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The Effect of Leaflet-Based Education on Adolescents' Perceptions of HIV/AIDS at Samarinda Health Vocational School

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Abstract

The increasing prevalence of HIV/AIDS among adolescents remains a significant public health concern and is closely linked to inadequate knowledge and persistent misconceptions regarding transmission risks and prevention strategies. Adolescents represent a vulnerable population due to limited access to accurate sexual health information and the influence of social stigma surrounding HIV/AIDS. Data obtained from the Samarinda City Health Center revealed a total of 48 confirmed HIV cases recorded between January and December 2025 among individuals aged 16–54 years, indicating the continued transmission risk within the community, including school-aged populations. This community service initiative aimed to improve the knowledge, attitudes, and perceptions of students at the Samarinda Health Vocational School through the implementation of innovative health education using leaflet-based media. Leaflets were designed to present clear, concise, and easily understandable information related to HIV/AIDS transmission, prevention, and risk behaviors, making them suitable for adolescent audiences. A correlational study with a cross-sectional design was employed to evaluate the effectiveness of this educational intervention. Data were collected using structured questionnaires administered to 22 student respondents before and after exposure to the leaflet media. Statistical analysis was conducted using the Wilcoxon Signed Rank Test to assess changes in perception scores. The results demonstrated a statistically significant improvement in the mean perception score, which increased from 7.91 prior to the intervention to 10.36 following the educational session ($p = 0.000$). These findings indicate that leaflet-based education is highly effective in enhancing adolescents' perceptions and understanding of HIV/AIDS prevention. In conclusion, creative and media-based health education strategies, particularly the use of informative leaflets, should be strengthened and integrated into school-based programs. Such approaches play a crucial role in fostering early awareness, promoting healthy behaviors, and contributing to sustainable efforts to reduce HIV prevalence among younger populations.

Keywords: HIV/AIDS, Prevention, Leaflets, Teenagers, Health Promotion

1. Introduction

Human Immunodeficiency Virus (HIV) infection and Acquired Immunodeficiency Syndrome (AIDS) remain major challenges in public health efforts, both globally and in Indonesia. This issue not only affects individual health outcomes but also has profound social, economic, and cultural implications. People living with HIV (PLHIV) frequently experience stigma and discrimination from family members, healthcare providers, and the wider community. These negative attitudes are largely driven by low levels of knowledge, misinformation, and persistent misconceptions regarding HIV/AIDS transmission, prevention, and treatment (Ministry of Health of the Republic of Indonesia, 2022).

Indonesia ranks 14th globally in terms of the total number of people living with HIV and 9th in the number of new HIV infections. By 2025, the number of PLHIV in Indonesia is estimated to reach approximately 564,000 individuals; however, only about 63% are aware of their HIV status (Muhawarman, 2025). This situation highlights a significant gap in HIV testing and awareness. At the regional level, data from the Samarinda Kota Primary Health Care Center (UPTD Puskesmas Samarinda Kota) reported 48 HIV cases throughout 2025, with the majority occurring among adults aged 18 to 59 years. Although this age group dominates reported cases, adolescents remain a critical population due to their vulnerability and potential role in future transmission trends.

Adolescents are particularly susceptible to HIV/AIDS infection because they are in a developmental phase characterized by identity exploration, curiosity, emotional instability, and a strong inclination toward experimenting with new experiences (Angela et al., 2019). Limited knowledge and inadequate understanding of

HIV/AIDS among adolescents contribute to increased vulnerability to risky behaviors, which may lead to infection and negatively affect their physical health, mental well-being, and social functioning (Arini & Kasanah, 2021). Furthermore, adolescents' perceptions and attitudes toward HIV/AIDS play a significant role in shaping stigma against PLHIV. Negative perceptions, excessive fear of transmission, moral judgment, and negative personal or social experiences often reinforce discriminatory behaviors toward PLHIV.

Stigma toward PLHIV remains a major barrier to effective HIV prevention, testing, and treatment. Individuals who experience stigma are more likely to delay seeking healthcare services, conceal their HIV status, and disengage from treatment programs. Consequently, stigma not only harms PLHIV psychologically and socially but also undermines public health efforts to control HIV transmission. Therefore, improving public attitudes and perceptions through structured education and health promotion campaigns is essential to reducing stigma and increasing awareness of HIV/AIDS, particularly among vulnerable groups such as adolescents (Umami, 2025).

Various factors influence HIV prevention efforts among adolescents in shaping preventive behaviors against HIV/AIDS. These factors include the role of healthcare workers, accessibility of accurate information, peer influence, parental parenting styles, and individual perceptions regarding HIV risk (Rini & Noviyani, 2019). Adequate knowledge serves as a foundation for developing positive attitudes and perceptions, which in turn encourage safe and preventive behaviors, such as abstaining from risky sexual activities, consistent condom use, and avoidance of substance abuse (Nurfadillah & Indrawati, 2025). In addition, predisposing, enabling, and reinforcing factors as described in health behavior theories play crucial roles in determining health-related behaviors, including sexual health practices and HIV prevention strategies (Aziz et al., 2023).

Based on situational analysis conducted in the field, it was identified that there are still limited information platforms tailored specifically to meet the needs of adolescents at Samarinda Health Vocational School. Although adolescents are highly exposed to digital technology and social media, the utilization of digital platforms for structured health education remains suboptimal. This gap presents both a challenge and an opportunity, as information technology has substantial potential to improve health literacy among young people when used appropriately and strategically.

This community service activity was conducted to improve students' attitudes and perceptions regarding HIV/AIDS at Samarinda Health Vocational School through the use of innovative leaflet-based educational media. Leaflets were chosen as a health promotion tool because they are cost-effective, easy to distribute, visually engaging, and capable of delivering concise yet comprehensive health messages. When designed appropriately, leaflets can serve as an effective medium to increase knowledge, correct misconceptions, and foster positive perceptions toward HIV/AIDS and PLHIV.

Health education plays a pivotal role in shaping adolescents' understanding, attitudes, and behaviors related to HIV/AIDS. As future adults and potential agents of change within their communities, adolescents require accurate, age-appropriate, and culturally sensitive information. Schools, particularly health vocational schools, represent a strategic setting for implementing HIV/AIDS education programs because students are already oriented toward health-related knowledge and practices. However, even among health-oriented students, misconceptions and stigma can persist without targeted and continuous educational interventions.

Leaflet-based education is one of the traditional yet still relevant health promotion methods. Despite the rapid advancement of digital technology, printed educational media remain effective, especially in school settings where direct interaction and guided discussions accompany material distribution. Leaflets allow students to review information repeatedly at their own pace, share it with peers or family members, and retain key messages longer. Moreover, the visual elements in leaflets such as illustrations, infographics, and simplified language help adolescents better understand complex topics like HIV transmission, prevention, and treatment.

The effectiveness of leaflet-based education lies not only in content delivery but also in message framing. Messages that emphasize empathy, scientific accuracy, and human rights perspectives are more likely to reduce fear and stigma toward PLHIV. Educational materials that focus solely on fear-based messaging may inadvertently reinforce negative stereotypes and discrimination. Therefore, the leaflets used in this program were designed to balance factual information with positive narratives, highlighting that HIV is a manageable chronic condition when treated properly and that PLHIV can live healthy, productive lives.

Improved perception among adolescents is expected to influence their social behavior. Adolescents who possess accurate knowledge and positive perceptions are more likely to show supportive attitudes toward PLHIV, reject discriminatory behaviors, and promote inclusive social environments. This shift in perception is crucial in reducing social exclusion and creating a supportive atmosphere for individuals affected by HIV/AIDS.

Furthermore, adolescents with positive perceptions are more likely to adopt preventive behaviors, seek accurate information, and encourage peers to engage in healthy practices.

From a public health perspective, early intervention through school-based education contributes to long-term HIV prevention. Adolescents who are well-informed are more prepared to make responsible decisions regarding sexual health and are more likely to access preventive services such as voluntary counseling and testing (VCT). Education also empowers adolescents to critically evaluate misinformation circulating on social media, which is a significant source of health-related misconceptions among young people.

In addition, the role of educators and healthcare professionals is essential in reinforcing the messages delivered through leaflets. Interactive discussions, question-and-answer sessions, and reflective activities can enhance students' engagement and deepen their understanding. Collaboration between schools and local health institutions, such as primary health care centers, ensures that educational interventions are aligned with current public health policies and local epidemiological conditions.

The findings from this community service initiative underscore the importance of combining educational media with supportive learning environments. While leaflets serve as an entry point for knowledge dissemination, sustained behavior change requires continuous reinforcement through school curricula, peer education programs, and parental involvement. Engaging parents and caregivers in HIV/AIDS education can further strengthen adolescents' understanding and foster open communication about sexual and reproductive health topics at home.

Moreover, integrating digital elements such as QR codes on leaflets that link to credible online resources can bridge the gap between traditional and digital education methods. This hybrid approach may enhance adolescents' interest and accessibility to reliable information, thereby maximizing the impact of health education interventions.

In conclusion, leaflet-based education is an effective and practical strategy to improve adolescents' perceptions of HIV/AIDS when implemented thoughtfully and supported by interactive educational activities. Improving adolescents' knowledge and perceptions is a critical step toward reducing stigma, promoting preventive behaviors, and ultimately contributing to the control of HIV/AIDS transmission. Schools, particularly health vocational schools, should be continuously empowered as key partners in public health education, ensuring that future generations are equipped with the knowledge, attitudes, and values necessary to address HIV/AIDS responsibly and compassionately.

2. Research Methods

This study employed a quantitative research approach. The research utilized a pre-experimental design with a one-group pretest–posttest design, in which measurements were conducted before and after the administration of leaflet-based educational media. The study was conducted at Samarinda Health Vocational School and took place on November 28, 2025. The study population consisted of 22 eleventh-grade students from the Medical Laboratory Technology program, and the entire population was included as the sample using a total sampling technique, resulting in a sample size of 22 participants. Data were collected using a structured questionnaire as the research instrument. The data were then analyzed using bivariate analysis to identify differences in scores before and after the educational intervention. The analysis process was carried out in two stages: first, data normality testing was conducted based on the Asymp. Sig. value; subsequently, the Wilcoxon signed-rank test was applied to examine the differences between pretest and posttest scores.

3. Results and Discussions

Human Immunodeficiency Virus (HIV) attacks and reduces the ability of the human immune system, while Acquired Immunodeficiency Syndrome (AIDS) marks the most advanced stage of the disease's progression. (WHO, 2023). The provision of reproductive health education plays an important role in changing potentially harmful adolescent sexual behavior. The main target of this program is high school students. This health education can be delivered through counseling or special programs within the school curriculum.

Tabel 1. *Deskriptiv Descriptive Statistics*

N	Minimum	Maximum	Mean	Std. Deviation
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<i>Pretest</i>	22	6.00	10.00	7.9091	1.44450
<i>Posttest</i>	22	7.00	12.00	10.3636	1.70561
Valid N (listwise)	22				

The results of this study indicate that providing health education through leaflet media has a significant effect on improving adolescents' attitudes and perceptions regarding HIV/AIDS prevention. This increase is seen through descriptive and inferential analysis results that illustrate the change in scores between the pretest and posttest. In the stage before education was given, the average pretest score of 7.91 showed that most students still had a level of knowledge that was in the sufficient category. This could be due to the fact that information about HIV/AIDS has not been intensively delivered in the school environment or the lack of easily accessible educational media for adolescents. This condition is in line with reports from several previous studies which stated that adolescents' knowledge of HIV/AIDS tends to vary and is often influenced by limited information exposure. After the material was presented, the average score increased to 10.36. This increase shows that education through leaflets is able to provide additional understanding for students and improve their perceptions regarding HIV/AIDS prevention measures. Statistically, this change is also supported by the standard deviation results which show a shift in the distribution pattern of values towards a higher category. In other words, most students experienced a consistent increase in scores after receiving education. This increase shows that the material presented through leaflets is not only easy to understand but also able to attract participants' attention, so that the information provided can be absorbed more optimally

Tabel 2. *Tests of Normality*

	<i>Kolmogorov-Smirnov^a</i>			<i>Shapiro-Wilk</i>		
	<i>Statistic</i>	<i>Df</i>	<i>Sig.</i>	<i>Statistic</i>	<i>Df</i>	<i>Sig.</i>
<i>Pretest</i>	.145	22	.200*	.894	22	.023
<i>Posttest</i>	.282	22	.000	.809	22	.001
*. <i>This is a lower bound of the true significance.</i>						

a. *Lilliefors Significance Correction*

The results of the Shapiro–Wilk normality test show that the distribution of pretest and posttest data does not follow a normal distribution, with significance values of 0.023 and 0.001 respectively ($p < 0.05$). This indicates that the data does not meet the normality assumption required for the use of parametric statistical tests. Based on these conditions, the analysis of score differences before and after the intervention was performed using the nonparametric Wilcoxon Signed Rank Test. The selection of the Wilcoxon test is considered appropriate because the data is paired, comes from the same respondents, and does not require a normal data distribution.

Tabel 3. Uji Wilxocon

Ranks		N	Mean Rank	Sum of Ranks
<i>Posttest – Pretest</i>	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	20 ^b	10.50	210.00
	Ties	2 ^c		
	Total	22		
<i>a. Posttest < Pretest</i>				
<i>b. Posttest > Pretest</i>				
<i>c. Posttest = Pretest</i>				

The analysis results in the Ranks table show that no participants experienced a decrease in scores between the pretest and posttest (negative ranks = 0), while most participants, namely 20 people, experienced an increase in scores after being given educational intervention through leaflet media. In addition, 2 participants did not experience any change in scores. This finding descriptively shows that the intervention given was well received by almost all participants and was able to encourage positive changes in attitudes and perceptions related to HIV/AIDS prevention. A mean rank value of 10.50 in the positive ranks group indicates that the tendency of the observed difference is consistently towards an increase in posttest scores compared to pretest scores. This indicates that the improvement experienced by participants did not only occur individually, but was relatively evenly distributed among most respondents. The absence of negative ranks also shows that the intervention did not cause a decrease in participants' understanding or attitudes.

Tabel 4. *Test Statistics^a*

<i>Posttest – Pretest</i>	
Z	-3.944 ^b
Asymp. Sig. (2-tailed)	.000
<i>a. Wilcoxon Signed Ranks Test</i>	
<i>b. Based on negative ranks.</i>	

The results of the Wilcoxon Signed Rank Test showed a Z value of -3.944 with a significance level of $p = 0.000$ ($p < 0.05$), indicating a significant difference between the pretest and posttest scores for participants' attitudes and perceptions. This finding confirms that the educational intervention provided was able to produce significant changes in adolescents' attitudes and perceptions regarding HIV/AIDS prevention. The dominance of respondents in the positive ranks category indicates that most participants experienced an increase in scores after the intervention, so the direction of the difference was positive, meaning posttest scores were higher than pretest scores. The increase shows that providing education using leaflet media is effective in improving understanding and forming more positive attitudes towards efforts to prevent HIV/AIDS transmission. The results of this study support behavioral theory, which states that there is a relationship between attitudes and perceptions. An individual's level of knowledge plays an important role in influencing decision-making for action, as it forms the cognitive basis for behavior. Therefore, the higher a person's knowledge, the greater the chance that individual has to make efforts to prevent HIV/AIDS transmission (El Ansari et al., 2023).

Leaflets as educational media have several advantages that support their effectiveness. Leaflets can present information concisely, clearly, and in a structured manner, making it easier for students to understand the material, especially on health topics that are relatively complex. Information displayed through a combination of text and simple images can strengthen understanding and increase students' interest in reading. Leaflets are portable, allowing students to reread information at any time. This ability plays an important role in the learning process because it allows students to improve their understanding independently. Leaflets also provide a visual learning experience that is suitable for most adolescents who are more responsive to simple and engaging media. From a health promotion perspective, the results of this study indicate that education using leaflet media has the potential for broader application in school health programs. Adolescent groups are a population vulnerable to the risk of HIV/AIDS transmission, influenced by limited access to adequate information and surrounding environmental factors. Therefore, providing education that is accurate and easily understood is very important. Leaflets are a relatively inexpensive, easy-to-distribute medium that does not require high technology, so they can be implemented even in schools with limited resources. The results of this study make an important contribution to strengthening the understanding that leaflet media can be used as an effective and efficient health promotion tool. The success of this health promotion is expected to serve as a basis for educational institutions and health workers to develop similar educational programs on other health topics to increase awareness and healthy living behaviors among adolescents.

Figure. 1 Activity Documentation





Figure. 2 Material Presentation Documentation

4. Conclusion

Health education using leaflet media has been demonstrated to be an effective strategy for improving adolescents' attitudes and perceptions toward HIV/AIDS prevention. The effectiveness of this intervention is evidenced by the significant increase in perception and attitude scores observed between the pretest and posttest measurements. Statistical analysis using the Wilcoxon Signed Rank Test further confirmed a meaningful difference before and after the educational intervention, indicating that the changes in students' perceptions were not due to chance but were directly influenced by the use of leaflet-based health education. One of the primary strengths of leaflet media lies in its ability to present essential health information in a concise, structured, and visually engaging format. Adolescents often respond more positively to educational materials that are simple, direct, and easy to comprehend. Leaflets allow complex topics such as HIV/AIDS transmission, prevention strategies, and risk behaviors to be broken down into key points that can be quickly understood without overwhelming the reader. This clarity helps reduce misconceptions and fosters a more accurate understanding of HIV/AIDS among students. In addition, leaflet media offer practical advantages compared to other educational approaches. Unlike oral presentations or one-time counseling sessions, leaflets can be retained and re-accessed by students at any time, reinforcing learning beyond the initial educational session. This repeated exposure plays an important role in strengthening knowledge retention and supporting gradual attitude change. The portability and low production cost of leaflets also make them a sustainable and scalable option for school-based health promotion programs, particularly in resource-limited settings. Furthermore, the positive outcomes observed in this intervention suggest that leaflet-based education not only enhances cognitive understanding but also influences adolescents' perceptions and attitudes toward preventive behaviors. Improved attitudes are a critical precursor to behavior change, especially in the context of HIV/AIDS prevention, where stigma, fear, and misinformation often hinder effective prevention efforts. Based on these findings, leaflet media are worthy of recommendation as an effective health promotion tool within school health programs. Schools provide a strategic setting for early intervention, allowing health education to reach adolescents during a formative stage of attitude development. Moreover, the adaptable nature of leaflet media offers strong potential for expansion to other health topics, such as reproductive health, substance abuse prevention, mental health awareness, and nutrition education. By integrating creative, age-appropriate, and evidence-based leaflet materials into school health initiatives, educators and health professionals can contribute to sustainable improvements in adolescent health awareness and preventive behaviors.

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