to factors such as peer pressure, exploration of identity, and a desire for autonomy. Adolescents make up 16% of the global populace (9). In Indonesia, adolescents constitute approximately 20% of the demographic, with North Sulawesi indicating that 21.50% of its 2.62 million inhabitants are adolescents (10). A survey indicated that 2.3% of Indonesian adolescents aged 15-24 had engaged in sexual relationships (11). The incidence of RSB fluctuates across geographical regions. For instance, 32.6% of male adolescents in Java engaged in premarital sexual activities, frequently influenced by peer pressure and exposure to pornography (12). Factors influencing RSB encompass individual, familial, social, and environmental factors such as age, peer pressure, media exposure, as well as substance use such as smoking, alcohol and drugs (SAD), community norms, and parental guidance (4,13–16). These factors exhibit considerable variation between urban and rural environments, underscoring the necessity for targeted interventions that consider local contexts and specific adolescent needs.

This study aims to answer the following questions:

1. Is there a correlation between factors such as age, gender, dating status, media exposure, peer pressure, community figures, parental guidance, SAD(Smoking, Alcohol, Drugs)-related lifestyles and the degree of risky sexual behavior in high-school adolescents?

2. What are the most significant factors influencing adolescents to engage in risky sexual behaviors involving direct contact with genitalia or sexual intercourse with others?

By identifying and prioritizing these influential factors, this research seeks to provide actionable insights for healthcare professionals and policymakers to develop targeted interventions. Emphasis is placed on understanding how location, age, community figures, parental guidance, and other socio-environmental factors contribute to RSB in adolescents. Prioritizing these factors will allow for more focused and effective public health strategies that are tailored to the distinct needs of adolescents in urban and rural settings.

2. Methods

The sample size was calculated using a proportionate stratified random sampling method. The total population of high school students in the urban and rural areas of Tomohon City and Minahasa District was considered. The sample included 244 urban adolescents and 182 rural adolescents. The calculation was based on the total population of 8,585 students, with a margin of error of 5%.

The study was conducted in high schools in Tomohon City (urban) and Minahasa District (rural) in North Sulawesi, Indonesia. The population included high school students from these regions, with a focus on comparing the differences in risky sexual behaviors between urban and rural adolescents. Students were recruited from selected high schools using a stratified random sampling method. The schools were chosen based on their classification as urban or rural according to the criteria set by the Indonesian Central Bureau of Statistics. The researchers coordinated with school authorities to gather students from different classes to participate in the study.

The primary instrument used for data collection was the Sexual Risk Survey (SRS) by Turchik & Garske (2009), which was adapted for the Indonesian context. The survey included 19 questions, both positive and negative, using a Likert scale. The validity and reliability of the instrument were tested in a pilot study with 32 respondents, showing a Cronbach's alpha value greater than 0.70, indicating high reliability. The instrument was deemed valid and reliable for measuring risky sexual behaviors among Indonesian adolescents. The instrument's validity was tested using the product-moment correlation, with all items showing a significant correlation ($p < 0.05$), indicating that the questions were valid for measuring the intended variables. The reliability was tested using Cronbach's alpha, with values exceeding 0.70, indicating that the instrument was consistently reliable across different respondents.

Prior to analysis, a normality test was performed for each variable. Subsequently, scores for each questionnaire were calculated. For the Risky Sexual Behavior (RSB) score in linear regression analysis, the focus was on questions 15 to 19, followed by non-parametric analysis. Higher scores indicated a greater variety of RSB activities among adolescents. Specifically, to predict engagement in RSB, questions 17 ("I touch the genital area of the opposite sex") and 18 ("I often engage in sexual intercourse with my partner or fiancé") were considered, with responses of 'Agree' or 'Strongly Agree' yielding a "Yes" output. The analysis was conducted using IBM SPSS v.25. Simple linear regression was used to identify factors that increase the intensity of RSB, while multiple logistic regression was employed to predict factors that raise the likelihood of adolescents making direct contact with others' genitals or engaging in sexual intercourse.

The study adhered to ethical research principles, ensuring the protection of respondent rights, privacy, autonomy, confidentiality, justice, and beneficence, in accordance with the Declaration of Helsinki. Approval was granted by the Research Ethics Committee of the Faculty of Nursing at Indonesia University (Reference Number: KET 006/UN2.F12.DI.2.1/PPM.00.02/2023). The research was conducted from October 2022 to June 2023.

3. Results and Discussion

We involved 426 high school adolescents, aged 15 to 19 years (mean = 16.8 years, SD = 1.2). Descriptive analyses yielded insights into the demographic attributes and variable distributions. The results revealed that 244 (57.3%) respondents originated from the city, while 182 (42.7%) came from rural areas. Gender distribution demonstrated a greater incidence of female students, with 255 (59.9%) in comparison to 171 male students (40.1%). Furthermore, 177 students (41.5%) reported dating history, whereas 249 students (58.5%) indicated the absence of dating experience (Table 1). The findings of this study address the first research question by demonstrating that factors such as age, urban location, and SAD-Lifestyle are significantly correlated with the degree of risky sexual behavior among adolescents. Specifically, older age and urban residency are associated with higher RSB, while a healthier lifestyle reduces RSB. The collinearity statistics show no significant multicollinearity, with a tolerance value of 0.983 and a VIF of 1.018 for both factors, indicating that the predictors are largely independent of each other.

In addressing the second research question, the logistic regression analysis identified age, community figures, and location as the most significant factors influencing engagement in high-risk sexual behaviors involving genital contact or sexual intercourse. Older adolescents and those with less influence from community figures are more likely to engage in these behaviors, while rural residency serves as a protective factor. To delve deeper into the factors influencing risky sexual behavior, we analyzed factors associated with risky sexual behavior among adolescents. Initial analysis revealed that older age ($\beta = 0.259$, $p < 0.001$) and living in urban area ($\beta = 0.297$, $p < 0.001$) were positively associated with risky behavior, while being female ($\beta = -0.214$, $p < 0.001$) and having higher grades ($\beta = -0.162$, $p = 0.002$) were negatively associated. Adding the variable "dating" to the model further explained the variance in risk scores, with dating showing a positive association ($\beta = 0.119$, $p = 0.007$).

A more comprehensive model, including variables related to lifestyle, media influence, peer pressure, community leadership, and parental involvement, provided a more robust explanation of risky sexual behavior. While age ($\beta = 0.149$, $p = 0.002$) and

location ($\beta = 0.148$, $p = 0.001$) continued to be significant predictors, their effects were reduced. Lifestyle factors, particularly those related to sadness ($\beta = -0.263$, $p < 0.001$) and community leadership ($\beta = -0.248$, $p < 0.001$), emerged as strong negative predictors. Media, peer pressure, and parental involvement did not significantly influence risky sexual behavior in this model.

Table 3 provides crucial insights into the factors influencing adolescents' likelihood to touch others' genitals or engage in sexual intercourse, as determined by multiple logistic regression analysis. Age emerges as a significant predictor, with an odds ratio of 1.916 ($B = .650$, $\text{Sig.} = .001$). The role of being a community leader (CFigure) presents a notable protective factor, with an odds ratio of .882 ($B = -.125$, $\text{Sig.} = .001$). Location variable, specifically being from a rural area, is associated with a lower likelihood of engaging in these behaviors, demonstrated by an odds ratio of .312 ($B = -1.166$, $\text{Sig.} = .003$).

Discussion

This study aimed to explore the correlations between various factors and the degree of risky sexual behavior in high-school adolescents and to identify the most significant factors influencing high-risk behaviors. Our findings confirm that age, urban location, and affinity to SAD-Lifestyle are strongly correlated with RSB. Older adolescents and those in urban areas are at greater risk, whereas those rejecting SAD-lifestyles exhibit lower RSB. The most critical factors determining engagement in high-risk sexual behaviors are age, the influence of community figures, and location. Older adolescents and those with less guidance from community figures are more likely to engage in these behaviors, underscoring the protective role of community figures and the higher vulnerability among urban adolescents.

In this study, urban individuals (both male and female) show higher percentages of high-risk sexual behaviour compared to their rural counterparts. This result aligns with several studies, which found that urban adolescents are more likely to engage in RSB compared to rural adolescents, especially those who are females (17,18). However, this study result is different compared to other studies, stating that residency in rural area posed adolescents with higher risk of engaging with RSB (19,20). The differences in urban and rural settings reflect variations in multiple layers of influence. This including access to information and healthcare services, community norms, peer dynamics, and perception towards being at risk of contracting disease, which can affect their awareness and engagement in risky behaviors.

Linear regression analysis (Table 2) shows that the variable "Community Figures" has a negative coefficient (-0.153) and is significant ($p < 0.01$), which means that increasing the influence or presence of community figures tends to decrease the RSB value. This indicates that community figures have a protective role against risky sexual behavior, in line with a study in Malawi stating that Community figures play multiple vital roles in supporting adolescents' health and well-being (21). This means that community figures might have a significant influence on teenagers' decisions regarding sexual behavior. For example, a community figure's advice or mentorship could encourage a teenager to delay sexual activity or practice safe sex. This influence can be seen in Table 3, where each one-unit increase in the role of community figures reduces the odds of engaging in risky sexual behavior by approximately 11.8%.

A community figure is an individual recognized and respected within a community for their contributions, influence, or moral standing community. Thus, they may exert influence through informal means, such as personal relationships and social interactions. Unlike a community leader, a community figure may not necessarily hold a formal leadership position but still plays a crucial role in shaping the community's values, norms, and behaviors. Their relationships with adolescents empower them to offer counsel and may engage in diverse endeavors such as presentations, workshops, or community initiatives designed to enhance awareness associated with RSB (Chimatiro et al., 2020; Yamin et al., 2022). In conclusion, the guidance of community figures can encourage individuals and groups to adopt healthier norms and values while also enhancing social and community oversight. As a result, the active involvement of community figures effectively reduces the likelihood of engaging in risky sexual behaviors, as evidenced by the lower RSB values in this model.

The variable "SADLifestyle" shows that the higher the score reflecting disapproval or irrelevance of behaviors such as smoking, drinking alcohol, and drug use, the lower the RSB value. This result supports findings that indicate engaging in substance use increases the likelihood of RSB, such as having multiple sexual partners, engaging in transactional sex, and inconsistent condom use among both men and women (23,24). Smoking significantly influences behavioral patterns due to nicotine's modulation of the brain's reward system (25) while substance misuse can adversely affect decision-making, marked by heightened impulsivity and risk-taking tendencies. Together with alcohol's influence, they alter judgments in personal and social spheres, thereby impacting moral considerations (26,27). This means that individuals who disapprove of or do not engage in smoking, alcohol, and drugs-related lifestyles tend to have a lower risk of engaging in risky sexual behaviors.

The positive coefficient for the variable "Age" indicates that as age increases, RSB values tend to increase, meaning that older individuals tend to have a higher risk of engaging in risky sexual behaviors. With the statistical significance found in this model ($p = 0.009$), it is found that each additional year in age, the RSB Score increases by 0.480. Additionally, each additional year in age increases the odds of engaging in sexual intercourse or touching others' genitals by 38.9%, highlighting the growing involvement in RSB as adolescents get older. This substantial increase highlights that older teenagers are much more likely to partake in the behavior compared to their younger counterparts.

This result is in line with other studies stating that older age exposes adolescents to higher risk in engaging in RSB (28–30). This explanation could include a variety of factors. As individuals age, they may face relationship stress or life changes, as

well as their maturing reproductive system, which previous studies suggest could increase the risk of engaging in risky sexual behavior(28). For example, relationship stress or unmet emotional needs could influence an individual's decision to engage in risky behavior. In addition, it is possible that older individuals feel more comfortable or interested in exploring new sexual behaviors, potentially due to increased social exposure or psychological maturity, as suggested by previous research from Seidu and colleagues (2021) Age could also associate individuals with certain social groups or environments that may have different norms or behaviors related to sexuality.

In our study on high school students (SMA/SMK) in Tomohon City and Minahasa Regency we also examined the influence of media, peers, and parents on RSB. Surprisingly, our findings indicated that these factors did not have a significant influence on the adolescents' engagement in risky sexual activities, as defined by specific behaviors such as kissing on the lips, touching the breast or genital area of the opposite sex, frequent sexual intercourse with a partner or fiancé, and self-stimulation for pleasure. These findings contrast with three comprehensive meta-analyses. The first meta-analysis, pooling data from over 25,000 adolescents, reported a significant positive association between parent-adolescent sexual communication and youth safer sex behavior, particularly stronger for girls and communication with mothers (31). The second meta-analysis on peer influence found strong associations between sexual peer norms and adolescent sexual behaviors (32). Lastly, a meta-analysis examining the impact of social media indicated significant associations between social media use and various risky behaviors (15).

Discrepancies regarding influence of media, peer and parents on RSB may arise from differences in regional and cultural contexts, specific behaviors measured, and methodological variations. Our findings suggest that, within this specific population, media, peer, and parental influences may not play as significant roles in RSB as previously reported. This unexpected finding that parents do not significantly influence RSB in our study population might be due to several factors. It is possible that adolescents in this specific cultural and regional context may rely more on community figures for guidance and support, rather than their parents. Alternatively, parental influence might be mediated through these other figures, or the quality and nature of parental relationships might not be captured fully by our measures.

This study does not directly assess participants' closeness with parents or community figures. It also does not distinguish heterosexual and homosexual relationships, so the result is more likely to be different in other cultures in which sexual orientations are more varied. Even though the questionnaire offers valuable insights into the reasoning behind adolescent behavior, it still lacks a comprehensive assessment of the closeness and quality of these relationships. We recommend future studies using qualitative methods to further investigate the motivating factors of these adolescents to commit risky sexual behavior. Particularly questions measuring emotional closeness, trust, communication quality, and support from significant influencers. Additionally, capturing socio-economic status, family dynamics, and cultural background will provide a broader context, while differentiating between types of peer relationships can elucidate specific pressures or support mechanisms. Addressing these gaps will enable a more nuanced understanding of how close relationships impact adolescent behavior..

4. Conclusion

This study highlights the significant impact of both non-modifiable (age, location, gender) and modifiable factors on mitigating risky sexual behaviors (RSB) among adolescents. Older adolescents exhibit higher RSB, with each additional year increasing the RSB score by 0.480 and the odds of engaging in sexual intercourse or genital touching by 38.9% ($p = 0.009$). Urban adolescents are at greater risk, while females and students with higher grades tend to exhibit lower RSB. Influential community figures can significantly reduce RSB, with a one-unit increase in their influence reducing the odds of RSB by approximately 11.8% (negative coefficient = -0.153 , $p < 0.01$). Adolescents who reject smoking, alcohol, and drugs (SAD) lifestyles also exhibit lower RSB. To effectively address these issues, prioritizing the involvement of community figures in adolescent sexual education and empowering them to mentor and guide is crucial. Implementing comprehensive sex education curricula, targeting early interventions for younger adolescents, and supporting academic achievement are essential strategies. These measures, tailored to local contexts, will help mitigate RSB and promote healthier behaviors.

Future research should explore the motivations behind risky behaviors using qualitative methods, considering factors like emotional closeness, trust, and support from peers, parents or community figures. Despite its limitations, this study underscores the crucial role of community figures and healthy lifestyles in reducing RSB, offering valuable insights for public health initiatives.

Research ethics

The study adheres to ethical research principles by protecting respondent rights, privacy, autonomy, confidentiality, justice, and beneficence, in accordance with the Declaration of Helsinki (as revised in 2013). Approval was granted by the Research Ethics Committee of the Faculty of Nursing at Indonesia University (Reference Number: KET 006/UN2.F12.DI.2.1/PPM.00.02/2023).

Informed Consent

Informed consent was obtained from all individuals included in this study, or their legal guardians or wards. The research was conducted from October 2022 to June 2023.

Author's Contribution

ADS conceptualized the study. The methodology was developed by ADS, SM and PF. Formal analysis and interpretation were conducted by ADS and EPY. EPY critically revised the article. Supervision was provided by SM. The article was drafted by EPY. All authors have read, reviewed, accepted responsibility for the entire manuscript content and approved its

submission.

Declarations of Competing Interest

All authors declare no competing interest in this study.

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Data Availability

The raw data and questionnaires used in this study can be obtained from the corresponding author upon request.

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