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# The Effect of Health Promotion about HIV/AIDS on Adolescents' Knowledge

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**Abstract**

*HIV/AIDS is a disease caused by a virus and can result in AIDS if not treated immediately. One factor that can overcome the transmission of HIV/AIDS is knowledge. Knowledge about HIV/AIDS is very much needed in preventing HIV/AIDS. Objective: To determine the effect of health promotion about HIV/AIDS on the knowledge of adolescents at Kaureh State High School. The study used a pre-experimental design with one group pretest posttest, a random sampling technique, a population of students in grades X and XI with a sample size of 52 respondents using a questionnaire and analyzed using the Wilcoxon test. The results obtained knowledge before health promotion was 56.6% and adolescent knowledge after health promotion was 84.3% there was an increase of 27.8% And the results of the Wilcoxon test with a value of -6.208 with a p-value of 0.000 with a significance of 0.05%. A The results show that there is an effect of health promotion about HIV/AIDS on the knowledge of adolescents at Kaureh State High School. Suggestion: Researchers expect that health promotion will be carried out continuously in collaboration with health services and it is hoped that adolescents will seek information about health from various media.*

## Introduction

Human Immunodeficiency Virus (HIV) attacks the immune system gradually, weakening it and making the body more susceptible to infections and diseases. If left untreated, it can progress to AIDS (acquired immunodeficiency syndrome), an advanced stage characterized by a variety of symptoms and opportunistic infections due to a decreased immune response. The impact of HIV is extensive, the HIV virus can affect millions of people worldwide, causing new infections and significant deaths each year (Anggraini et al., 2022; Piot et al., 2001; Quinn, 2008). Global statistics show the serious impact of HIV, especially among adolescents and adults. Around 36.7 million people in this age group are living with HIV, with 1.3 million new cases recorded, highlighting the challenges in controlling the spread of the virus (Thome, 2023). UNAIDS (Unand Natums Program in HIV and AIDS) data shows that among adolescents aged 15-19 years, there are 154,800 men and 500 women living with HIV, while 430,500 men and 580 women in this age group are affected by the virus. The death rate of children due to AIDS is also concerning, with 20,300 deaths, consisting of 11,000 men and 9,300 women (Sembiring, 2023).

Indonesia faces serious challenges related to HIV/AIDS, with the number of cases continuing to increase. From January to March 2023, there were 515,455 HIV cases and 145,037 AIDS cases nationally (Ministry of Health of the Republic of Indonesia, 2023). In Papua Province,

there were 51,408 HIV cases and 145,037 AIDS cases as of March 2023. In Jayapura, the District Health Office recorded 4,533 new cases of HIV and AIDS in the same period. These data reflect a significant public health challenge and indicate the need for continued and intensive efforts to control the epidemic and provide adequate care for those affected.

Adolescents are at high risk of contracting sexually transmitted infections, including HIV/AIDS, due to their developing behaviors and emotions (Naswa & Marfatia, 2010; Seth etal., 2011; Ssewanyana et al., 2021; Abrantes da Silva et al., 2023; Paul et al., 2024). They often engage in experimental and risky sexual activities. This vulnerability is exacerbated by a lack of knowledge about the dangers of sexually transmitted infections and how to prevent them. Many adolescents are unaware of the seriousness of HIV/AIDS and its long-term impacts due to a lack of education on the topic (Devirya, 2022; Deacon & Stephney, 2007; Griessel-Roux, 2006; Tatisina et al., 2025).

To reduce the risk of HIV/AIDS among adolescents and address the lack of knowledge, health promotion is essential (Obeagu & Obeagu, 2024; Bossonario et al., 2022). This involves a variety of strategies and media to educate individuals about healthy behaviors. The goal is to improve adolescent health understanding and actions, provide information about the risks of unsafe sexual practices, and encourage healthier choices to protect against infections such as HIV/AIDS (Putri et al., 2020). The government considers health promotion as a key strategy to prevent the spread of HIV/AIDS among adolescents. By implementing a comprehensive health education program, the government seeks to reduce the incidence of HIV/AIDS by encouraging safe sexual practices and other preventive behaviors (Satcher, 2001; Douglas & Fenton, 2013; Braeken & Cardinal, 2008; Obeagu & Obeagu, 2024; Mbengo et al., 2022). The program aims to reach individuals and groups, create an environment for adolescents to learn to avoid risky behaviors, and adopt a healthy lifestyle. The goal is to equip adolescents with the knowledge and skills to protect themselves and others from HIV/AIDS (Silalahi, 2021; Weiss et al., 1996).

Knowledge plays a vital role in preventing the spread of HIV/AIDS, as it directly influences an individual's attitude and perception towards the disease (Ismail et al., 2022). Understanding the risks and methods of HIV/AIDS transmission is crucial for adolescents. However, knowledge about HIV/AIDS among Indonesian adolescents is still low, with only 14.3% of female adolescents and 26.7% of male adolescents having adequate understanding according to the 2018 Indonesian Demographic and Health Survey. This knowledge gap highlights the need for better educational efforts to increase awareness and understanding among adolescents, making it a priority in combating the disease (Rahman et al., 2022; World Health Organization, 2023; Cini et al., 2023; Abdul et al., 2024).

Health promotion is a key strategy to reduce the negative impacts of HIV/AIDS by encouraging positive behavioral changes. Adolescents' lack of knowledge about HIV/AIDS increases the risk of risky practices. Health education is essential to guide adolescents and communities towards healthier choices. Through various methods and media, health promotion aims to achieve individual and collective health goals, educating and empowering individuals to prevent the spread of HIV/AIDS (Suparno et al., 2021).

The World Health Organization emphasizes that health promotion helps individuals and communities take control of factors that affect their health, improving quality of life. Research shows that effective health promotion increases knowledge and awareness of HIV/AIDS, especially among adolescents (Takainginan et al., 2016). A study by Sumangkut et al. (2020) also revealed that good health education initiatives can improve understanding and attitudes towards HIV/AIDS, highlighting the importance of health promotion in combating the disease and protecting vulnerable populations.

A study by Sri and Susanti (2021) emphasized the importance of health promotion in improving adolescent knowledge about HIV/AIDS. Dewi et al. (2023) showed that health promotion initiatives significantly increased adolescent awareness and understanding. These results underscore that targeted education can change adolescent knowledge and behavior, especially in HIV/AIDS prevention, as well as address knowledge gaps and shape their attitudes towards safe practices.

In April 2024, interviews with 15 grade X and XI students at Kaureh State Senior High School showed an alarming lack of awareness about HIV/AIDS. Of the 15 students, only five had knowledge about the disease, while the remaining ten students had very limited or no understanding of HIV/AIDS, including how it is transmitted, how to prevent it, and how to treat it. This knowledge gap is concerning because it coincides with reports of risky behavior among some students, highlighting the dangers of uninformed decisions. The lack of education about HIV/AIDS in schools underscores the need for more targeted health promotion, and is a reason for researchers to investigate this issue further.

Previous studies have not specifically examined the effect of HIV/AIDS health promotion on adolescent knowledge at SMA Negeri Kaureh, Jayapura Regency, Papua, so this area requires further exploration. The gap in knowledge and risky behavior among students suggests the need for focused educational interventions. This study aims to fill the gap in the literature by exploring how health promotion can improve adolescent knowledge at SMA Negeri Kaureh and develop strategies to prevent the spread of HIV/AIDS. This study is expected to provide insight into how education can reduce promiscuity and protect adolescents from the risks associated with lack of awareness. Based on the description above, the researcher is interested in examining the effect of health promotion about HIV/AIDS on adolescent knowledge at SMA Negeri Kaureh, Jayapura Regency, Papua.

## Methods

Research followed a quantitative method using the one-group pre-test–post-test design as its pre-experimental structure. The researchers selected this design to measure how a health promotion intervention shaped adolescent knowledge of HIV/AIDS through assessment of pre-intervention and post-intervention education reception. The design without control group remains suitable for assessing changes within a single group of participants because it finds widespread use in public health and educational research when randomized control trials face ethical or logistical barriers.

The research took place at SMA Negeri Kaureh situated within Jayapura Regency of Papua Province. Students from grades X and XI at SMA Negeri Kaureh formed the selected population because of their developmental phase where they face increased risk exposure toward dangerous behaviors including sexual health risks. A total of 52 students representing the full study population were selected by applying Slovin formula which determines the correct sample size with specified margin of error. Each student obtained equal opportunity for selection into the research study through a basic random sampling procedure. The sampling methods contributed to making findings more applicable across the school's adolescent demographic through reducing sampling errors.

In this research project the implemented intervention consisted of a designed program to educate about HIV/AIDS. The session designer tailored education content specifically for high school students at their designated intellectual level by covering the topics of HIV and AIDS nature, their differences, transmission methods, prevention knowledge, and stigma and psychosocial effects of the disease. Early detection together with responsible conduct received emphasis during the session which dealt with stigma. During delivery the teacher implemented diverse interactive techniques by using visual presentations alongside real-life examples together with fluid discussions that involved participants. Students had one hour to participate

in the session through question asking along with thought sharing to keep the learning experience active. A health educator with training maintained the session to verify information accuracy as well as maintain normalized delivery.

A structured questionnaire acting as the principle data collection tool served for measuring participants' knowledge levels. Designing the questionnaire incorporated known indicators from validated HIV/AIDS knowledge tools which also met the guidelines of national health education standards. The questionnaire consisted of twenty questions presented through multiple-choice and true/false options to evaluate both basic HIV/AIDS knowledge and conceptual understanding. A preliminary test of the questionnaire was conducted on ten students from an equivalent educational institution. The preparatory trial helped clarify doubtful questions and determine instrument reliability through Cronbach's alpha analysis resulting in a reliability score of 0.78. Three experts specializing in public health and adolescent health education validated the content validity of the study.

The data collection process commenced with pre-test distribution right before the health promotion session implementation. The students did the survey in controlled classroom conditions with strict supervision to maintain concentration and maintain survey confidentiality. A post-test questionnaire containing the identical questions followed the health promotion session to assess knowledge alteration. The planned timing of assessment allowed researchers to observe changes caused by the session independently from other external variables. The evaluation researchers scored both phases' questionnaire data which they entered into their database for assessment purposes.

The researchers used univariate and bivariate statistical approaches to achieve a detailed analysis of the study results. A univariate analysis showed how the respondents' data points described their age groups together with grade placement and knowledge score distributions both before and after the intervention. The obtained data appeared as frequencies along with percentage distributions to demonstrate overall patterns in the study. The knowledge scores were evaluated using pre-established criteria that resulted in three corresponding categories named good, adequate, and poor. The established categories showed how well the intervention performed among different understanding levels. The Wilcoxon Signed-Rank Test analyzed knowledge score variations between pre-intervention and post-intervention points. The Wilcoxon Signed-Rank Test served as the appropriate method because the ordinal nature of data combined with the limited participant numbers precluded parametric testing. The study employed a 0.05 p-value cut-off point to confirm statistically important effects on knowledge acquisition through the intervention program.

## Result and Discussion

The results of the Wilcoxon test obtained a Z value = - 6208 and a p-value of 0.000. where the p-value is 0.000 <0.05 so that Ho is rejected and Ha is accepted. Conclusion There is an influence of health promotion about HIV/AIDS on the knowledge of adolescents at Kaureh State High School.

### Univariate Test Results

Univariate analysis is used to determine the frequency distribution and percentage of each variable studied. The results of the study on 52 respondents at SMA Negeri Kaureh were conducted using a research questionnaire data collection format.

Table 1. Respondent characteristics

| Frequency | Percentage | Variable |
|---|---|---|
| **Class** | | |
| X | 26 | 50% |
| XI | 26 | 50% |

| Age | | |
|---|---|---|
| 16 Year | 15 | 28,8% |
| 17 Year | 24 | 46,2% |
| 18 Year | 9 | 17,3% |
| 19 Year | 4 | 7,7% |
| **Knowledge Before Health Promotion** | | |
| Good | 9 | 17,31% |
| Enough | 14 | 26,92% |
| Less | 29 | 55,77% |
| **Knowledge After Health Promotion** | | |
| Good | 39 | 75,0% |
| Enough | 12 | 23,1% |
| Less | 1 | 1,9% |
| **Total** | **52** | **100%** |

Source: Research Results, 2024

Based on table 1, it is known that the distribution of class categories is evenly divided, namely (50%), the highest age is 17 years (46.2%), the highest knowledge before health promotion is in the poor category (55.77%), and the highest knowledge after health promotion is in the good category 75.0%.

Table 2. Frequency distribution of knowledge before (Pre-test) health promotion about HIVAIDS in adolescents at Kaureh State High School

| Prior knowledge | Frequency | Percent (%) |
|---|---|---|
| Good | 9 | 17,31% |
| Enough | 14 | 26,92% |
| Less | 29 | 55,77% |
| Total | 52 | 100% |

Based on Table 2, it is known that before the intervention, 29 respondents or 55.77% had insufficient knowledge, 14 respondents or 26.92% had sufficient knowledge, and 9 respondents or 17.31% had good knowledge.

Table 3. Frequency distribution of knowledge after (Post test) health promotion about HIV/AIDS in adolescents at Kaureh State High School

| Prior knowledge | Frequency | Percent (%) |
|---|---|---|
| Good | 39 | 75% |
| Enough | 12 | 23,08% |
| Not enough | 1 | 1,92% |
| **Total** | **52** | **100%** |

Based on Table 3, after health promotion actions were carried out, 39 respondents or 75% had good knowledge, 12 respondents or 23.08% had sufficient knowledge, and 1 respondent or 1.92% had poor knowledge.

**Bivariate Analysis Results**

Table 4. The Influence of Health Promotion About HIV/AIDS on the Knowledge of Adolescents at Kaureh State High School

| Knowledge Variable | Min | Max | Mean | SD | *Negative Ranks* | *Positive Ranks* | *Ties* | Z Value | *P Value* |
|---|---|---|---|---|---|---|---|---|---|
| Pre Test<br>Post Test | 16<br>44 | 96<br>100 | 56,56<br>84,31 | 19.233<br>12.695 | 1 | 50 | 1 | -6,208 | 0,000 |

Source: Research, 2024

Based on table 4, the data shows a significant difference in the average knowledge score of adolescents at Kaureh State High School before and after HIV/AIDS health promotion with an increase of 27.8. The results of the Wilcoxon test show a P-Value = 0.000 <0.05, which indicates that health promotion has a significant effect on students' knowledge of HIV/AIDS at Kaureh State High School.

Table 5. Descriptive Statistics of Knowledge Scores Before and After Health Promotion Intervention

| Variable | Minimum Score | Maximum Score | Mean (%) | Standard Deviation (%) |
|---|---|---|---|---|
| Pre-test Knowledge Score | 16 | 96 | 56.56 | 19.23 |
| Post-test Knowledge Score | 44 | 100 | 84.31 | 12.69 |

The data presented in Table 5 explains students' knowledge changes through pre-intervention and post-health promotion measurement. The intervention began with 16% as the lowest pre-test score suggesting that at least one participant lacked fundamental knowledge of the subject. At the same time the pre-test revealed 96% as the highest score indicating some students already had detailed knowledge about health from other resources. A wide range of baseline knowledge existed among students because the mean pre-test score reached 56.56% yet maintained a substantial standard deviation value of 19.23%. Student knowledge levels about HIV/AIDS appear inconsistent because both good understanding and inadequate understanding coexist within the same student sample.

After the intervention both the minimal score exceeded 44% whereas the most successful participant scored at 100%. The students achieved a dramatic post-test score mean of 84.31% combined with a decreased standard deviation at 12.69%. Executive levels of student knowledge saw a significant rise after the intervention because this shows the intervention successfully bridged the essential educational gap for students with the least understanding. When students experienced standard deviation reduction they achieved educational consistency in their health knowledge levels. Through the intervention population-wide knowledge levels rose while inequalities in understanding decreased in a way that generated equal health literacy distribution across students throughout the study group.

The educational results are substantial because students demonstrated 27.75 percentage points of improvement between their pre-test and post-test scores. This notable improvement demonstrates how the health promotion material and teaching methods suited exactly to the learning requirements of young people in this particular area. Through contextualized health education delivered via interactive ways institutes can make substantial modifications to adolescent understanding within limited time periods.

Table 6. Distribution of Knowledge Score Changes by Grade and Age Group

| Category | n | Mean Pre-test (%) | Mean Post-test (%) | Mean Difference (%) |
|---|---|---|---|---|
| Grade X | 26 | 55.40 | 82.90 | 27.50 |
| Grade XI | 26 | 57.70 | 85.70 | 28.00 |
| Age 16 | 15 | 54.00 | 82.40 | 28.40 |
| Age 17 | 24 | 57.10 | 86.20 | 29.10 |
| Age 18–19 | 13 | 58.00 | 83.00 | 25.00 |

The evaluation of knowledge score modifications shows the distribution across different student grade levels and age groups as recorded in Table 6. The knowledge gained by Grade X students progressed from 55.40% during pre-test assessment to 82.90% in post-test evaluation for a total increase of 27.50 percentage points. Grade XI students exhibited slightly higher

improvement than the other level since their pretest scores strengthened from 57.70% to 85.70%, which indicated a boost of 28.00 percentage points. The performance difference in knowledge acquisition between Grade X and XI students may stem from student maturity levels combined with their academic experience and probable difference in health topic exposure before the study.

The mean scores of 16-year-old students increased from 54.00% to 82.40% which amounts to an exceptional 28.40-point improvement. Seventeen-year-olds who represented the most numerous group registered the maximum average score enhancement of 29.10 points leading their final test results to 86.20%. The average learning gain recorded by students between 18 to 19 years old amounted to 25.00 points although slightly reduced compared to their younger counterparts. The slight lowering of student gains among older learners might be due to their existing knowledge base being higher thus leading to restricted observable improvement. Research results among 16-17 year olds demonstrate strong willingness to learn from health education programs probably because fresh information and advanced mental adaptability enabled better understanding. The established conceptual frameworks among older students possibly prevented a major change in their understanding because the intervention mainly supported existing knowledge rather than reorganizing it.

**Knowledge before (pre-test) health promotion is carried out**

This study revealed that 55.77% of participants had inadequate knowledge about HIV/AIDS before the health promotion initiative. This lack of knowledge can be attributed to various factors including the influence of education, media, social and cultural context, economic conditions, personal experiences, and age. These elements collectively shape an individual's understanding and awareness of health-related issues. as noted by (Ningrum et al., 2023). Riyanto (2013) in Situmeang's (2019) study emphasized that education plays an important role in shaping knowledge by changing attitudes and behaviors through structured teaching and training. This underlines the importance of educational interventions in increasing levels of knowledge. Thome's (2023) study supports this idea, showing that before educational efforts were implemented, adolescents at SMA YPKP Al Fatah Sentani had a sufficient level of knowledge of 45.63% about HIV/AIDS. In contrast, Situmeang's (2019) study found that 64.2% of the community had inadequate knowledge before the start of HIV/AIDS health promotion. This highlights the significant knowledge gap and the critical need for targeted health education to effectively address this gap.

A study conducted by Rita Ismail et al. (2023) showed that before being given health education, People Living with HIV/AIDS (PLWHA) had an average knowledge level of only 10.70% regarding HIV/AIDS. This low level of knowledge was clearly reflected in their responses to the questionnaire, where they indicated significant confusion, anxiety, and lack of self-confidence. The researchers argued that these emotional and cognitive responses underscored their lack of understanding of HIV/AIDS and the difficulties they faced in understanding information about the disease. The findings highlight the need for comprehensive health education to address this knowledge gap and improve overall understanding.

**Knowledge after (post test) health promotion is carried out**

This study showed a significant increase in respondents' knowledge about HIV/AIDS following health promotion efforts, with 75% of participants achieving a good knowledge classification. This increase highlights the effectiveness of health promotion in increasing knowledge levels from initially low standards to much higher levels. These results underscore the important role that knowledge plays in facilitating health behavior change. The results of this study are consistent with theoretical perspectives on the effects of health promotion. This study supports the idea that providing targeted counseling and information about HIV/AIDS not only increases understanding but also effectively improves overall knowledge outcomes.

This reinforces the idea that structured health education is essential to advancing health literacy and encouraging positive behavior change. Thome's (2023) study revealed a significant increase in knowledge about HIV/AIDS prevention among adolescents at SMA YPKP Al-Fatah Sentani by 46.98% after an educational intervention. This highlights the effectiveness of targeted health education in increasing understanding of HIV/AIDS among adolescents.

In contrast, Situmeang's (2019) study showed that 91.4% of respondents in the community achieved a high level of knowledge after health promotion efforts, indicating a substantial impact on public awareness. Meanwhile, Ismail et al. (2023) in her study explained that a more modest average increase of 12.25% in knowledge among People Living with HIV/AIDS (PLWHA) after health education, indicating a more gradual increase in this group. The researchers observed that respondents who participated in health promotion about HIV/AIDS showed high enthusiasm and self-confidence. Increased self-confidence and positive social interactions significantly encourage proactive attitudes and actions aimed at preventing the transmission of HIV/AIDS.

**The effect of health promotion about HIV/AIDS on adolescent knowledge**

The results of this study showed a significant increase in the level of knowledge, increasing from an average of 56.56% before health promotion to 84.31% after its implementation. This significant increase is evidenced by a p-value of 0.000 <0.05. highlighted the effectiveness of health promotion in improving understanding among adolescents. Health promotion plays an important role in improving knowledge by delivering clear and impactful messages through appropriate media. This approach not only helps in better understanding of information but also motivates adolescents to apply the knowledge they gain, thus encouraging proactive behavior in responding to health information (Suparyati & Lestari, 2022). This was also stated by Bakara (2014) who in his study explained that there was a significant difference in students' knowledge of HIV/AIDS before and after receiving health education, with a p-value of 0.000, indicating a significant effect. This underlines that health education effectively improves students' understanding of HIV/AIDS. According to Thome's research (2023), there was a substantial change in the level of knowledge, with initial knowledge mainly in the sufficient category of 45.63%, which increased to the good category of 46.98% after education. This shows a positive effect of educational interventions in improving knowledge about HIV/AIDS prevention.

Based on research by Ismail et al. (2023), it was observed that there was an increase in knowledge about HIV/AIDS by 1.55% after health education. This finding further supports the idea that health education is very important in increasing adolescent awareness and understanding of HIV/AIDS, thus encouraging better preventive behavior and knowledge retention. The results of Muliana et al. (2014) study showed a significant increase in knowledge in the experimental group after health education, as evidenced by the Wilcoxon signed rank test. The group's average score increased from 9.65 in the pre-test to 14.75 in the post-test, with a p-value of 0.05 (0.000 <0.05), indicating a statistically significant increase. This finding confirms that health education is effective in significantly increasing high school students' understanding of HIV/AIDS. The researchers asserted that health promotion played a significant role in significantly increasing respondents' knowledge about HIV/AIDS. Health promotion changed their understanding from ignorance to awareness and actively encouraged strong enthusiasm for learning. This method not only increased understanding but also facilitated the acquisition of detailed and useful information about HIV/AIDS, thereby addressing the knowledge gap and fostering a more informed perspective among respondents.

**Untapped Realities in Adolescent HIV/AIDS Education**

The research shows that teens acquired more than fleeting information about HIV/AIDS. Quantitative measurements showed a successful intervention as pre-test scores averaged at

56.56% but post-test results reached 84.31% (Takainginan et al., 2016; Sumangkut et al., 2020) yet a thorough analysis of the data highlights fundamental issues affecting adolescent health education. The educational approach produced substantial growth in minimum understanding because it enhanced knowledge from 16% at baseline to 44% at the conclusion of instruction. This evidence strikes against the widespread belief that deficient health knowledge test performers must be disengaged or incapable students. These findings confirm the premise of Bossonario et al. (2022) and Devirya (2022) that exposure shortages to credible accessible information create most knowledge gaps. Young people show rapid positive responses when they find information that connects with their developmental level as well as their real-world circumstances.

Knowledge improvement found its way toward every educational division that took part in the study. The research data showed wide-ranging knowledge improvements across Grade X students and XI students and the age groups from 16 to 19 years. The research demonstrates that mid-adolescence stands out as a period during which young individuals become more responsive to complex cognitive information even if it introduces disease prevention and long-term health consequences (World Health Organization, 2023; Seth et al., 2011). Using this information will improve future intervention timing because health education delivered when cognitive development reaches its peak achieves longer-lasting results (Anggraini et al., 2022). The baseline data revealed disturbing inequalities regarding what students already knew in their pre-research period. The pre-test scores of numerous students indicated insufficient learning while other students managed to score higher marks which cannot be attributed only to individual differences. This outcome demonstrates basic errors in three crucial components of society including educational establishments along with public health outreach organizations as well as local community networks (Deacon & Stephney, 2007; Piot et al., 2001; Thome, 2023). The knowledge disparities existing between young adults relate closely to their socio-economic background and parental educational attainment alongside their media exposure as Griessel-Roux (2006) indicates.

The narrowing of knowledge gaps represents a key achievement that stands out as the most important finding from the intervention. After the intervention students demonstrated better knowledge equality through their post-test results since they grouped within the good knowledge category. The research confirms that properly developed health promotion strategies can serve as balancing factors to minimize social inequalities which typically affect health literacy according to Douglas and Fenton (2013) and Suparno et al. (2021). The widespread positive score changes reported by all participants except one challenges previous assumptions that adolescents lack interest in health education according to Obeagu & Obeagu (2024) and Satcher (2001). Research demonstrates that young people act willing to participate with health information that presents itself as participatory and dynamic and personal to their interests. Dewi et al. (2023) along with Muliana et al. (2014) confirm that adolescent health programs tend to succeed or fail based on how information is delivered to them.

Research indicates that the improvement levels were not significant for a limited number of students. The underlying psychological factors including past trauma and stigma beliefs and emotional withdrawal do not respond well to traditional educational approaches as shown by Silalahi (2021) and Ismail et al. (2023). The research suggests that upcoming interventions should build safe discussion platforms while providing emotional support along with peer-guided learning to meet the recommendations of Bakara et al. (2018) and Putri et al. (2020).

These research results demonstrate that establishing HIV/AIDS teaching at national and regional curriculum levels becomes an immediate educational priority. One-time HIV/AIDS educational efforts succeed but they cannot eliminate the requirement for structured ongoing learning which strengthens knowledge retention and positive attitude development alongside behavioral adaptation across extended periods (World Health Organization [WHO], 2023;

Suparyati & Lestari, 2022). Systemic curriculum integration operates as a vital approach to guarantee the consistency of essential health information despite occasional sporadic intervention efforts.

The study's findings discover how family and community contribute to the results. The spaces where adolescents live typically maintain restrictive boundaries on public discussions about HIV/AIDS as Naswa and Marfatia (2010) and Ismail et al. (2022) have reported. The education of parents and caregivers at the same time as school-based interventions becomes essential because parents might present opposing information from what students learn at school (Devirya, 2022). Educational researchers propose that involvement of community participants and multiple stakeholders should strengthen school-based interventions and develop united support structures (Obeagu & Obeagu, 2024; Dewi et al., 2023).

These research outcomes set consequences that spread across entire communities past school environments. The continuing public health threat of HIV/AIDS in Indonesia particularly affects Papua region (Ministry of Health of the Republic of Indonesia, 2023; Papua, 2023) while adolescents face an essential decision point. They embody two important roles because they are at high risk while simultaneously serving as the next generation to shape how the epidemic develops (Rahman, 2022; Quinn, 2008). Knowledge acquisition stands essential but interventions should simultaneously address attitudes and self-efficacy and behavioral intentions for completing the prevention framework. True preventive health behavior becomes attainable when knowledge gets transformed into motivational action according to Putri et al. (2020) and Bakara et al. (2018). Upcoming educational methods should unite conceptual material with practical exercises which let students develop their skills and simulate real-world scenarios to create enduring changes in student behaviors.

## Conclusion

This research showed that health promotion interventions which follow a systematic approach help adolescents learn more about HIV/AIDS. Student knowledge about HIV/AIDS was poor before intervention as revealed by an average score of 56.56% among a large percentage of participants. Student knowledge demonstrated substantial growth after completing the educational session because their average post-test scores reached 84.31%. These scores indicated a 27.75 percentage point gain. Data obtained from the Wilcoxon Signed-Rank Test demonstrated how the health promotion created a statistically substantial difference (p-value = 0.000) showing that directed educational strategies effectively address adolescent knowledge deficits. The results showed that education methods which deliver complex health information through accessible and engaging presentation techniques allow adolescents to acquire new knowledge at all initial knowledge capacity levels. After implementing health education initiatives the population distribution of student knowledge became more equal demonstrating that health education successfully improves understanding for all while building student equality. Educational programs to promote adolescent health should be recognized as primary elements in combined public health approaches which work to decrease the HIV/AIDS burden. The study findings indicate that education needs to continue as a long-term essential process. Despite its strong effects a solitary intervention lacks the capacity to solve all emotional social behavioral factors affecting lasting health behaviors. Future programs need to adopt a planned approach through multi-level educational processes delivered multiple times to schools, families and communities for optimal benefit. A generation educated in HIV/AIDS can be created through the systematic implementation of this education in schools and the development of platforms to explore matters openly combined with sustained health-related engagement.

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