
The Relationship between Knowledge Level and Reproductive Health Triad Prevention Behavior in Adolescents

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Abstract . Adolescents represent a population highly vulnerable to reproductive health risks, particularly the Adolescent Reproductive Health Triad (Triad KRR), which encompasses risky sexual behavior, HIV/AIDS, and substance abuse. National data reported 63,707 new HIV cases and 18,474 substance-abuse rehabilitation admissions in 2024, while a preliminary survey at the study site found that 70% of students lacked understanding of Triad KRR prevention and no adolescent reproductive health counseling unit (PIK-R) was yet available at the school. This study aimed to examine the relationship between knowledge level and Triad KRR prevention behavior among tenth-grade students at SMKN Bungursari, Purwakarta Regency, in 2026. A quantitative analytic-survey design with a cross-sectional approach was employed, involving 60 tenth-grade students selected through proportionate stratified random sampling. Data were collected using a validated 20-item knowledge questionnaire and a validated 10-item Guttman-scale behavior questionnaire, then analyzed using the Chi-square test. The results showed that most respondents (63.3%) had good knowledge of the Triad KRR, while the majority (60%) demonstrated good prevention behavior. The Chi-square test yielded a statistically significant association between knowledge and behavior ($p = 0.022$), although the strength of association was weak (Contingency Coefficient = 0.284). It was concluded that knowledge is significantly related to, but not the sole determinant of, Triad KRR prevention behavior among tenth-grade students. Establishing a school-based adolescent reproductive health counseling unit (PIK-R) is recommended to provide structured education and reinforce preventive behavior among students.

Keywords: Adolescent Reproductive Health Triad, Knowledge, Prevention Behavior, Adolescents

INTRODUCTION

Adolescents constitute a demographically strategic yet health-vulnerable population group. Globally, individuals aged 10-19 years number approximately 1.3 billion, or 16% of the world's population, while in Indonesia adolescents make up 17% of the national population, or roughly 46 million people (17). Given this substantial proportion, the reproductive health status of adolescents is a key determinant of the nation's future human capital, particularly because adolescence is a critical transitional period marked by rapid physical, psychological, and social change.

The National Population and Family Planning Board (BKKBN) has identified three interrelated threats known as the Adolescent Reproductive Health Triad (Triad KRR): premarital sexual behavior and its consequences, including unintended pregnancy and early marriage; HIV/AIDS transmission;

and the misuse of narcotics, psychotropic substances, and other addictive substances (4). Indonesia's national health profile for 2024 recorded 63,707 new HIV infections and 21,536 new AIDS cases, with adolescents aged 15-19 years accounting for 5.81% of HIV cases nationally (9). A comparable upward trend has been observed at the district level: in Purwakarta Regency, the study site, new HIV cases rose from 174 in 2022 to 189 in 2023 and 295 in 2024, eighteen of which occurred among adolescents aged 15-19 years (6). Substance-abuse rehabilitation admissions similarly increased from 13,472 cases in 2023 to 18,474 cases in 2024 nationally (9), while premarital sexual activity among Indonesian adolescents has been documented in multiple national surveys, contributing to a substantial share of the estimated 2,400,000 annual abortion cases nationally, of which roughly 800,000 (33%) occur among adolescents (4).

The study site, SMKN Bungursari, is located in a sub-district that regional authorities have identified as one of eleven narcotics-trafficking risk areas in Purwakarta Regency, a designation associated with elevated exposure to substance-related and other reproductive health risks among local youth. These environmental conditions underscore the relevance of examining Triad KRR awareness and prevention behavior at this school. A preliminary interview with ten tenth-grade students found that seven did not understand the definition or prevention of the Triad KRR, nine reported having never received structured education on the topic, and eight relied primarily on the internet and social media, without professional guidance, as their main source of reproductive health information. No adolescent reproductive health counseling unit (PIK-R) has yet been established at the school.

Knowledge is theorized to shape adolescents' prevention behavior, whereby better-informed adolescents are expected to adopt more protective practices. However, prior studies present inconsistent findings: a study of 80 tenth- and eleventh-grade students at SMAN 1 Padalarang found a significant association between knowledge and Triad KRR behavior, despite most respondents already having moderate knowledge (11), whereas studies among adolescents in Tulungagung and at SMAN 13 Merangin found no significant relationship between reproductive health knowledge and behavior, suggesting that factors beyond knowledge, such as parental closeness and religious values, may play a more decisive role (8,14). Given this inconsistency and the absence of prior research at this school, the present study aimed to examine the relationship between knowledge level and Triad KRR prevention behavior among tenth-grade students at SMKN Bungursari, Purwakarta Regency.

METHODS

This study employed a quantitative analytic-survey design with a cross-sectional approach, in which the independent variable (knowledge) and the dependent variable (prevention behavior) were measured simultaneously. The study was conducted at SMKN Bungursari, Purwakarta Regency, West Java Province, in July 2026, following ethical approval from the Research Ethics Committee of STIKes Budi Luhur Cimahi (No: 005936/STIKes Budi Luhur Cimahi/2026). All participants provided written informed consent, with parental consent additionally obtained given participants' minor status.

The population comprised all 149 tenth-grade students at the school. Using the Slovin formula with a 10% margin of error, a sample of 60 students was obtained and allocated proportionally across five classes through proportionate stratified random sampling. Inclusion criteria were active enrollment in the tenth grade, presence during data collection, and willingness to participate after providing informed consent; students with incomplete questionnaires or who withdrew during data collection were excluded.

Knowledge was measured using a 24-item multiple-choice questionnaire adapted from an instrument originally developed by Arishanti (2) for a study on Triad KRR health education among

adolescents. Item validity was tested using product-moment correlation against a critical r-table value of 0.333; four items (S3, S19, S20, S21) were dropped for failing to meet this criterion, leaving 20 valid items with a corrected item-total correlation range of 0.386-0.552 and a reliability coefficient of Cronbach's $\alpha = 0.843$. The final 20-item instrument covers sexuality, HIV/AIDS, and substance abuse, with correct answers scored 1 and incorrect answers scored 0. Because the Shapiro-Wilk test indicated the total knowledge score in the present sample was not normally distributed ($p = 0.031$), knowledge was dichotomized into "good" and "poor" categories using the median score ($Md = 15$) as the cut-off point.

Prevention behavior was assessed using a 10-item Guttman-scale questionnaire adapted from an instrument originally developed by Aini (1) for a study on knowledge, attitude, and Triad KRR prevention behavior. All 10 items met the validity criterion against a critical r-table value of 0.444, with a corrected item-total correlation range of 0.398-0.720 and a reliability coefficient of Cronbach's $\alpha = 0.759$. Items were scored according to the polarity of each statement (positive or negative). Because the total behavior score in the present sample was also not normally distributed (Shapiro-Wilk $p < 0.001$), behavior was likewise dichotomized into "good" and "poor" categories using the median score ($Md = 9$) as the cut-off point.

Data were processed through editing, coding, entry, and cleaning procedures and analyzed using SPSS software. Univariate analysis produced frequency distributions for each variable. Because both knowledge and behavior were dichotomized into two categories each, forming a 2×2 contingency table, the association between them was examined using the Pearson Chi-square test, with the strength of association assessed using the Contingency Coefficient (12). The significance level was set at $\alpha = 0.05$.

RESULT

This study involved 60 tenth-grade students at SMKN Bungursari, Purwakarta Regency, analyzed using an analytic-survey design with a cross-sectional approach. The findings are presented according to the stages of data analysis conducted, namely univariate and bivariate analysis. Univariate analysis was performed to describe the frequency distribution of each variable, namely knowledge level and Triad KRR prevention behavior, the results of which are presented in Table 1 and Table 2, respectively. Bivariate analysis was then conducted to examine the relationship between knowledge level and Triad KRR prevention behavior, with the results of the statistical test presented in Table 3.

Table 1. Distribution of Knowledge Level regarding the Adolescent Reproductive Health Triad

Knowledge Level	Frequency (n)	Percentage (%)
Good	38	63.3
Poor	22	36.7
Total	60	100.0

Source: Primary data, 2026

Table 1 shows that most respondents, 38 (63.3%), had good knowledge of the Triad KRR, while 22 respondents (36.7%) had poor knowledge, indicating that the majority of respondents had attained an adequate level of knowledge.

This pattern appeared closely linked to information sources: 32 respondents (53.3%) relied on the internet and social media, 10 respondents (16.7%) on health workers, 5 respondents (8.3%) on teachers, and only 3 respondents (5.0%) on parents, while 10 respondents (16.7%) had never received any reproductive health information at all. Regardless of knowledge category, nearly all respondents had never received structured Triad KRR education, indicating that the knowledge levels observed

were predominantly self-acquired through informal digital exposure rather than through any school-based instructional program.

Table 2. Distribution of Triad KRR Prevention Behavior

Behavior Category	Frequency (n)	Percentage (%)
Good	36	60
Poor	24	40
Total	60	100

Source: Primary data, 2026

Table 2 shows that the majority of respondents, 36 (60%), demonstrated good prevention behavior, while 24 respondents (40%) demonstrated poor prevention behavior toward the Triad KRR. Regarding living arrangements, 96.7% lived with their parents; among respondents in the poor-behavior category, all (100%) lived with their parents, suggesting that parental co-residence alone did not consistently translate into good prevention behavior, and that its protective potential may depend more on the quality and consistency of parental supervision and communication than on co-residence itself.

Table 3. Relationship between Knowledge Level and Triad KRR Prevention Behavior

Knowledge Level	Good Behavior		Poor Behavior		Total		<i>p-value</i>
	n	%	n	%	n	%	
Good	27	71.1	11	28.9	38	100,0	0.022
Poor	9	40.9	13	59.1	38	100,0	

Source: Primary data, 2026

Table 3 shows that among respondents with good knowledge, most (71.1%) demonstrated good behavior, whereas among respondents with poor knowledge, most (59.1%) demonstrated poor behavior. The Pearson Chi-square test yielded a *p-value* of 0.022 ($p < 0.05$), with no expected cell count below 5 (minimum expected count = 8.80), indicating a statistically significant relationship between knowledge level and Triad KRR prevention behavior among tenth-grade students at SMKN Bungursari, Purwakarta Regency. However, the Contingency Coefficient of 0.284 indicates that the strength of this association is weak, suggesting that factors beyond knowledge also substantially influence students' preventive behavior.

DISCUSSION

Knowledge level

Most respondents had achieved a good level of knowledge about the Triad KRR, a finding that may initially appear counterintuitive given the near-total absence of structured school-based education on the topic. This suggests that knowledge acquisition occurred predominantly through informal, self-directed exposure primarily via the internet and social media which, while sufficient to convey factual content, does not necessarily equate to the depth of understanding cultivated through structured instruction. According to Bloom's cognitive taxonomy, unmediated digital exposure typically supports the "know" and "comprehend" levels of learning without necessarily progressing to the analytical understanding required to consistently inform protective behavior (15). This finding parallels studies at SMKN 4 Padang and SMAN 1 Padalarang, both of which similarly reported that most students had attained moderate-to-good knowledge despite limited exposure to formal Triad KRR curricula (1,11), suggesting that while informal sources can build a foundational knowledge

base, the absence of a structured PIK-R program at the study site may still constrain students' progression toward deeper, application-level understanding.

Prevention behavior

Although a considerable majority (60%) demonstrated good prevention behavior, 40% did not. Nearly all respondents (96.7%) lived with their parents, a context that could theoretically support protective supervision, as the quality of parental communication and monitoring has been shown to play a protective role against adolescent risk behavior (3), yet the limited variation in living arrangements made this factor difficult to examine further in this study. Poor behavior among some respondents may also be explained by heightened susceptibility to peer influence during middle adolescence (16). Increased knowledge alone does not automatically translate into behavior change, as this requires a gradual process from knowing to consistently adopting a practice (5), given that health behavior is shaped by predisposing, enabling, and reinforcing factors acting together, not by cognitive gain in isolation (10).

Relationship between knowledge and behavior

A clear trend was observed: the proportion of good behavior was higher among respondents with good knowledge (71.1%) than among those with poor knowledge (40.9%), and this trend reached statistical significance ($p = 0.022$). However, the weak strength of association (Contingency Coefficient = 0.284) indicates that knowledge explains only a limited portion of the variation in behavior. This is further reflected in the residual knowledge-practice gap: 28.9% of respondents with good knowledge still exhibited poor behavior, while 40.9% of those with poor knowledge nonetheless exhibited good behavior. This pattern is consistent with the view that knowledge functions as one predisposing factor among several including attitudes, subjective norms, and self-efficacy that jointly determine behavior (3).

This finding contrasts with two prior Indonesian studies among adolescents that reported no significant relationship between reproductive health knowledge and behavior: one among adolescent girls in Tulungagung, which found no significant association with dating patterns, premarital sex, out-of-wedlock pregnancy, and abortion ($p = 0.976$) and concluded that religious values and parental closeness played a more decisive role than knowledge alone (14); and another among 100 students at SMAN 13 Merangin, which likewise found no significant relationship ($p = 0.196$) and concluded that knowledge functions only as a complementary, rather than primary, determinant of behavior (8). Conversely, the present finding aligns with a study among students at SMAN 1 Padalarang, which similarly found a significant, though not strong, association between knowledge and Triad KRR behavior (11).

A structural equation modeling study further found that adolescents' risky reproductive health behavior was shaped not only by knowledge but also by parental role, teacher role, peer influence, and mass media, with mass media exerting the strongest influence among all examined factors (13) a pattern relevant to the present study, given that 53.3% of respondents obtained reproductive health information from unmediated internet sources. Taken together, these findings suggest that while knowledge-based interventions remain necessary, they should be complemented by strategies that address social and environmental determinants of behavior, such as structured peer education, parental involvement, and curated digital health content, in order to more effectively close the knowledge-practice gap identified in this study.

CONCLUSION

This study found that most tenth-grade students at SMKN Bungursari had good knowledge regarding the Adolescent Reproductive Health Triad, although two in five students still exhibited poor

prevention behavior. A statistically significant but weak relationship was found between knowledge level and Triad KRR prevention behavior ($p = 0.022$; Contingency Coefficient = 0.284), indicating that knowledge is a necessary but not sufficient determinant of adolescents' preventive practices in this setting. Other factors such as attitudes, peer influence, and parental role likely contribute substantially and warrant further investigation. Establishing a school-based adolescent reproductive health counseling unit (PIK-R) is recommended to provide structured education and reinforce preventive behavior among students.

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