FMDB *Transactions on Sustainable Techno Learning*

Effectiveness of Video-Assisted Teaching on Substance Abuse Knowledge among Adolescents

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Abstract: Substance abuse is an increasingly serious public health problem in India, especially among adolescents who are more vulnerable to early exposure and addiction. Recent reports indicate a disturbing trend: a significant drop in the age of initiation. Reportedly, around 5,500 adolescents start using tobacco every day. This underscores the need for timely and effective educational interventions to raise awareness and prevent substance abuse at an early stage. The present study was conducted to assess the effectiveness of the Video Assisted Teaching Program (VATP) on knowledge of substance abuse among adolescents. The study employed a true experimental design with 60 adolescents selected from private colleges in Moradabad. The participants were equally divided into experimental (n=30) and control (n=30) groups by a simple random sampling technique (lottery method). The experimental group received VATP intervention, while the control group received no structured teaching program. The results showed a significant increase in the experimental group's knowledge level. After the intervention, the results showed that 63.3% of participants in the experimental group had profound knowledge (score range: 23–28), whereas none in the control group did. In the experimental group, the mean knowledge score significantly improved from 9.47 to 22.57. Statistical analysis showed the effectiveness of the intervention ($t = 16.062$, $p < 0.001$) and identified VATP as a highly effective strategy for enhancing adolescent awareness of substance abuse.

Keywords: Substance Abuse Knowledge; Video-Assisted Teaching; Health Education; College Students; Substance Abuse Prevention; Awareness Program; Health Promotion; Nursing Education.

Received on: 17/02/2025, **Revised on:** 20/04/2025, **Accepted on:** 23/06/2025, **Published on:** 05/06/2026

Journal Homepage: https://www.fmdbpub.com/user/journals/details/FTSTL

DOI: https://doi.org/10.69888/FTSTL.2026.000747

Cite as: T. Sharma, A. Singh, S. Vahist, R.K. Jha, M. Mokdad, M. R. Domakani, S. Adablanu, and A. A. Watfa, "Effectiveness of Video-Assisted Teaching on Substance Abuse Knowledge Among Adolescents," *FMDB Transactions on Sustainable Techno Learning*, vol. 4, no. 2, pp. 80–90, 2026.

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1. Introduction

Early use can disrupt normal brain development, resulting in permanent cognitive deficits and increased risk for addiction. People who start using substances before age 15 are about seven times more likely to develop a substance use disorder than people who begin use after age 21 [6]. This highlights the importance of early prevention and intervention efforts. Several risk factors contribute to substance abuse in teenagers. These include individual factors such as low self-esteem, poor coping skills, and mental health issues; family factors such as parental substance use, lack of supervision, and family conflict; and social factors such as peer pressure, media influence, and easy access to substances. Lack of involvement in constructive activities and academic difficulties also play a significant role. The problem has been compounded in recent years through the impact of digital media and social networking platforms that expose adolescents to content that may glamorize substance use [5]. These factors together create a complex environment that increases the likelihood of substance abuse among youth. Substance abuse is a complex problem, and there is a great deal of need for comprehensive and effective prevention. In this regard, education is crucial in equipping adolescents with the knowledge and skills to resist peer pressure and make informed decisions. Yet traditional health education approaches may not be sufficient to capture the attention and interest of today's digitally inclined youth [4]. This means that innovative and engaging teaching methods are required to transfer information and induce behavior change effectively. One such method is Video-Assisted Teaching Programs (VATP). These programs use multimedia technology to deliver educational content in visually and audibly engaging ways. VATP combines images, animations, narration, and real-life scenarios to make information easier to understand and remember [3].

It takes into account different learning styles and is particularly useful in conveying complex health concepts. The interactivity of video-based learning also promotes active participation and critical thinking among learners, rendering it a valuable tool in health education. VATP has many advantages in the context of substance abuse prevention. It provides standardized information dissemination, ensuring that all participants receive the same, accurate messages [1]. It also provides an opportunity to demonstrate real-life consequences of substance use and therefore creates a greater emotional impact. In addition, video-based programs are easily disseminated and accessible, making them a cost-effective, scalable solution for reaching large populations. The present study was conducted at selected private colleges in Moradabad, Uttar Pradesh, to assess the effectiveness of the Video Assisted Teaching Program on adolescents' knowledge of substance abuse [2]. Moradabad, like many other Indian cities, has experienced an increase in substance use among young people and is an appropriate location for this study. The study examines adolescents entering college, a critical transition and a group especially vulnerable to external influences. The study uses a true experimental design, the gold standard research methodology for establishing cause-and-effect relationships. Participants are randomly allocated to either the experimental or the control group, so differences in outcomes can be attributed to the intervention [11]. The application of a structured knowledge assessment tool provides for an objective measurement of changes in participants' understanding of substance abuse. The significance of this study is its potential to inform the development of effective educational interventions for substance abuse prevention [8].

The study provides useful insights into the efficacy of multimedia-based teaching methods by assessing the impact of VATP on adolescents' knowledge. The findings can be used to design and implement similar programs in educational institutions to improve the reach and impact of health education initiatives. The study also has wider implications for public health policy and practice. It highlights the need to incorporate innovative teaching methodologies into existing health education paradigms [9]. The findings can inform policymakers and educators to design evidence-based programs that address the specific needs of adolescents. The research further emphasizes the importance of collaboration among different stakeholders, including educational institutions, healthcare providers, and community organizations, to foster a conducive environment for substance abuse prevention. Substance Abuse in Adolescents. Substance abuse in adolescents is a growing and complex problem that needs to be addressed urgently [1]. With substance use becoming more common, starting at earlier ages, and leading to serious health consequences, the importance of effective prevention strategies is clear. Video-assisted teaching programs offer a promising approach to improve knowledge and facilitate positive behavioral change. Among VATPs, they can play a vital role in tackling substance abuse challenges and contribute to the overall well-being of young individuals through engaging, informative content. The current study intends to investigate this potential and provide evidence to support the use of innovative educational interventions in the fight against substance abuse among adolescents [12].

1.1. Problem Statement

A study to assess the effectiveness of a Video Assisted Teaching Program on knowledge regarding substance abuse and its consequences among adolescents in selected private colleges at Moradabad, Uttar Pradesh.

1.2. Objectives

- To assess the pre-test level of knowledge regarding substance abuse among adolescents in both experimental and control groups.
- To develop and implement the VATP on knowledge regarding substance abuse among adolescents.
- To assess the post-test level of knowledge regarding substance abuse among adolescents.
- To evaluate the effectiveness of the VATP in improving knowledge regarding substance abuse.
- To find out the association between pre-test and post-test scores with selected socio-demographic variables.

1.3. Conceptual Framework

The study was grounded in the General System Theory by Ludwig von Bertalanffy and applied in a modified form. This theory conceptualizes any living system as an open entity in continuous exchange with its environment. In the present study:

- **Input:** Pre-test assessment of adolescents' knowledge regarding substance abuse.
- **Throughput:** Administration of the Video Assisted Teaching Program.
- **Output:** Post-test assessment to measure change in knowledge levels.

2. Review of Literature

A systematic review of existing literature was conducted across two broad themes: (a) prevalence of substance use disorders, and (b) effectiveness of video-assisted teaching programs.

2.1. Prevalence of Substance Use Disorders

A descriptive-analytical study by Heydarabadi et al. [1] examined the prevalence and patterns of substance abuse among 604 dormitory students at Sahib Behest University of Medical Sciences. The study revealed that around 15.4% of students engaged in substance use, signifying a substantial public health issue in university residential settings. Significantly, about 58% of the participants reported that they had started their substance use in dormitories or nearby recreational areas such as parks. “The finding highlights the influence of living environments and peer interaction on substance use behaviors. The study mentioned that high rates of experimentation are attributed to easy access, social acceptance, and lack of strict supervision in such places. It also highlighted the need for targeted awareness programs and closer monitoring in student accommodation. A large-scale study on substance use disorders was done by Chavan et al. [2] on 2895 people from Punjab using a multistage random cluster sampling. The weighted prevalence of alcohol use disorder was found to be 7.9%. Other substance use disorders were 2.48%, and tobacco dependence was found to be 5.5%. Young adults between the ages of 18 and 25 had the highest prevalence, suggesting that young adulthood is a critical period for vulnerability to substance use. Socio-cultural factors, economic pressure, and peer pressure were also cited as contributing factors in the study.

Crucially, the findings underscored the importance of early intervention approaches, public health education initiatives, and accessible treatment programs in tackling substance abuse within youth demographics. In Eastern Turkey, Karatay and Bas [3] conducted a study of 613 high school students to examine the factors that affect substance abuse. Their findings revealed that about 40% of students had experimented with smoking, and more than 60% had at least one drinking experience. The study also showed a significant correlation between lower levels of self-efficacy and higher use of substances, especially in male students. Moreover, students who experienced academic failure, had negative relationships with their families, or had been exposed to traumatic events were more prone to substance abuse. These results suggest that psychological and environmental factors play an important role in adolescent behavior. The study highlighted the need to reinforce family support systems, increase academic engagement, and build self-confidence in students as measures to prevent substance abuse. Gul and Sharma [4] did a cross-sectional hospital-based study on 300 treatment-seeking individuals in Punjab to analyze the patterns of substance abuse. The results revealed that opioids were the most commonly abused substance (59.67% followed by alcohol (29%. The high percentage (81.67%) of respondents who reported substance use beginning before age 27 years suggests early adulthood as a vulnerable period.

Peer pressure and the false belief that it would enhance sexual performance were significant motivators for substance use, according to the study. These findings highlight the need for targeted awareness campaigns addressing myths about substance use and the importance of early intervention programs. Furthermore, the study recommends strengthening counseling services and rehabilitation facilities. Saxena et al. [5] surveyed 511 male adolescents in Dehradun and found that 46.9% were involved in some form of substance use. Substances were mainly obtained from friends in 75.5% of cases, a striking result that demonstrated the strong influence of peer groups. However, despite the high prevalence, about 80.2% of participants expressed

a desire to quit. This indicates willingness to change behavior when proper support is available. The study highlighted the significance of a supportive environment, including parents, teachers, and community members. Prevention strategies should emphasize peer education, parental involvement, and school-based awareness programs to reduce substance abuse among adolescents effectively. Saxena et al. [5] carried out a study on 100 adolescents in Bhubaneswar, Odisha, to assess their knowledge and practices regarding substance abuse. The results showed that boys were more likely to use substances as a means of coping with anxiety and stress.

The study revealed that several factors influenced the children, including parental behavior, exposure to television and other media, and peer pressure. Adolescents model their behavior on what they observe in their surroundings; family and social influences are important determinants. The study emphasized the need for awareness and education regarding the harmful effects of substance use. It also recommended school-based intervention programs and positive parental involvement to reduce risk factors. Filbey et al. [6] looked at brain changes in 48 chronic marijuana users with structural and functional magnetic resonance imaging (MRI). The research demonstrated substantial reductions in the volume of the bilateral orbitofrontal gyri and in the brain's structural connectivity. The results strongly suggest a neurological impact of long-term substance use, especially if use starts at an early age. Such changes in the brain are linked to impaired decision-making, reduced cognitive control, and a greater risk of addiction, the researchers observed. The research shows the biological consequences of substance abuse and stresses the urgency of preventive measures oriented towards adolescents. It also supports the importance of early education and intervention to protect brain development and long-term mental health.

2.2. Effectiveness of Video-Assisted Teaching Programs

Saxena et al. [5] conducted a study to evaluate the effectiveness of a planned teaching program on the ill effects of alcohol among 60 adolescents in Vadodara. The results revealed that the pre-test knowledge level of participants was 43.3%, which indicated a low level of awareness of the adverse effects of alcohol consumption. The knowledge after the structured teaching intervention increased significantly to 65.33 % in the post-test. The improvement clearly indicated that planned and systematic educational programs can improve adolescents' understanding of substance abuse. The study highlighted the importance of early education interventions to prevent risky behavior. It also highlighted the importance of thoughtfully designed teaching strategies in fostering positive attitudes and informed decision-making among young people. Shindey and Pandey [7] developed and evaluated a Video-Assisted Teaching Program (VATP) to improve staff nurses' knowledge of screening for substance abuse among 80 staff nurses in New Delhi. 71.25% of participants possessed only average knowledge about identification and screening methods for substance abuse before intervention. A significant improvement was observed after the VATP, with 63.75% of participants attaining a good level of knowledge. The study found that the video-assisted method was very effective in improving comprehension and practical skills. It said audiovisual methods of learning are better for recall and engagement than traditional teaching. The findings support the use of novel teaching tools like VATP in healthcare education programs to improve the early identification and management of substance abuse cases.

Goswami et al. [8] conducted a study on the effect of structured teaching on knowledge of substance abuse among 91 nursing students in Udaipur, using a pre-test and post-test quasi-experimental design. Pre-test results revealed that 73.62% of students had poor knowledge of substance abuse and its consequences. However, in the post-test, 83.35% of the participants had adequate knowledge after the educational intervention. This is a significant improvement and suggests the efficacy of a structured teaching program in bridging knowledge gaps. The study underlined the importance of including such educational modules in nursing curricula to prepare future healthcare professionals. It also highlighted that systematic teaching can make a significant difference in awareness, attitudes, and readiness to address substance-related issues. Srivastav and Karsayal [9] conducted a pre-experimental study with 60 students in Bhopal to assess the efficacy of the Video Assisted Teaching Program on awareness of substance abuse. Results. There was a significant improvement in knowledge levels post-intervention. The pre-test scores ranged from 10 to 18, with a mean of 14.37, indicating limited baseline understanding. However, the post-test scores ranged from 20 to 28, with a mean of 25.53, which is significantly higher than the pre-test mean. This big jump shows the strong effect of VATP in improving the understanding and retention of information. Video-assisted methods are highly effective educational tools, and their wider use should be promoted in academic institutions to raise awareness and promote preventive behaviors among students.

Chavan et al. [2] conducted a study with 53 pre-university college students in Karnataka to evaluate the effectiveness of an awareness program on substance abuse. The results indicated that before the intervention, approximately 91 percent of the participants had average knowledge about substance abuse and its negative effects. After implementing the awareness program, there was a marked improvement, with 52.8% of students attaining a good level of knowledge in the post-test. The improvement suggests that structured awareness programs can be effective in increasing adolescents' understanding. The study emphasized the need for educational interventions to address misconceptions and promote healthier lifestyle choices. It also recommended periodic awareness campaigns in educational institutions to maintain knowledge levels and prevent substance abuse. In a large study, Fibey et al. [6] explored gender differences in substance abuse treatment among 2,169 adolescents from 11 cities in

Sweden. The study found that girls entering treatment had significantly more risk factors than boys, including psychological distress, family-related problems, and social vulnerabilities. This finding suggests a gender-paradoxical association, where boys tend to have higher rates of substance use, while girls seeking treatment tend to have more severe underlying conditions. The study highlighted the need for gender-sensitive approaches to prevention and treatment programs. It also recommended that interventions should be tailored to the specific emotional and social challenges of female adolescents to enhance treatment results and overall health.

3. Research Methodology

This paper outlines the systematic procedures and strategies used to assess the effectiveness of the VATP in improving adolescents' knowledge about substance abuse in selected private colleges in Moradabad, Uttar Pradesh.

3.1. Research Approach and Design

An experimental research approach was employed. A true-experimental, pre-test post-test control group design was adopted:

- **Experimental Group:** E1 → X → E2
- **Control Group:** C1 → … → C2

Where E1/C1 = pre-test, X = VATP intervention (experimental group only), E2/C2 = post-test.

3.2. Setting, Population, and Sampling

The study was conducted at selected private colleges in Moradabad, principally Shree Satya College of Institute and Teerthanker Mahaveer College of Engineering. The target population comprised adolescents aged 18–25 years. A sample of 60 adolescents (30 experimental, 30 control) was selected using simple random sampling with probability proportional to size (lottery method without replacement).

3.3. Inclusion and Exclusion Criteria

Participants were included if they were: available during data collection, aged 18–25 years, able to communicate in English, and enrolled in medical or non-medical streams. Students who were ill at the time of data collection were excluded.

3.4. Research Tool

A self-structured knowledge questionnaire was developed in two sections:

- **Section A — Socio-demographic Proforma:** 15 variables including age, gender, religion, type of family, number of siblings, parental qualifications and occupations, monthly family income, current living status, and prior exposure to substance abuse.
- **Section B — Knowledge Questionnaire:** 28 multiple-choice items covering definitions, causes, signs and symptoms, classification, consequences, and treatment of substance abuse. Each correct answer scored 1; an incorrect answer scored 0. Maximum score = 28.

3.5. Knowledge Scoring Key

Table 1 shows the classification of knowledge levels based on score ranges. 0–7 scores reflect poor knowledge, 8–15 average knowledge, 16–22 good knowledge, and 23–28 profound knowledge.

Table 1. Knowledge level and corresponding score ranges

Level of Knowledge	Score Range
Poor	0–7
Average	8–15
Good	16–22
Profound	23–28

3.6. Validity, Reliability, and Ethics

Content validity was established by 5 experts from the nursing and medical fields. Reliability was assessed using the Split-Half (odd-even) method; Pearson's r = 0.744, indicating satisfactory reliability. Ethical clearance was obtained from the Institutional Ethics Committee of TMU Moradabad. Written informed consent was obtained from all participants and their parents. Confidentiality and anonymity were maintained throughout.

3.7. Data Collection Procedure

A pilot study was conducted from 15–19 March 2024 on 8 adolescents (4 experimental, 4 control) to verify feasibility. The main data collection was conducted from 3–6 April 2024. On Day 1, pre-tests were administered to both groups. The VATP (25-minute session on definition, causes, classification, signs and symptoms, diagnostic evaluation, treatment, and prevention of substance abuse) was administered to the experimental group only. On Day 3, post-tests were administered to both groups.

3.8. Plan for Data Analysis

Data were analyzed using descriptive statistics (frequency, percentage, mean, median, standard deviation, range) and inferential statistics (Chi-square test, paired t-test, unpaired t-test). The level of significance was set at $p \leq 0.05$.

4. Data Analysis and Interpretation

4.1. Socio-Demographic Profile

Table 2 presents the frequency and percentage distribution of socio-demographic variables for both the experimental (n=30) and control (n=30) groups.

Table 2: Frequency and percentage distribution of socio-demographic variables (N=60)

Variable	Category	Experimental (%)	Control (%)
Age	18 years	50.0	36.7
	19 years	33.3	33.3
	20 years	13.3	23.3
	21 years	3.3	6.7
Gender	Male	63.3	90.0
	Female	36.7	10.0
Religion	Hindu	73.3	73.3
	Muslim	23.3	26.7
	Christian	3.3	0.0
Family Type	Nuclear	26.7	16.7
	Joint	73.3	73.3
Living Status	With family	50.0	80.0
	Hostel	43.3	16.7
Prior knowledge of substance abuse	Yes	16.7	36.7
	No	83.3	63.3
Ever consumed any drug	Yes	13.3	13.3
	No	86.7	86.7

The majority of participants in the experimental group were 18 years old (50%), male (63.3%), Hindu (73.3%), from joint families (73.3%), and had no prior knowledge of substance abuse (83.3%). The control group was predominantly male (90%), had a similar religious distribution, and mostly lived with family (80%).

4.2. Pre-Test Knowledge Scores

Before intervention, the majority of participants in both groups had only average knowledge (Table 3).

Table 3: Pre-test knowledge score distribution (N=30 per group)

Knowledge Level	Score Range	Pre-Experimental f (%)	Pre-Control f (%)

Profound	23–28	0 (0%)	0 (0%)
Good	16–22	0 (0%)	3 (10%)
Average	8–15	25 (83.3%)	21 (70%)
Poor	0–7	5 (16.7%)	6 (20%)

No participant in the experimental group and none in the control group had achieved the profound knowledge category. Mean pre-test score was 9.47 (SD=2.46) in the experimental group and 10.47 (SD=4.34) in the control group, reflecting comparable baselines.

4.3. Descriptive Statistics — Pre-Test Comparison

Table 4 shows that the mean score for the Control group (10.47) was higher than that for the Experimental group (9.47).

Table 4: Descriptive statistics — pre-test scores (N=30 per group)

Group	Mean Score	SD	Median	Maximum	Minimum	Mean %
Experimental	9.47	2.460	9	14	4	33.81%
Control	10.47	4.337	9.5	22	2	37.38%

The Control group also had less variability (SD of 4.337 compared with 2.460). The mean percentage for the Control group was 37.38%, and for the Experimental group, 33.81%.

4.4. Post-test knowledge scores

Following the VATP intervention, a dramatic shift in knowledge levels was observed in the experimental group (Table 5).

Table 5: Post-test knowledge score distribution (N=30 per group)

Knowledge Level	Score Range	Post-Experimental f (%)	Post-Control f (%)
Profound	23–28	19 (63.3%)	0 (0%)
Good	16–22	10 (33.3%)	9 (30%)
Average	8–15	1 (3.3%)	8 (26.7%)
Poor	0–7	0 (0%)	13 (43.3%)

A majority (63.3%) achieved profound knowledge, and 33.3% had good knowledge. None remained in the poor category. In contrast, the control group showed no improvement to a profound level; in fact, 43.3% remained in the poor category.

4.5. Descriptive Statistics — Post-Test Comparison

The experimental group's mean percentage score doubled from 33.81% to 80.60%, while the control group's score remained virtually unchanged (37.38% to 40.83%) (Table 6).

Table 6: Descriptive statistics — post-test scores (N=30 per group)

Group	Mean Score	SD	Median	Maximum	Minimum	Mean %
Experimental	22.57	3.794	24	27	14	80.60%
Control	11.43	5.137	10.5	21	4	40.83%

4.6. Pre-Test vs. Post-Test Comparison — Both Groups

Table 7 shows that the Experimental group improved after the intervention, with 63.3% reaching the profound level, compared to 0% before the test. Meanwhile, the Control group showed slight improvement, with 43.3% in the poor level in the post-test.

Table 7: Comparison of pre-test and post-test score distribution — both groups (N=30 per group)

Level	Pre-Experimental	Pre-Control	Post-Experimental	Post-Control
Profound (23–28)	0 (0%)	0 (0%)	19 (63.3%)	0 (0%)
Good (16–22)	0 (0%)	3 (10%)	10 (33.3%)	9 (30%)

Average (8–15)	25 (83.3%)	21 (70%)	1 (3.3%)	8 (26.7%)
Poor (0–7)	5 (16.7%)	6 (20%)	0 (0%)	13 (43.3%)

4.7. Statistical Testing — Paired and Unpaired T-Tests

The paired t-test for the experimental group yielded a highly significant result (t=16.062, df=29, p<0.001), confirming that the VATP had a substantial positive effect on knowledge scores (Table 8).

Table 8: Paired and unpaired T-test results (* significant at p<0.05; NS = non-significant)

Group	Pre-Mean	Post Mean	Pre SD	Post SD	T-value	df.	p-value
Experimental (Paired)	9.47	22.57	2.460	3.794	16.062	29	<0.001*
Control (Paired)	10.47	11.43	4.337	5.137	0.820	29	0.419 (NS)
Unpaired (Post Exp vs Control)	22.57	11.43	—	—	9.549	58	<0.001*

The control group's paired t-test showed no significant change (t = 0.820, p = 0.419). The unpaired t-test comparing post-test scores between groups was also highly significant (t=9.549, df=58, p<0.001), confirming the superiority of the experimental group's post-intervention performance.

4.8. Association with Socio-Demographic Variables

Most socio-demographic variables showed no significant association with knowledge scores (Table 9).

Table 9: Association of knowledge scores with socio-demographic variables (* Significant at p<0.05)

Demographic Variable	Chi-square Value	df.	p-value	Result
Age	0.840	3	0.840	Not Significant
Gender	0.029	1	0.865	Not Significant
Religion	0.265	2	0.876	Not Significant
Type of Family	3.409	1	0.065	Not Significant
Area of Residence	1.615	2	0.446	Not Significant
Number of Siblings	1.085	3	0.781	Not Significant
Occupation of Father	10.992	3	0.012	Significant*
Monthly Family Income	11.004	3	0.027	Significant*
Qualification of Father (Post-Exp)	12.827	3	0.046	Significant*
Previous Knowledge of Substance Abuse	Significant	—	<0.05	Significant*

However, significant associations were found with the father's occupation (Chi-square=10.992, p=0.012), monthly family income (Chi-square=11.004, p=0.027), and the father's qualification in post-test experimental data (Chi-square=12.827, p=0.046). A significant association was also found with prior knowledge of substance abuse.

4.9. Discussions

The present study set out to assess the effectiveness of a Video Assisted Teaching Program (VATP) on knowledge regarding substance abuse among adolescents in selected private colleges at Moradabad. The results provide robust evidence for VATP as an effective educational tool.

4.9.1. Pre-Test Knowledge Level

The baseline assessment revealed that the majority of students had only average knowledge (83.3% in the experimental group; 70% in the control group), with a significant proportion in the poor category (16.7% in the experimental group; 20% in the control group), and none achieved good or profound levels in the experimental group.

This is consistent with the findings of Gulu and Sharma [4], who reported that 25% of high school children had inadequate knowledge, 40% moderate knowledge, and only 35% adequate knowledge regarding alcohol use and its harmful effects.

The generally low pre-test scores across both groups validate the critical need for structured educational interventions on substance abuse among college-going adolescents in India, particularly in semi-urban settings like Moradabad.

4.9.2. Effectiveness of VATP Post-Test Findings

The VATP produced a dramatic improvement in knowledge levels in the experimental group. Post-intervention, 63.3% of participants achieved profound knowledge, 33.3% achieved good knowledge, and none achieved poor knowledge. The mean knowledge score rose from 9.47 (33.81%) to 22.57 (80.60%), representing an increase of 13.10 points. These findings are supported by Rajesh et al. [10], who reported post-intervention adequate knowledge levels of 83.35% and a paired t-value of 18.9425 ($p < 0.001$). Shindey and Pandey [7] similarly reported that post-test scores (mean 25.53) were significantly higher than pre-test scores (mean 14.37) following VATP intervention on substance abuse. The statistically significant paired t-test result ($t = 16.062$, $df = 29$, $p < 0.001$) in the present study confirms hypothesis H1. There is a significant difference between pre-test and post-test knowledge scores in the experimental group. The control group's non-significant result ($t=0.820$, $p=0.419$) further validates that the improvement was attributable to the VATP rather than to extraneous variables.

4.9.3. Comparison between Groups

The unpaired t-test comparing post-intervention knowledge scores between the experimental and control groups yielded a highly significant result ($t = 9.549$, $p < 0.001$). This confirms that the VATP had a meaningful and lasting impact on knowledge acquisition in the experimental group compared to the control. This is consistent with Rajesh et al. [10], who found that the mean post-test score (13.77±1.78) was significantly greater than the pre-test score (10.07±1.90) following VATP on drug abuse.

4.9.4. Socio-Demographic Associations

The study found that most demographic variables (age, gender, religion, family type, area of residence, number of siblings, mother's occupation and qualification, monthly income, living status, prior drug use awareness) were not significantly associated with knowledge scores. This suggests that the VATP was uniformly effective across diverse demographic subgroups. However, father's occupation, father's qualification, and prior knowledge of substance abuse showed significant associations. These findings align with Chavan et al. [2], who found a positive correlation ($r=0.4524$) between awareness and attitude about the ill-effects of substance abuse among adolescents. The association with prior knowledge underscores the value of previous exposure to health education in shaping receptiveness to new information. The present true-experimental study assessed the effectiveness of a Video Assisted Teaching Program (VATP) on knowledge of substance abuse among 60 adolescents aged 18-25 years from selected private colleges in Moradabad, Uttar Pradesh. The participants were equally divided into two groups: the experimental group (n=30), which received the VATP intervention, and the control group (n=30), which did not receive any intervention. Data collection was conducted over 3 days, from 3rd to 6th April 2024, using a validated, self-structured knowledge questionnaire.

The pre-test results revealed that knowledge of both groups was mostly average or poor, with mean scores of 9.47 for the experimental group and 10.47 for the control group, indicating that the participants had similar knowledge levels about substance abuse. There was a significant improvement in the experimental group after implementation of VATP. The mean knowledge score increased to 22.57, which represents 80.60% achievement, and 63.3% of participants reached the profound level of knowledge. The mean score of the control group increased slightly from 10.47 to 11.43 (40.83%), and 43.3% of participants remained in the poor knowledge category. The paired t-test statistical analysis showed a significant difference in the experimental group ($t = 16.062$, $p < 0.001$). Thus, the research hypothesis (H1) was accepted. In addition, the study showed that there are significant associations between the level of knowledge and some socio-demographic variables such as the father's occupation, the father's educational qualification, and prior knowledge of substance abuse. The findings are evident that the Video Assisted Teaching Program is a very effective and scalable educational intervention to improve adolescents' knowledge regarding substance abuse. The results also support the use of Ludwig Von Bertalanffy's General System Theory as a conceptual framework, demonstrating how structured educational input (throughput) can result in measurable and meaningful improvements in knowledge outcomes (output).

5. Conclusion

The study showed that most of the adolescents from selected private colleges had average or poor knowledge of substance abuse before the intervention, which indicates the clear necessity of educational intervention. The implementation of the Video Assisted Teaching Program (VATP) was highly effective in improving knowledge, as 63.3% of participants achieved a profound level of understanding after the intervention. Statistical analysis showed a highly significant improvement ($p < 0.001$) in the experimental group, while no significant change was found in the control group. Further, knowledge scores showed a significant association with some socio-demographic variables, such as father's occupation, father's educational qualification, and prior knowledge of substance abuse. In contrast, most of the other variables did not show any significant relationship. Despite these positive findings, the study had some limitations, such as a small sample size ($n = 60$), which limits the generalisability of the results. Further, the research was confined to selected private colleges of Moradabad, thereby limiting

its generalisability to other settings such as government institutions or rural areas. The study used an English-only questionnaire, which may have excluded participants with limited language proficiency.

The study's short duration (the post-test was done on the third day) did not allow for the assessment of long-term knowledge retention. The findings have important implications for nursing practice, education, administration, and research. Nurses, particularly those in psychiatric, community, and school health, can use these insights to identify at-risk adolescents and offer appropriate counseling and family guidance. There is an enormous need to integrate substance abuse awareness into nursing education curricula and to encourage the use of innovative teaching methods such as VATP. From an administrative perspective, in-service training programs should be organized periodically, and educational resources should be made available to health care professionals and the public. Further research is recommended to investigate underlying causes, risk factors, and long-term effectiveness of interventions, including longitudinal designs across diverse populations. There is a need to incorporate structured awareness programs into the education system at the community and school levels, with active participation from parents, teachers, and peer groups as key stakeholders in the prevention process.

5.1. Recommendation

Further research in the area of adolescent substance abuse is strongly recommended to increase the existing body of knowledge and to enhance intervention strategies. A comparative study among rural and urban adolescents may better elucidate differences in awareness, exposure, and risk factors for substance abuse. In addition, studies to identify substance abusers and to evaluate targeted interventions to reduce associated psychosocial problems would be beneficial in addressing the issue more effectively. Comparative research between male and female adolescents can also help in understanding gender-based differences in knowledge, attitude, and behavioral patterns towards substance abuse. Similar studies can be extended to nursing students to evaluate their specific knowledge gaps and readiness to handle substance-related issues in clinical settings. Descriptive studies among school students below the age of 18 years would help identify early risk behaviors and knowledge levels, and enable preventive measures to be taken in time. Finally, long-term follow-up studies are required to evaluate the sustainability and durability of knowledge gains from Video Assisted Teaching Programs (VATP) and ensure continued effectiveness over time.

Acknowledgment: The authors sincerely acknowledge the academic support and institutional contributions provided by Teerthanker Mahaveer College of Nursing, Soban Singh Jeena Government Institute of Medical Sciences and Research, Zaragoza University, Shahrekord University, University of Education, and Kuwait University.

Data Availability Statement: The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Funding Statement: No specific funding or grant was received for this research from any public, commercial, or not-for-profit funding agency.

Conflicts of Interest Statement: The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethics and Consent Statement: The study was conducted in accordance with established ethical guidelines, and participants were assured that their responses would remain confidential and anonymous**.**

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