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ORIGINAL ARTICLE

The Relationship Between Knowledge Level and Attitudes Towards HIV/AIDS Prevention Among Public High School Students

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Abstract
Background: Human immunodeficiency virus (HIV) is an infection that attacks the immune system, specifically white blood cells called CD4 cells. Acquired Immunodeficiency Syndrome (AIDS) is the final stage of HIV infection, which occurs when the immune system is severely damaged by the virus. The purpose of this study was to determine the relationship between knowledge levels and attitudes toward HIV/AIDS prevention behavior.
Method: This study employed a descriptive design with a cross-sectional approach. The sample was obtained through random sampling, with a total of 502 respondents from grade 11 of public high schools in Jambi City. Data were analyzed using univariate and bivariate methods using the chi-square test. The research instrument used a structured questionnaire.
Results: Of the 502 respondents, 119 students (51.1%) had a moderate to poor level of knowledge, while 170 students (33.9%) had a good level of knowledge. Regarding attitudes, 107 students (21.3%) showed fair to poor attitudes, and 177 students (35.3%) had good attitudes. There was a significant relationship between the level of knowledge and attitudes and HIV/AIDS prevention behavior among public high school students in Jambi City in 2024 ($p < 0.001$).
Conclusion: The majority of students have less-moderate knowledge, mostly positive attitudes, but good behavior is still low, so educational intervention is needed to improve students' knowledge, attitudes and behavior.
Keyword: *HIV/AIDS, Knowledge, Attitude, Behavior, Senior High School Students in Jambi City*

INTRODUCTION

Human immunodeficiency virus (HIV) is a retrovirus that causes severe immune dysfunction through the depletion of CD4 T lymphocytes (1). AIDS is the final stage of HIV infection, when the immune system is severely weakened. This condition is diagnosed when the CD4 count drops to <200 cells/mm^3 (normal 500–1,600 cells/mm^3) or when the patient experiences opportunistic infections, regardless of the CD4 count (2).

The World Health Organization estimates that there will be 3.9 million people living with HIV (PLHIV) in 2022 WHO have been infected and are aware of their status as PLHIV (3). PLHIV remains a significant health problem in Indonesia (4). The issue of HIV among adolescents in Indonesia is a serious concern. According to the 2018 National HIV/AIDS Study (STBP), HIV prevalence in Indonesia reached 25.8% among men who have sex with men, 28.8% among injecting drug users, 24.8% among transgender women, and 5.3% among female sex workers (5). According to the Ministry of Health in 2022, approximately 1,929 adolescents aged 15-24 years were estimated to be infected with HIV, an increase of 3.8% from the previous year (6). Based on data from the Jambi City Health Office for the period January to July 2023, there were 85 positive cases of HIV recorded, with details of 78 cases being men and 8 cases being women (7). HIV transmission remains common in many vulnerable populations, including men who have sex with men, injecting drug users, commercial sex workers, blood exchange/contamination, and vertical transmission from mother to child (8,9). Adolescence is the age group most vulnerable to reproductive health problems such as early pregnancy, unsafe abortion, harassment and rape, sexually transmitted infections including HIV (10). Therefore, strengthening interventions and policies that focus on HIV prevention in adolescents is very necessary to achieve the target of an AIDS-free world by 2030 (11).

Knowledge is the result of a process of knowing that arises after an individual observes or takes action on an object, and develops through experience gained both from oneself and from the surrounding environment (12). In the educational process, attitude plays an important role because a positive attitude not only reflects good beliefs and feelings, but also encourages individuals to behave actively and constructively (13). Behavior itself is a real manifestation of knowledge and attitudes, in the form of very diverse human actions or activities, such as walking, talking, crying, laughing, working, studying, writing and reading (14). Tujuan penelitian Untuk mengetahui Hubungan Tingkat Pengetahuan dan Sikap terhadap perilaku pencegahan HIV/AIDS pada siswa SMA Negeri Se-Kota Jambi tahun 2024. Hipotesis penelitian ini Terdapat hubungan antara tingkat Pengetahuan dan Sikap, terhadap Perilaku pencegahan HIV/AIDS pada siswa SMA Negeri Kota Jambi tahun 2024.

Meskipun keterkaitan antara tingkat pengetahuan dan sikap dengan perilaku pencegahan HIV/AIDS telah banyak dikaji, hasil penelitian terdahulu masih menunjukkan inkonsistensi. The study reported a significant relationship between Yulistiasia I et al. in adolescents at PGRI 3 High School in the Seberang Padang Working Area, showing a relationship between the level of knowledge and attitudes with HIV/AIDS prevention measures (15). Meanwhile, the study by Irsyad et al. did not find any significant association with attitudes and behavior towards HIV/AIDS prevention among street children in Kudus Regency (16).

The variability in findings may be due to differences in methodological design, population characteristics, and measurement instruments. Therefore, this research is needed to strengthen empirical evidence in different population contexts and fill the remaining knowledge gaps.

METHOD

This research is a descriptive study with a cross-sectional design, using primary data in the form of a questionnaire conducted on a population of 4,527 high school students in Jambi City. The number of samples in this study was 502 samples which were distributed proportionally across all State Senior High Schools in Jambi City. The inclusion criteria for this study were willingness to be a research respondent, attending Jambi City State Senior High School, studying in grade XI and using a smartphone. Stages of data processing and analysis using SPSS which are analyzed univariately and bivariately. This research has received approval and recommendations from the Jambi Provincial Education Office with letter number 77/R/DISDIK-1.3/VII/2024 and has passed the ethics test of the Faculty of Medicine and Health Sciences, University of Jambi with letter number 841/UN21.8/PT.01.04/2025.

RESULTS AND DISCUSSION

Details of the demographic distribution of mapping of public high schools in Jambi City based on knowledge, attitudes and behavior are shown in Table 1. This shows that most students in almost all sub-districts have poor to moderate knowledge (80.6–97.2%), while only a small proportion of students have good knowledge (2.8–19.4%). In addition, the majority of students had a good attitude towards the measured topics (68.7–88.9%). There were only a few students with less-moderate attitudes (11.1–31.3%). Meanwhile, the majority of students showed less-moderate behavior (94–100%), while good behavior only appeared in a small proportion of students (0.7–5.6%), indicating the need for interventions or additional educational programs to encourage increased positive behavior across the sub-district.

Most students in almost all sub-districts had poor to moderate knowledge (80.6–97.2%), while only a small proportion of students had good knowledge (2.8–

19.4%). In addition, the majority of students had good attitudes toward the topics measured (68.7–88.9%). Only a small proportion of students had poor to moderate attitudes (11.1–31.3%). Meanwhile, most students showed poor to moderate behavior (94–100%), while good behavior was only present in a small proportion of students (0.7–5.6%), indicating the need for interventions or additional educational programs to encourage increased positive behavior across sub-districts. Gunawan et al. in the Parigi Community Health Center Work Area in 2021 conducted a study on 13 informants that adolescents have insufficient knowledge about HIV/AIDS. Although adolescents show positive attitudes, subjective norms, and perceptions regarding behavioral control related to HIV/AIDS, the effectiveness of disseminating health information in schools is still not optimal. Teenagers' interest in finding out about HIV/AIDS is also still low, resulting in a gap between receiving information and active efforts to increase knowledge (17).

Table 1. Univariate Demographic Analysis of Mapping of State Senior High School Areas in Jambi City Based on Knowledge, Attitudes and Behavior

Region	Knowledge				Attitude				Behavior			
	Less-Moderate		Good		Bad-Quite		Good		Less-Moderate		Good	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Danau Sipin District SMA Negeri 1	34	94,4	2	5,6	10	27,8	6	72,2	35	97,2	1	2,8
Alam Barajo District SMA Negeri 11 SMA Negeri 12	67	93,1	5	6,9	21	29,2	1	70,8	68	94,4	4	5,6
Kota Baru District SMA Negeri 4 SMA Negeri 6 SMA Negeri 8	103	95,4	5	4,6	32	29,6	6	70,4	106	98,1	2	1,9
Jambi Timur District SMA Negeri 2 SMA Negeri 13 SMA Negeri 14	124	92,5	10	7,5	42	31,3	2	68,7	133	99,3	1	0,7
Danau Teluk District SMA Negeri 7	35	97,2	1	2,8	10	27,8	6	72,2	36	100	0	0
Paal Merah District SMA Negeri 9	29	80,6	7	19,4	4	11,1	2	88,9	36	100	0	0
Telanaipura District SMA Negeri 5 SMA Negeri 10	61	84,7	11	15,3	21	29,2	1	70,8	70	97,2	2	2,8
Jelutung District SMA Negeri 3	32	91,4	3	8,6	6	17,1	9	82,9	35	100	0	0

Research conducted by Intan et al. found that school-based interventions can increase knowledge and healthy lifestyle behavior in adolescents (18). The results of the analysis regarding the relationship between knowledge levels and HIV/AIDS prevention behavior are presented in Table 2.There were 233 students (46.4%) who had a low-moderate level of knowledge, while 269 students (53.6%) had a good level of knowledge. This finding shows that the majority of respondents are in the good knowledge category. Statistical analysis also revealed a significant relationship between the level of knowledge and HIV/AIDS prevention behavior in high school students in Jambi City, as indicated by a p value < 0.001. A number of studies consistently show that knowledge and attitudes are important determinants of HIV/AIDS prevention behavior in adolescents. Yulistiasia I et al. on adolescents at PGRI 3 High School in the Seberang Padang Working Area showed a relationship between the level of knowledge and attitudes with HIV/AIDS prevention measures15. Similar findings were reported by Nazya, who proved the same results, namely that there was a significant relationship between the level of knowledge and attitudes and behavior (19)

Table 2. Relationship between Knowledge Level and HIV/AIDS Prevention Behavior among Public High School Students in Jambi City in 2024

Knowledge	Preventive Behavior				Total		*P-value*	*PR*
	Moderate-Poor		Good					
	n	%	n	%	n	%		
Moderate-Poor	119	51,1	114	48,9	233	46,4	<0,001	1,29
Good	99	19,7	170	33,9	269	53,6		
Total	218	43,4	284	56,6	502	100		

Research by Hendrawan et al. at SMAN 1 Lasusua, North Kolaka in 2021 on 68 adolescents found that gender, level of knowledge, attitudes, and actions of adolescents were related to HIV/AIDS prevention (20). The results were similar to those obtained by Nugrahwati et al. on 59 respondents in class XI at SMAN 2 Sleman. The factors that were significantly related to adolescent behavior towards HIV/AIDS prevention were the level of knowledge and attitude. The factor that most influences adolescent behavior towards HIV/AIDS prevention is attitude (21). Putri et al. also reported a relationship between knowledge and attitudes and HIV/AIDS prevention measures at SMAN 23 Makassar (22). Another study at SMA Negeri 1 Kupang showed that the level of knowledge, attitudes and role of peers were significantly related to HIV and AIDS prevention behavior in adolescents (23).

However, not all studies show consistent results. Nurfadillah reported that there was no relationship between HIV/AIDS knowledge and HIV/AIDS prevention behavior(24). Sitorus et al also found that there was no significant relationship between attitudes and HIV/AIDS prevention behavior (25). Rosa et al. reported that there was no significant relationship between knowledge and HIV/AIDS prevention measures among adolescents at SMP Negeri 1 Sukoharjo (26). The findings of Irsyad C et al. on adolescents in the street children community in Kudus Regency also showed that there was no relationship between knowledge and HIV/AIDS prevention behavior (16).

Respondents with good knowledge were 1.29 times more likely to adopt good preventive behaviors than those with moderate or poor knowledge. Statistical analysis showed a significant relationship between knowledge level and HIV/AIDS prevention behavior ($p < 0.001$), confirming that increased knowledge contributes directly to more optimal prevention practices. Knowledge, attitudes and actions are important elements that can help teenagers control HIV/AIDS (27). A person's knowledge influences how they act (28). The higher the level of education, the broader the knowledge (29). The level of knowledge is based on the learning process in order to increase changes in behavior, skills and attitudes obtained from the results of education (30). Education level plays an important role in influencing HIV/AIDS prevention behavior (31).

Findings regarding the relationship between attitudes and HIV/AIDS prevention behavior among high school students in Jambi City in 2024 can be seen in Table 3. The table shows that negative attitudes towards HIV/AIDS are more likely to result in moderate-to-severe vulnerability to HIV/AIDS prevention behavior with a percentage of 26.7%. The results of the bivariate analysis using the Chi-Square test showed that there was a significant relationship between attitudes towards HIV/AIDS prevention behavior (p value <0.001).

Table 3. Relationship between Attitudes to HIV/AIDS Prevention Behaviors among Public High School Students in Jambi City in 2024

Attitude	Preventive Behavior				Total		*P-value*	*PR*
	Bad-Enough		Good					
	n	%	n	%	n	%		
Bad-Enough	27	5,4	107	21,3	134	26,7	<0,001	0,60
Good	191	38,0	177	35,3	368	73,3		
Total	218	43,4	284	56,6	502	100		

The results of the analysis show that respondents with good attitudes are 0.60 times more likely to exhibit good preventive behavior compared to respondents with fair-poor attitudes, with PR = 0.60 and p < 0.001, which indicates that attitudes are not always in line with preventive behavior.

Based on the research results in Table 3, it is known that 368 respondents (73.3%) have a good attitude, while 134 respondents (26.7%) show attitudes in the fair to bad category. These findings indicate that most students have a positive attitude towards HIV/AIDS prevention.

In line with research by Yosepha et al., attitude is a predisposing factor that can influence adolescent behavior, so that good knowledge about HIV/AIDS will help adolescents to make prevention efforts (32). This finding was reinforced by Wardanai et al., who found a significant relationship between attitudes and HIV/AIDS prevention measures in adolescent girls (33). Other research also shows that the level of knowledge and attitude is a factor that is significantly related to adolescent behavior towards HIV/AIDS prevention, namely the level of knowledge and attitude (34). However, not all studies show consistent results. Nurfadillah et al. reported that there was no relationship between HIV/AIDS knowledge and HIV/AIDS prevention behavior (24). Meanwhile, Sitorus et al. also found that there was no significant relationship between attitudes and HIV/AIDS prevention behavior (25).

The results of the analysis show that there is a relationship between attitudes towards HIV/AIDS prevention behavior among state high school students in Jambi City in 2024. Respondents with good attitudes were 0.60 times more likely to exhibit good preventive behavior than respondents with fair–poor attitudes (PR = 0.60; p < 0.001). According to Notoatmodjo, knowledge is one of the factors that influences health behavior (35). The HBM posits that higher levels of knowledge increase perceptions of susceptibility and severity of health problems, which influences individual health behaviors (36).

The need for extension methods that are adapted to the level of education (37). Health education aims to achieve changes in the behavior of individuals, families and communities in fostering and maintaining health, playing an active role in realizing optimal health in accordance with a healthy life both physically, mentally and socially (38). Education level influences a person's ability to receive and understand information. The higher the education level, the greater the knowledge, including regarding HIV/AIDS prevention behaviors (39).

These findings indicate that attitudes are not always directly proportional to preventive behavior. Nevertheless, positive attitudes towards HIV/AIDS still play an important role in encouraging students to take better preventive measures. Thus, increasing

positive attitudes can make a significant contribution in strengthening HIV/AIDS prevention behavior in secondary school students..

CONCLUSION

The majority of public high school students in Jambi City have a level of knowledge that is still in the poor-moderate category (80.6%–97.2%), with a relatively low proportion of good knowledge (2.8%–19.4%), the highest in Paal Merah and the lowest in Danau Teluk. Students' attitudes towards HIV/AIDS prevention are generally considered good (68.7%–88.9%), with Paal Merah and Jelutung showing the highest proportion, while East Jambi has the lowest. Meanwhile, most preventive behavior is still in the less-moderate category (94.4%–100%), with good behavior only appearing in a small proportion of students (0%–5.6%), the highest in Alam Barajo, while several sub-districts do not show any good behavior at all.

The number of respondents was 502 people, showing that 53.6% had good knowledge, while 46.4% were in the moderate-poor category. Good preventive behavior was more frequently found in the well-informed group, with a proven significant relationship between the level of knowledge and HIV/AIDS preventive behavior ($p < 0.001$) and a 1.29 times greater chance of implementing preventive behavior in this group.

In terms of attitude, 73.3% of respondents were in the good category and 26.7% were in the fair-poor category. Good preventive behavior is also more dominant in the group with good attitudes, and the attitude variable shows a significant relationship with preventive behavior ($p < 0.001$), with the opportunity for good preventive behavior being 0.60 times greater in the group with good attitudes compared to the group with sufficient attitudes.

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