

EFFECTIVENESS OF TECHNOLOGY ENHANCED LEARNING ON KNOWLEDGE AND ATTITUDE REGARDING RISK REDUCTION STRATEGIES FOR SELECTED HIGH RISK BEHAVIOURS AMONG ADOLESCENTS AT SELECTED SCHOOL, CHENNAI

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ABSTRACT

Background: Adolescents are increasingly exposed to high-risk behaviour such as alcohol consumption, smoking, and tobacco use, which may adversely affect their health. Enhancing knowledge and attitude through appropriate educational strategies is essential. **Objectives:** To evaluate the effectiveness of technology-enhanced learning on knowledge and attitude regarding risk reduction strategies for selected high-risk behaviour among adolescents. **Methods:** A quantitative pre-experimental one-group pretest–posttest design was adopted among 70 adolescents aged 15–17 years at a selected school in Chennai using convenience sampling. Data were collected using a structured knowledge questionnaire and attitude rating scale. A four-week technology- enhanced learning intervention was administered. Data were analyzed using descriptive and inferential statistics. **Results:** The study findings using the self-administered questionnaire show that in the pretest, 62.85% of participants had inadequate knowledge, whereas in the posttest, 80% had moderately adequate knowledge and 20% had adequate knowledge. Regarding attitude, 82.86% had moderately unfavorable attitude in pretest, which improved to 28.6% favorable attitude in posttest. The mean difference in knowledge (6.46) and attitude (10.74) was statistically significant ($t = 24.26$ and 24.37 , $p < 0.05$). A positive correlation was found between knowledge and attitude. Significant association was observed between knowledge and previous exposure ($\chi^2 = 22.11$, $p < 0.05$). **Conclusion:** The study concluded that, Technology-enhanced learning was effective in improving knowledge and attitude regarding risk reduction strategies among adolescents

KEYWORDS

Adolescents, Technology-Enhanced Learning, High-Risk Behaviour, Knowledge, Attitude.

INTRODUCTION

High-risk behaviour are actions that increase the risk of disease, injury, disability, or social problems. Common high-risk behaviour among adolescents include violence, alcoholism, tobacco use, and substance misuse. Adolescence is a critical developmental stage during which individuals are more vulnerable to engaging in such behaviours.¹

Globally, adolescents constitute about 16% of the world's population, and high-risk behaviors significantly contribute to morbidity and mortality. Early initiation of substance use increases the risk of long-term dependence and health problems². In India, adolescents form about 22.8% of the population, and substance use is increasingly observed at a younger age. Studies have reported that approximately 20.3% of adolescents consume tobacco, 21.4% consume alcohol, 2.6% use cannabis, and 15.6% use inhalants.³ In Tamil Nadu, 33.8% of adolescents were current substance users, and in Chennai, about 78% of adolescents had unhealthy lifestyle habits.⁴

Education plays an important role in preventing high-risk behaviour by improving awareness and promoting healthy decision-making. However, limited studies have been conducted on technology-enhanced learning regarding risk reduction strategies among adolescents. Hence, the present study was undertaken to assess the effectiveness of technology-enhanced learning on knowledge and attitude regarding selected high-risk behaviour among adolescents.

OBJECTIVES

1. To assess the level of knowledge and attitude on selected high risk behaviour among adolescents.
2. To evaluate the effectiveness of technology enhanced learning regarding risk reduction strategies on knowledge and attitude on selected high risk behaviour among adolescents.
3. To determine the correlation between knowledge and attitude on selected high risk behaviors among adolescents.
4. To find out the association between the pre-test level of knowledge and attitude on selected high risk behaviors with selected demographic variables among adolescents.

Hypotheses

- **H1:** There will be a significant difference in the pre-test and post-test level of knowledge and attitude on selected high risk behaviour among adolescents.
- **H2:** There will be a significant correlation between the pretest level of knowledge and attitude regarding selected high risk behaviour among adolescents.

- **H3:** There will be a significant association between the pretest level of knowledge regarding selected high risk behaviors with selected demographic variables among adolescents.

Assumptions

- Acquisition of knowledge positively impacts behavioral practices.
- Technology enhanced learning strategies in risk reduction empower adolescents with essential understanding of specific high risk behaviour, including alcohol consumption, smoking, and tobacco use.

Delimitations

- The duration of data collection was confined to a period of 30 days.
- The study sample was restricted to 70 participants.
- Data were collected exclusively from adolescents who were available during the specified collection period.

Review of Literature

The review of literature in this study is organized under the following headings.

1. **Section-A:** Studies related to incidence rate of selected high risk behaviour in substance abuse such as indulged in alcohol, cigarette smoking, and tobacco use.
2. **Section-B:** Studies related to knowledge and attitude towards selected high risk behaviour in substance abuse such as indulged in alcohol, cigarette smoking, and tobacco use.
3. **Section-C:** Studies related to the effectiveness of teaching intervention on knowledge and attitude towards selected high risk behaviour in substance abuse such as indulged in alcohol, cigarette smoking, and tobacco use among adolescents.

Davoodi et al., (2024) conducted a cross-sectional study to assess the prevalence of high- risk behaviour among female second-year high school students from the four regions of Ahvaz. Totally 463 students were recruited by random sampling technique. Data were collected by using a demographic questionnaire and Iranian Adolescents' Risk Behavior Scale (IARS). The study results revealed that, the prevalence of high risk behaviour among second-year high school girls in Ahvaz was 79.15%. The most common high risk behaviour 14.92% were thrash driving and 17 13.13% was drug use. There was a significant relationship between the presence of a counselor and drug use (P0.05). The study concluded that, need for psychological, educational, counselling, and therapeutic interventions to prevent high risk behaviors.⁵

Selvakumari et al., (2025) conducted a cross- sectional study to assess

the Knowledge and Attitude towards Safety Behavior among Adolescents in Jeppiar Matric Higher Secondary School, Chennai. Totally 60 participants were recruited by using purposive sampling technique. Data were collected by using structured questionnaire. The results revealed that, 32% of the adolescents had adequate knowledge, 28% had moderately adequate knowledge and 40% of the adolescents had inadequate knowledge. Regarding attitude of safety behaviour, 27% of adolescents had most favorable attitude, 45% of adolescents had moderately favorable attitude, and 28% of adolescents had unfavorable attitude regarding safety behaviour. The study concluded that teaching program is essential among students to increase knowledge and positive attitude regarding safety behaviour among adolescents.⁶

Viji et al., (2024) conducted a pre-experimental study to assess the effectiveness of structured teaching programme on knowledge regarding Risk factors and Prevention of Suicidal Behaviour among Adolescents in Bangalore. Totally 60 adolescents were selected by using purposive sampling technique. The data were collected by using structured questionnaire. The study results revealed that, the paired 't' test value is 7.35 which is significantly higher than the table value of 2.0009 at $p=0.05$ level. Thus, the structured teaching programme is effective in improving the knowledge regarding Risk factors and Preventive measures for Suicidal Behavior among Adolescents. There was a significant association between the levels of knowledge of the adolescent with their selected demographic variables with sex, Monthly income of family was statistically significant at p value <0.05 .⁷

METHODOLOGY

A quantitative research approach with a pre-experimental one-group pretest-posttest design was adopted. The study was conducted at Bharathiyar Matriculation Higher Secondary School, Guduvancheri, Chennai. The study population consisted of adolescents aged 15–17 years. A total of 70 adolescents were selected using non-probability convenience sampling technique based on inclusion and exclusion criteria. The data collection tool comprised three sections: demographic variables, a structured knowledge questionnaire (30 items), and an attitude rating scale (15 items with 5-point Likert scale). The knowledge scores ranged from 0–30 and were categorized as inadequate (0–10), moderately adequate (11–20), and adequate (21–30). The attitude scores ranged from 15–75 and were categorized as unfavorable (15–35), moderately favorable (36–55), and favorable (56–75). The reliability of the knowledge questionnaire was established using split-half method ($r = 0.88$), and the attitude scale using test-retest method ($r = 0.86$). Data collection was carried out for one month. Pretest was conducted using the structured tools. This was followed by a four-week technology-enhanced learning intervention through weekly one-hour sessions using PowerPoint and LCD projector covering aspects of high-risk behaviour. Posttest was conducted using the same tools. Data were analyzed using descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (paired t-test, correlation, and chi-square test). Ethical clearance was obtained, and informed consent, confidentiality, and anonymity were maintained.

Organization of the Findings

Data obtained from the school aged children were organized, analyzed and presented under the following sections.

- Section - A:** Distribution of study participants based on demographic variables

- Section - B:**

Part - I: Assessment of level of knowledge, regarding selected high-risk behaviour among adolescents (15-17 years middle adolescents).

Part - II: Assessment of level of attitude regarding selected high risk behaviour among adolescents (15-17 years middle adolescents).

- Section - C:**

Part - I: Data on effectiveness of technology enhanced learning regarding risk reduction strategies on knowledge regarding selected high risk behaviour among adolescents (15-17 years middle adolescents).

Part - II: Data on effectiveness of technology enhanced learning regarding risk reduction strategies on attitude regarding selected high risk behaviour among adolescents (15-17 years middle adolescents).

- Section - D:** Data on correlation between the level of knowledge and attitude regarding selected high risk behaviour among adolescents (15-17 years middle adolescents).

- Section - E:**

Part - I: Data on association between the pretest level of knowledge

regarding selected high risk behaviour with their selected demographic variables.

Part - II: Data on association between the pretest level of attitude regarding selected high risk behaviour with their selected demographic variables.

RESULT

The study findings revealed that during pretest, majority 44 (62.85%) of the participants had inadequate knowledge and 26 (37.14%) had moderately adequate knowledge. In the posttest, majority 56 (80%) had moderately adequate knowledge and 14 (20%) had adequate knowledge regarding selected high-risk behaviour.

Regarding attitude, during pretest, majority 58 (82.86%) of the participants had moderately unfavorable attitude and 12 (17.14%) had unfavorable attitude. In the posttest, 50 (71.4%) had moderately favorable attitude and 20 (28.6%) had favorable attitude.

There was a significant improvement in knowledge and attitude after the intervention. The mean difference in knowledge (6.46) and attitude (10.74) was statistically significant ($t = 24.26$ and 24.37 , $p < 0.05$), indicating the effectiveness of technology-enhanced learning. A positive correlation was found between knowledge and attitude ($r = 0.65$). A statistically significant association was observed between knowledge and previous knowledge about high-risk behaviour ($\chi^2 = 22.11$, $p < 0.05$), whereas no significant association was found between demographic variables and attitude.

Table 1: Frequency and Percentage Distribution Samples According to their Level of Knowledge n=70

S. No	Level of knowledge regarding selected high risk behaviour	Number of participants			
		Pretest		Posttest	
		F	%	F	%
1	Inadequate Knowledge (1-10)	44	62.85	0	0
2	Moderately Adequate Knowledge (11-20)	26	37.14	56	80
3	Adequate knowledge (21-30)	0	0	14	20

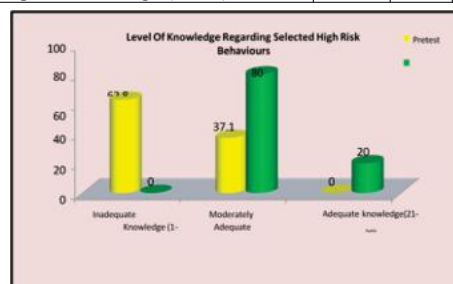


Figure 1: A Cylindrical Diagram Showing the Percentage Distribution of Samples in Terms of their Level of Knowledge Regarding Selected High Risk Behaviour

Table 2: Frequency and Percentage Distribution Samples According to their Level of Attitude n=70

S. No	Level of attitude regarding selected high risk behaviour	Number of participants			
		Pretest		Posttest	
		F	%	f	%
1	Unfavorable attitude (12-28)	12	17.14	0	0
2	Moderately unfavorable attitude (29-44)	58	82.86	50	71.4
3	Favorable attitude (45-60)	0	0	20	28.57

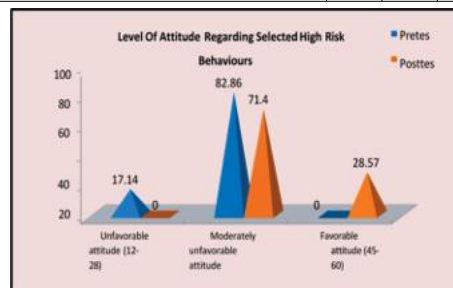


Figure 2: A Pyramid Diagram Showing the Percentage Distribution of Samples in Terms of their Level of Attitude Regarding Selected High Risk Behaviour.

Table 3:Mean, Mean Difference, Standard Deviation and T-value According to the Pretest and Posttest Level of Knowledge n=70

Level of knowledge regarding selected high risk behaviours	Mean and standard deviation	Mean difference	Paired 't' test and p value	Value and df
Pretest	10.62±2.29	6.46	t=24.26	tv=1.99
Posttest	17.08±3.14			df=69

Note: *p<0.05, S= Significant

Table 4:Mean, Mean Difference, Standard Deviation and T-value According to The Pretest and Posttest Level of Attitude n=70

Level of attitude regarding selected high risk behaviours	Mean and standard deviation	Mean difference	Paired 't' test and p value	Table value and df
Pretest	42.64±6.27	10.74	t=24.37	tv=1.99
Posttest	53.38±6.16			df=69

Note: ***p<0.05, S= Significant

Table 5: Relationship Between The Level Of Knowledge And Attitude Regarding Selected High Risk Behaviors. n=70

Variables	Mean and standard deviation	Mean difference	Correlation 'r' value and p Value
Knowledge	10.62±2.29	32.02	r = 0.65
Attitude	42.64±6.27		

CONCLUSION

The present study revealed that adolescents aged 15–17 years had inadequate baseline knowledge and an unfavorable attitude towards selected high-risk behaviours. Following the implementation of a technology-enhanced learning programme, a statistically significant improvement was observed in both knowledge and attitude scores. The mean difference in knowledge (6.46) and attitude (10.74) was found to be highly significant (t = 24.26 and 24.37, p < 0.05). Furthermore, a positive correlation was identified between knowledge and attitude (r = 0.65), indicating that improvement in knowledge was associated with a favorable change in attitude. These findings demonstrate that technology-enhanced learning is an effective strategy for improving awareness and promoting positive attitudinal changes among adolescents. Therefore, such structured educational interventions can be effectively incorporated into school health programmes to reduce high-risk behaviours and promote healthy lifestyle practices among adolescents.

Recommendation Of The Study

- A descriptive study can be conducted to assess the prevalence of high risk behaviours among adolescents.
- A cross-sectional study can be conducted to identify the risk factors of high risk behaviours
- Similar study can be conducted for larger sample
- Similar study can be conducted over general population
- A comparative study can be conducted with two interventions
- A similar study can be conducted in two different settings.

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