



Evaluating the effectiveness of video-assisted learning modules in enhancing knowledge and attitudes toward substance abuse prevention among secondary school students

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Abstract

Background: Adolescent substance abuse continues to be a critical public health issue, with long-term impacts on individual well-being and societal health. Traditional educational methods, including lectures and workshops, often fail to engage adolescents effectively in substance abuse prevention programs. The use of video-assisted learning has shown promise in health education, but its application to substance abuse prevention remains underexplored. This study aims to assess the effectiveness of a video-assisted learning module in enhancing knowledge and attitudes toward substance abuse prevention among secondary school students.

Methods: A quasi-experimental pre-test and post-test design was used to evaluate the impact of the video-assisted teaching module. The study involved 320 secondary school students (ages 14-18) from selected schools in East Tambaram. Pre-test and post-test questionnaires assessed students' knowledge and attitudes regarding substance abuse prevention. Descriptive and inferential statistics, including paired t-tests, were used to analyze the data.

Results: The findings indicated significant improvements in both knowledge and attitudes toward substance abuse prevention after the intervention. A majority of participants demonstrated an increase in knowledge, with 40.6% of students achieving scores in the highest range post-test, compared to only 3.1% pre-test. Attitudes also shifted positively, with a 37.5% increase in students adopting a more positive stance toward substance abuse prevention.

Conclusions: The video-assisted learning module was highly effective in enhancing both knowledge and attitudes toward substance abuse prevention among adolescents. These results suggest that multimedia-based interventions may be a valuable addition to traditional prevention strategies, potentially reaching a broader adolescent audience and promoting long-term behavioral change.

Keywords: Substance abuse prevention, video-assisted learning, adolescents, health education, knowledge enhancement, attitude change

Introduction

Substance abuse among adolescents remains a growing global concern, with significant consequences for both individual health and societal well-being. According to the World Health Organization (WHO) (2015) [5], adolescence is a critical developmental stage where the risk of substance initiation is high. Data shows a disturbing increase in the use of alcohol, tobacco, and illicit drugs across various regions, with adolescents in low-income communities facing heightened vulnerabilities (Egbochuku *et al.*, 2009) [6]. In particular, substances like alcohol and tobacco are prevalent among youth, while the use of stimulants is emerging as a significant concern in university settings (Murthy *et al.*, 2016) [7]. Early exposure to these substances can have lasting impacts, including addiction, mental health disorders, and impaired cognitive and emotional development.

Current approaches to preventing adolescent substance abuse predominantly rely on traditional educational methods, such as classroom-based programs, counseling, and community initiatives. However, these methods often face significant limitations. Traditional programs tend to lack engagement and fail to reach the broader adolescent population, especially those in higher-risk groups (Sharma & Chaudhary, 2014) [4]. Additionally, many of these programs do not adequately address the diverse cultural contexts and varying substance preferences of adolescents, limiting their effectiveness in fostering long-term behavior

change. Research highlights that adolescents are more likely to respond positively to interventions that are interactive and personally engaging (Oliha, 2014) [3].

Despite these challenges, digital learning tools present a promising alternative for substance abuse prevention. Video-assisted learning modules, in particular, have shown significant promise in enhancing engagement and improving knowledge retention in educational settings. Digital platforms, such as video-based content, have the potential to make learning more engaging and accessible, particularly for digital-native adolescents. Csikszentmihalyi (2013) [1] suggests that interactive and multimedia learning can enhance intrinsic motivation, making the learning experience more compelling. Research has also shown that digital tools can bridge the gap left by traditional programs, offering students an innovative, self-paced learning experience.

However, while digital learning tools have been successfully applied in various educational contexts, their specific use in substance abuse prevention remains underexplored. Although there is some evidence supporting the effectiveness of digital health interventions in areas like sexual health education and mental health awareness, less focus has been given to substance abuse prevention, especially in secondary schools. This represents a research gap, as most interventions have been traditional, and few studies have examined the role of multimedia learning tools in this context (Jaworska & MacQueen, 2015) [2].

This study aims to address this gap by exploring the use of video-assisted learning modules to enhance knowledge and attitudes toward substance abuse prevention among adolescents. Given the increasing accessibility and pervasiveness of digital media in adolescent life, integrating such technologies into prevention strategies holds the potential to reach a larger audience and promote more sustainable behavior change.

Problem Statement and Rationale

Adolescent substance abuse remains a critical global issue, with serious consequences for individual health, educational attainment, and societal well-being. According to Moss *et al.* (2018) [12], the prevalence of substance use among adolescents varies by region, but the harmful effects are universally concerning. In India, studies have highlighted that drug abuse among youth is closely linked to juvenile crimes and has a lasting impact on the physical and psychological development of adolescents (Sharma, 2017) [15, 17]. Furthermore, research indicates that adolescents who engage in substance use are at a higher risk for mental health disorders, addiction, and poor academic performance (Dhawan *et al.*, 2013) [11].

Traditional prevention methods, such as lectures and workshops, are still widely used, but they often fail to engage adolescents effectively. For instance, role play interventions have shown some success in improving adolescents' knowledge of substance abuse (Nomimol *et al.*, 2015) [13], but such methods may still not fully capture the interest of digital-native adolescents. This limitation underscores the need for more interactive and engaging educational methods. Video-assisted learning has been identified as a promising alternative, combining visual and auditory elements to enhance learning outcomes. Benitto (2013) [9] found that video-assisted teaching modules significantly improved adolescents' understanding of the effects of substance abuse and the importance of preventive measures.

However, while video-assisted learning has been successfully used in various educational contexts, its specific application to substance abuse prevention among adolescents remains underexplored. Nongmeikapam *et al.* (2019) [14] demonstrated the effectiveness of video-assisted teaching in undergraduate psychiatry education, but few studies have focused on its use in the context of adolescent substance abuse education. This gap in the literature provides the rationale for this study, which aims to explore the effectiveness of video-assisted learning modules in enhancing adolescents' knowledge and attitudes toward substance abuse prevention.

Review of Related Studies

Digital Interventions for Health Education in Schools

Several studies have examined the effectiveness of digital interventions for health education, with promising results. Srivastav & Karsayal (2016) [24] conducted a study on the effectiveness of video-assisted teaching for educating adolescents about the ill effects of substance abuse and found significant improvements in knowledge and attitudes. Similarly, Fayombo (2011) [19] explored the relationship between academic variables and attitudes toward substance abuse, showing the importance of addressing both knowledge and attitudes in preventive interventions. Snehaltha *et al.* (2018) [25] highlighted how structured

teaching programs, especially those delivered through digital tools, can positively impact knowledge about the harmful effects of alcohol use among high school children. The effectiveness of video-assisted learning in improving knowledge and attitudes is further supported by Moshki *et al.* (2014) [23], who demonstrated that multimedia interventions improved preventive behaviors among university students. Moreover, Nongmeikapam *et al.* (2019) [14] compared video-assisted teaching with traditional lectures in undergraduate psychiatry education, concluding that video-based teaching was more effective in engaging students and improving their understanding. However, despite these positive findings, there is a lack of evidence specifically examining the impact of video-assisted learning modules on substance abuse prevention in secondary school settings, making this study highly relevant.

Gaps in Literature Related to Substance Abuse Prevention

While studies have successfully applied digital learning tools to various health topics, the literature on digital interventions for substance abuse prevention is still sparse. Most existing research focuses on traditional methods such as role play and life skills training (Jarali & Ogoncho, 2016; Moshki *et al.*, 2014) [22, 23], with limited attention given to multimedia-based approaches. Additionally, although some studies like Daniel *et al.* (2017) [18] and Sharma & Chaudhary (2016) [16] explore substance abuse patterns, they fail to investigate video-assisted learning as an intervention. This gap is significant, as adolescents are increasingly exposed to digital media, which could be leveraged as a potent tool for health education.

Moreover, previous studies on digital interventions in substance abuse prevention often focus on adults or university students, leaving a gap in research on the impact of digital interventions on adolescents in school settings. This study seeks to fill this gap by exploring how video-assisted learning modules can enhance knowledge and attitudes toward substance abuse prevention among adolescents in secondary schools.

Research Methodology

This section outlines the research design, participants, data collection methods, intervention, and data analysis techniques used in this study.

Research Design

This study employed a quasi-experimental design with a pre-test and post-test approach to measure changes in secondary school students' knowledge and attitudes regarding substance abuse prevention. The pre-test assessed baseline levels of knowledge and attitudes before the intervention, while the post-test measured any changes after exposure to the intervention.

Large sample size of 320 students was chosen to ensure sufficient statistical power and mitigate the lack of randomization. The absence of a control group was addressed by ensuring the sample was representative of the student population in East Tambaram, relying on a robust sample size to detect meaningful changes in knowledge and attitudes. The quasi-experimental design was appropriate because it measured the intervention's effect on a real-world population in an educational setting while accommodating practical limitations that made randomization difficult.

Sample Size and Participants

A total of 320 secondary school students (both male and female), aged 14-18 years, participated in the study. The sample included students from both public and private schools in East Tambaram, ensuring diversity in educational background.

Inclusion Criteria

- **Age:** 14-18 years.
- **Enrollment:** Enrolled in selected secondary schools in East Tambaram.
- **No Prior Substance Abuse Education:** Only students who had not received formal education or training on substance abuse prevention were included. This ensured that the knowledge and attitudes measured were those gained through the intervention rather than previous education.

The sample size of 320 was determined to ensure statistical power and was in line with prior studies of similar interventions in adolescent populations. A power analysis indicated that this sample size was sufficient to detect statistically significant differences in knowledge and attitudes with a high degree of confidence.

Data Collection Instruments

The primary data collection tool was pre-test and post-test questionnaires, designed to assess students' knowledge and attitudes regarding substance abuse prevention. The questionnaires included both Likert scale questions and multiple-choice items measuring:

- **Knowledge:** Understanding of the risks, consequences, and prevention of substance abuse.
- **Attitudes:** Attitudes toward substance abuse, including beliefs about its impact on personal health and social relationships.

Reliability and Validity

- Pilot testing was conducted with a small sample to test clarity and consistency.
- Reliability was confirmed using Cronbach's Alpha to assess internal consistency.

Additionally, demographic data (age, gender, educational background) were collected to explore how these variables may have influenced changes in knowledge and attitudes, allowing for a more nuanced analysis of the results.

Data Analysis Techniques

The data collected from the pre-test and post-test questionnaires were analyzed using a combination of descriptive and inferential statistics to determine the effectiveness of the intervention.

Descriptive Statistics

- Mean and Standard Deviation were used to summarize students' knowledge and attitudes before and after the intervention.

Inferential Statistics

- Paired t-tests were used to evaluate differences between pre-test and post-test scores in knowledge and attitudes.
- Spearman's correlation was used to assess the relationship between demographic variables (age,

gender, educational background) and changes in knowledge/attitudes.

All statistical analyses were performed using SPSS software, with a significance level set at $p < 0.05$. The handling of missing data and outliers was addressed by using multiple imputation for missing values and excluding extreme outliers from the analysis.

Result and Discussion

The findings of the study demonstrate a significant improvement in both knowledge and attitudes toward substance abuse prevention following the implementation of the video-assisted learning module among secondary school students. The demographic profile confirmed a balanced and diverse sample, while expert validation established the appropriateness and relevance of the intervention content. Multiple sources of substance-related information, primarily peers, family, and television, were identified, offering contextual insight into adolescents' exposure and awareness. Post-intervention results revealed substantial gains in knowledge levels and a marked positive shift in attitudes, with statistical analysis confirming the significance of these changes. The following tables present the detailed results.

Demographic Characteristics

A total of 320 secondary school students participated in the study. There was an equal distribution of males (50%) and females (50%). Most participants (56.3%) were between 14 and 16 years of age, while 43.7% were between 17 and 18 years old. Additionally, 75.6% reported having pocket money, and 17.5% engaged in part-time work.

Table 1: Demographic Characteristics of Participants (N = 320)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	160	50.0
	Female	160	50.0
Age Group (in years)	14-16	180	56.3
	17-18	140	43.7
Pocket Money	Yes	242	75.6
	No	78	24.4
Part-Time Job Status	Yes	56	17.5
	No	264	82.5

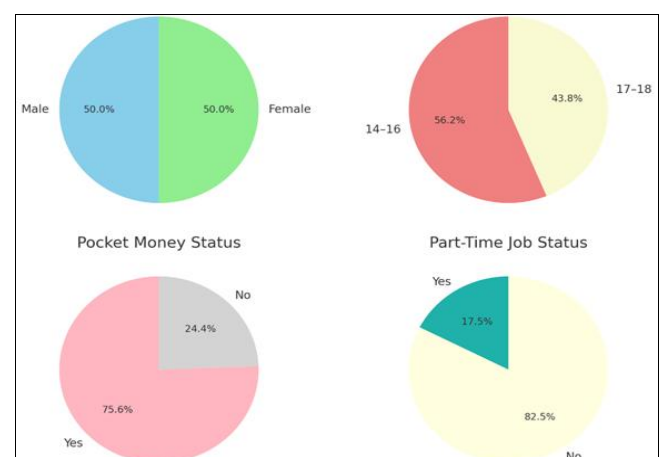


Fig 1: Demographic Characteristics of Study Participants (N = 320)

Interpretation

The demographic balance enhances the generalizability of the findings, and socioeconomic indicators such as pocket money may influence susceptibility to substance exposure.

Content Validation of the Intervention

Experts reported strong agreement on the relevance, adequacy, and organization of the video module.

Table 2: Content Validity Index of the Video-Assisted Teaching Module

Criteria	CVI
Relevance	1.00
Adequacy	1.00
Logical sequence	1.00
Language simplicity	0.86

Interpretation

The high CVI confirms that the intervention content was educationally appropriate and aligned with learning objectives. Minor adjustments to language could enhance accessibility for all learners.

Sources of Information on Substance Use

Participants were allowed to provide multiple responses. Peer groups, followed by family and television, were the most common sources of substance-related information.

Table 3: Sources of Information on Substance Use Among Adolescents (Multiple Responses Allowed)

Source of Information	Frequency	Percentage
Peer group	102	31.8
Family	95	29.7
Television	91	28.4
Internet	40	12.5
Radio	0	0.0
Newspapers	0	0.0

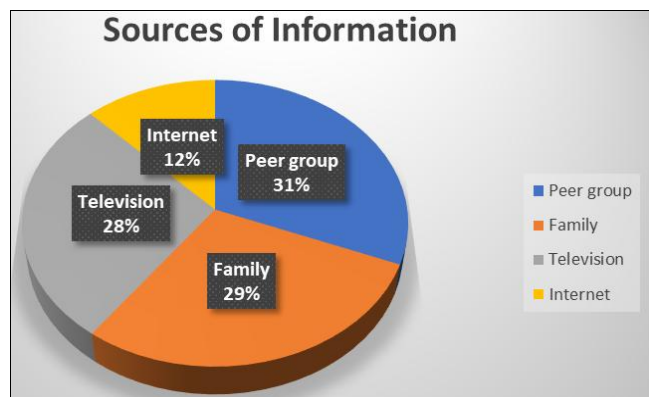


Fig 2: Sources of Information Regarding Substance Use among adolescents

Interpretation

Peer influence and family emerged as primary sources, indicating that both social environment and media exposure significantly shape awareness. Interventions may benefit from peer-based and parent-inclusive strategies.

Knowledge Levels Before and After the Intervention

Table 4: Pre-test and Post-test Knowledge Score Distribution (N = 320)

Knowledge Score Range	Pre-test n (%)	Post-test n (%)
0–20	50 (15.6)	0 (0.0)
21–40	100 (31.3)	20 (6.3)
41–60	120 (37.5)	50 (15.6)
61–80	40 (12.5)	120 (37.5)
81–100	10 (3.1)	130 (40.6)

Interpretation

There was a marked shift from lower to higher knowledge categories post-intervention. The increase in students scoring above 61% indicates substantial learning gains due to the video-assisted module.

Attitude Levels Before and After the Intervention

Table 5: Pre-test and Post-test Attitude Distribution (N = 320)

Attitude Category	Pre-test n (%)	Post-test n (%)
Positive	120 (37.5)	240 (75.0)
Neutral	140 (43.8)	60 (18.8)
Negative	60 (18.8)	20 (6.3)

Interpretation

Post-intervention attitudes reflect a strong shift toward prevention-oriented beliefs. The reduction in neutral and negative attitudes suggests increased awareness and behavioral readiness.

Statistical Significance of Attitude Change

Table 6: Mean, Mean Difference, and t-Test Results for Attitude Scores (N = 320)

Measure	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference	t	p
Attitude score	2.29 (0.72)	2.21 (0.78)	0.75	3.078	< .01

Interpretation

The significant t-value ($p < .01$) confirms that the intervention produced measurable improvement in attitudes. The reduction in mean attitude score suggests increased rejection of substance use.

Discussion

The results of this study demonstrate that video-assisted learning is an effective tool for enhancing adolescents' understanding and attitudes towards substance abuse prevention. These findings align with previous research, which has shown that multimedia interventions can significantly improve health-related knowledge and behavioral intentions (Nongmeikapam *et al.*, 2019) [14]. Notably, the shift in attitude from neutral or negative to positive highlights the potential of such interventions to not only educate but also reshape perceptions about substance use. The demographic characteristics of the participants, including an even gender distribution and a broad age range (14-18 years), further support the generalizability of these findings to similar student populations in other regions. The significant improvements observed in both knowledge and attitudes underscore the importance of interactive and engaging learning methods in tackling the pervasive issue of adolescent substance abuse.

However, the study also highlighted some areas for improvement, particularly in the language of the video module. While the content was validated by experts, a suggestion was made to simplify the language to ensure maximum accessibility, particularly for younger or less proficient students. Future studies may consider refining the language or testing different versions of the video to accommodate diverse learner needs.

Conclusion

The video-assisted teaching module proved to be a highly effective intervention for improving both the knowledge and attitudes of secondary school students regarding substance abuse prevention. Given the growing role of digital media in adolescents' lives, this approach holds great promise for public health initiatives aimed at preventing substance abuse. As digital tools continue to shape educational environments, integrating video-based learning modules into substance abuse prevention programs could help engage a larger and more diverse group of students. Future research should further explore the long-term effectiveness of such interventions and investigate additional factors such as social media influence and peer engagement in enhancing prevention efforts.

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