



The Effectiveness of Multimedia-Based Health Education on Drug Knowledge in Adolescents at SMA Bina Negara Arjasari, West Java, Indonesia

Liliek Fauziah^{1*}, Widyadari Prasetyaningrum², Rika Iswara³

^{1,2,3} Faculty of Nursing, Immanuel Institute of Health

ABSTRACT

Background: The prevalence of drug abuse in Indonesia reaches approximately 2.40% of the population aged 15–64, or approximately 4.5 million people. Of this number, approximately 2.3 million are school and college students. This high figure is due to the limited access and exposure to information about the dangers of drugs among adolescents. Due to the limited information available to students, education is needed to increase adolescent knowledge about drugs. Providing health education is an important effort in preventing drug abuse from an early age.

Objective: To determine the effectiveness of providing health education on the level of knowledge of adolescents about drugs at MA Bina Negara Arjasari, West Java, Indonesia

Method: Quantitative research with Quasy Experimental Design One Group Pretest-Posttest Design. The sample technique used total sampling technique with 89 students in grades X and XI. The instruments used in this study were video, power point and knowledge questionnaire with 20 questions. Data analysis used univariate analysis, namely frequency distribution and bivariate analysis using Wilcoxon Signed Rank Test.

Result: The results of the study showed that the pre-test scores of most respondents had a low level of knowledge (66.3%) and the post-test scores of almost all respondents had a good level of knowledge (93.9%). The results of the Wilcoxon Signed Rank Test obtained a p-value of $0.000 < 0.05$, which means that there is an effect of health education on preventing drug abuse on the level of knowledge of adolescents at MA Bina Negara Arjasari, West Java, Indonesia.

Conclusion: The results of this study support the importance of health education programs in schools as a primary strategy in preventing drug abuse among adolescents. Schools are advised to regularly hold interactive and engaging educational programs to equip adolescents with sufficient knowledge to recognize the dangers of drugs and adopt effective preventive measures.

KEYWORDS: Adolescents, Drugs, Health education, Level of knowledge.

INTRODUCTION

Adolescence is a critical stage in development that connects childhood and adulthood. During this period, authors emphasize changes, breaks, and significant moments that can profoundly influence how a teenager's life unfolds. Adolescence is defined as a crucial period in psychosocial development and a specific span of years. (Curtis, 2015) The social changes that occur during adolescence are characterized by increased interaction with peers. In addition to considering how they fit into the wider social world, they actively explore their identity and the meaning of life. Changes in the brain, nervous system, and biology also occur throughout this transformation (Morris et al., 2024).

The formation of a cohesive identity is one of the primary developmental goals of adolescence. During adolescence and early adulthood, identity development is characterized by adequate stability and systematic growth. The process of identity growth and modification can be influenced by life events, transitions, and the accumulation of concrete experiences. Through positive storytelling, healthy family and friendship bonds are embedded, leading to optimal identity development (Branje et al., 2021). Drug abuse in adolescents can be caused by various circumstances and can ultimately lead to dependence. The following are some elements that contribute to drug abuse: personality, family, environment, education, social community, and vulnerable demographic characteristics (Badan Narkotika Nasional, 2020). Furthermore, there is a significant impact of curiosity about the taste of these drugs (Dewi & Arsila, 2022).



Narcotics themselves are defined as drugs, natural or synthetic chemicals (liquids), or plant parts that have an effect on the central nervous system and, if used regularly, can cause physical and mental dependence (addiction), tolerance, and the need for higher doses (Shkuta et al., 2023). According to data from the United Nations Office on Drugs and Crime (UNODC), there are 284 million drug users aged 15-64 worldwide, this figure is equivalent to 5.6% of the global population (UNDOC, 2022). The National Narcotics Agency (BNN) together with the Indonesian Institute of Sciences (LIPI) in 2019 conducted research in 34 provinces in Indonesia. The results showed that the average age of first drug abuse is 19.2 years, which is included in the adolescent age category. The same survey also found that the prevalence of narcotics, psychotropic, and other addictive substance abuse reached 2.40% of the population aged 15–64, or approximately 4.5 million people. Of this number, approximately 2.3 million were schoolchildren (Badan Narkotika Nasional, 2022).

In Indonesia, drug use rates and their associated impacts continue to rise. This problem affects not only individuals but also all levels of society due to its serious, organized, and global nature. Drug abuse among adolescents and students is a complex issue that requires collaboration between various parties, including the government, authorities, health workers, the media, the community, and even families and adolescents themselves. This challenge is compounded by the fact that a lack of awareness or knowledge about drugs can make individuals more vulnerable to being targeted by dealers (Rusdiyanto et al., 2024)

Lack of information and understanding about the dangers of drug abuse puts adolescents at risk of becoming prime targets for drug dealers. Several institutions must be involved in this regard, given the wide-ranging negative consequences of drug abuse (Mardin et al., 2022). (Ismail et al., 2024) states that adolescents living in “drug trafficking centers” are more vulnerable to substance use. Adolescents exposed to drug dealers are up to 46 times more likely to start using drugs themselves. This suggests that adolescents are easy targets for drug dealers due to a lack of awareness and environmental protection. According to research, knowledge is a cognitive aspect that has been recognized as playing a significant role in drug use, particularly in terms of a lack of understanding about substances (Nanda et al., 2023). Through drug-related health education, children can access and understand resources and information about drug use prevention. With the help of this knowledge, students can make their own decisions about refraining from drug use (Lin et al., 2021).

METHODS

This research is a quantitative research using the Quasy Experimental Design method (One Group Pretest-Posttest Design). The population consisted of 38 class X students and 51 class XI students at MA Bina Negara Arjasari, with a total of 89 respondents. This study uses total sampling technique. The instruments used were knowledge questionnaires, animated videos and power point material on drugs. The research procedure involved three stages, pre-test, intervention, and post-test. The data analysis used was bivariate analysis using the Wilcoxon Signed Rank Test. This research has received ethical permission with number No.078/KEPK/IKI/E2/VI/2025 from the KEPK of Immanuel Health Institution Bandung on June 23, 2025.

RESULTS

Table 1 Distribution of respondents based age and gender (n:89)

Category age and gender	Frequency	percentage
15 year	8	9.0%
16 year	44	49.4%
17 year	36	40.4%
18 year	1	1.1%
Male	48	53.9%
Female	41	46.1%

Based on the data from table 1 below, it shows that almost half of the respondents in this study (49.4%) were 16 years old and most of the respondents in this study, 48 people (53.9%) were male.



Table 2 Distribution of Students' Knowledge Level Before Health Education

Knowledge	<i>f</i>	%
Not Enough	59	66.3%
Enough	11	12.4%
Good	19	21.3%
Total	89	100.0%

Table 2 shows that the level of knowledge of MA Bina Negara Arjasari students before providing health education on preventing drug abuse, the majority of students had a low level of knowledge, namely 59 people (66.3%).

Table 3 Distribution of Students' Knowledge Level After Health Education

Knowledge	<i>f</i>	%
Less	2	2.2%
Enough	4	4.5%
Good	83	93.3%
Total	89	100.0%

Table 3 shows the results of an increase in the level of knowledge about preventing drug abuse among MA Bina Negara Arjasari students after providing health education, namely that almost all respondents had good knowledge with a total of 83 people (93.3%).

Bivariate Analysis

Table 4 Analysis of the Influence of Health Education on Drug Abuse Prevention on the Level of Knowledge of Adolescents at MA Bina Negara Arjasari

Uji Wilcoxon					
Level of Knowledge					
Category	<i>Pretest</i>		<i>Posttest</i>		<i>P-Value</i>
	<i>F</i>	%	<i>f</i>	%	
Good	19	21.3%	83	93.3%	0.000
Enough	11	12.4%	4	4.5%	
Not enough	59	66.3%	2	2.2%	
Total	89	100.0%	89	100.0%	

Table 4 shows that the provision of health education interventions on the level of knowledge of adolescents has a significance value of p-value 0.000 ($p < 0.05$) which means that H_0 is rejected and H_a is accepted, so it can be concluded that the provision of health education interventions has a significant effect on the level of knowledge of students regarding the prevention of drug abuse at MA Bina Negara Arjasari

DISCUSSION

The results of the Wilcoxon Signed Rank Test showed that in the pretest stage, most respondents (66.3%) were in the poor knowledge category. After being given health education, the posttest results showed a significant increase, where almost all respondents (93.3%) were in the good knowledge category regarding drug abuse prevention. The statistical test results showed a p-value of 0.000 (< 0.05), which means that H_a is accepted and H_0 is rejected. This indicates a significant difference in the level of knowledge before and after being given health education. Thus, it can be concluded that health education plays a role in increasing the knowledge of adolescents at MA Bina Negara Arjasari, Bandung Regency regarding drug abuse prevention.

PowerPoint was used as a health education tool in this study because it can convey information visually and structured in an engaging way, and can combine various elements, including text, sound, and images, to help participants understand the material. On the other hand, animated videos were also chosen because of their ability to convey content authentically and dynamically through a



combination of sound and images, which increases learning motivation and makes it easier for people to absorb knowledge while simultaneously engaging their visual and auditory senses.

The results of this study are in line with the findings of (Novinda et al., 2025) entitled The Effect of Health Education About the Dangers of Drug Abuse on Knowledge in High School Students. The study obtained a p-value of 0.000, indicating a very significant change in knowledge, thus proving the effectiveness of health education carried out in a structured and intensive manner. The study also emphasized the importance of routine counseling as a continuous effort to increase adolescent awareness about the dangers of drugs, while also encouraging participation in positive activities, such as sports, to prevent drug abuse.

The change in knowledge following health education in this study is a dynamic process that occurs through learning and interaction between individuals and the information provided. In theory (Pakpahan et al., 2021), health education aims to foster awareness and deepen understanding within individuals, thereby influencing their attitudes and behaviors. According to (Rakhmawati et al., 2021), this process of change is not merely a passive transfer of information but involves internal awareness and active reflection, leading individuals to understand the impact or risks of a behavior, resulting in changes in their thinking and behavior.

This study found that although there was a significant increase in adolescents' knowledge regarding drug abuse prevention after health education, a small proportion of students still had insufficient (2.2%) and sufficient (4.5%) knowledge. This indicates that the education provided has not been fully successful in reaching all respondents optimally. Several factors can influence these results. First, differences in education levels and the ability to absorb information among individuals are obstacles to equitable knowledge change. Health education is a process of behavioral change that involves awareness and active acceptance from individuals, so this process requires time and repetition for the message to be fully absorbed and applied (Rakhmawati et al., 2021) Second, the media and methods used to deliver health education, even though they are visual and interactive, such as PowerPoint presentations and animated videos, still have limitations in addressing all learning styles and individual cognitive needs of students. Therefore, students with different learning styles or those requiring additional support may not fully grasp the material, resulting in low or moderate levels of knowledge.

Providing health education is a crucial component of drug prevention efforts. It needs to be conducted routinely, structured, and tailored to the characteristics of participants to ensure its positive impact is felt broadly and sustainably. A varied and inclusive educational approach is highly recommended to meet the varying cognitive needs and learning styles of adolescents.

CONCLUSION

Based on the results of a study conducted in June 2025 on 89 students at MA Bina Negara Arjasari in Bandung Regency, it can be concluded that health education regarding drug abuse prevention has a significant effect on increasing adolescent knowledge. Before education, most respondents had a low level of knowledge (66.3%), but after education, almost all respondents showed a significant increase in knowledge (93.3%). Thus, health education has proven effective in increasing adolescent understanding regarding drug abuse prevention

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