

Evaluating The Impact of a Structured Educational Intervention on Alcoholism Knowledge Among Nursing Students: A Pre-Experimental Study

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Abstract: *Introduction:* Alcohol misuse is a major global health challenge, with college students being particularly vulnerable due to peer pressure, stress, and limited awareness. Nursing students, as future healthcare providers, must possess adequate knowledge to address the health and social consequences of alcoholism effectively. This study aimed to evaluate the impact of a structured educational intervention on the knowledge of alcoholism among nursing students.

Methods: A pre-experimental, one-group pre-test and post-test design was employed. Sixty participants were recruited using non-probability convenience sampling. Data were collected using a validated 30-item structured knowledge questionnaire. The intervention included interactive lectures, multimedia presentations, and group discussions, delivered over three days. Knowledge levels were assessed pre- and post-intervention, with scoring categorized as inadequate, moderate, and adequate.

Results: Pre-intervention, 96.6% of participants demonstrated moderate knowledge, while none exhibited adequate knowledge. Post-intervention, 68.3% achieved adequate knowledge, with a mean score improvement from 14.88 ± 2.58 to 22.31 ± 3.32 ($p < 0.001$). Significant associations were observed between post-test scores and socio-demographic factors such as age, gender, and sources of information.

Conclusion: This first-of-its-kind study in the Indian context highlights the effectiveness of structured educational programs in enhancing knowledge about alcoholism among nursing students, underscoring the need for integrating such interventions into nursing curricula to address the growing burden of alcohol misuse.

Keywords: Alcoholism, nursing students, structured teaching program, knowledge improvement, educational intervention, pre-experimental study.

1. INTRODUCTION:

Alcohol abuse has been a significant global health issue, contributing to various physical, psychological, and social challenges. Over the past three decades, alcohol consumption has increased dramatically, both in India and worldwide. (1) The World Health Organization (WHO) estimated that approximately 400 million individuals suffer from alcohol dependence globally. (2) In India, the per capita alcohol consumption has been on the rise. The total per capita alcohol consumption among individuals aged 15 and older increased from 4.3 liters in 2010 to 5.7 liters in 2016. (1) Alcohol consumption in India has seen a significant increase over the past two decades, with substantial variability across states and union territories. Studies highlighted the rising prevalence of alcohol use among adults aged 15 years and above, emphasizing the need for state-level surveillance systems to monitor and address this growing public health concern. This alarming trend underscores the critical importance of interventions to enhance awareness and reduce the burden of alcohol-related harm. (3) College students are particularly vulnerable to alcohol misuse due to the transitional nature of college life. This phase of life involves major individual and contextual changes across all domains, including academics, social relationships, and personal responsibilities. Heavy drinking behaviors often peaked during college years, fueled by peer influence, academic stress, and the abundance of explicit and subtle social expectations to drink. (4) For many students, alcohol consumption represented an avenue for coping with stress, forming social bonds, or fulfilling a perceived sense of belonging. (5) Research indicated that approximately 60% of college students consumed alcohol, with half engaging in behaviors that led to adverse consequences such as injuries, academic failure, violence, and severe

health complications, including sexually transmitted infections.(4,6) Additionally, excessive alcohol use among students had a ripple effect, impacting not only the individuals but also those around them, including peers, family members, and communities at large.(7)

Psychosocial factors significantly influence alcohol misuse among college students. Behaviors such as impulsivity and sensation-seeking, along with the need to regulate negative emotional states like depression and anxiety, are identified as key drivers of excessive drinking. Social influences, including peer pressure and societal norms, further exacerbated the problem, creating an environment where alcohol consumption became normalized and, at times, glamorized. These behaviors often led to a cyclical pattern of drinking, reinforcing adverse outcomes and perpetuating unhealthy habits.(3,8,9)

The adverse effects of alcohol consumption are well-documented and far-reaching. Regular and excessive alcohol use often progresses to chronic conditions, including liver cirrhosis, gastritis, pancreatitis, and neurological impairments. Acute intoxication frequently results in unintentional injuries such as falls, burns, and traffic accidents. Alcohol consumption has also been causally linked to intentional injuries, including suicide and interpersonal violence, as well as neglect and abuse within familial and social.(10,11) Physiologically, alcohol impacts nearly every organ system, with the liver being the primary site of alcohol metabolism and the most affected organ—long-term heavy drinking impaired food digestion and nutrient absorption, leading to vitamin deficiencies and weakened immunity. Moreover, alcohol's depressant effects on the central nervous system heighten the risks of hypoglycemia and sudden death during acute intoxication.(3,12) In India, the prevalence of hazardous drinking patterns adds another layer of complexity to the problem. Despite government statistics indicating that only 18.8% of adult men and 1.3% of women consumed alcohol, a significant proportion of these individuals meet the criteria for hazardous drinking.(13) This behavior had severe societal consequences, including property damage, familial discord, and public disturbances.(7) Despite these challenges, awareness of alcohol use and misuse on college campuses remains limited. The cultural acceptance of alcohol in some settings, coupled with inadequate education on its consequences, perpetuated a lack of accountability and action.(14) Available research suggests that many students lack adequate knowledge about the health and social consequences of alcohol misuse.(15,16) Educational programs had the potential to address these gaps, but their implementation was inconsistent and often lacked evidence-based frameworks. The rising prevalence of alcohol misuse, coupled with its profound impact on health and society, necessitates targeted interventions. As future healthcare providers, nursing students are critical for such interventions. Equipping them with comprehensive knowledge about alcohol misuse and its consequences could enable them to serve as informed advocates and educators within their communities. Structured educational programs provide an effective platform for this purpose, allowing students to understand the multifaceted nature of alcohol-related issues and empowering them to contribute to prevention and treatment efforts.

This study was conducted to evaluate the effectiveness of a structured educational intervention in enhancing knowledge about alcoholism among nursing students in Dehradun. The program was designed to address key knowledge gaps, including the physiological, psychological, and social effects of alcohol consumption, as well as strategies for prevention and management. The study sought to contribute to the broader goal of reducing alcohol-related harm and promoting healthier behaviors among college students.

2. METHODOLOGY:

The study employed a pre-experimental one-group pre-test post-test design to evaluate the effectiveness of a structured educational intervention on knowledge about alcoholism among nursing students. The study involving Nursing students was conducted at Shri Guru Ram Rai College of Nursing, Dehradun, Uttarakhand. A total of 60 participants were selected using a non-probability convenience sampling technique, ensuring the inclusion of students who were available and willing to participate during the study period. Participants were included based on their enrollment in the sixth semester, willingness to participate, and availability during data collection. Students who were absent during the pre-test or post-test or unwilling to provide informed consent were excluded.

Data were collected using a structured knowledge questionnaire validated by subject matter experts. The tool consisted of two sections: Section I captured socio-demographic information such as age, gender, family type, parental education, family history of alcoholism, and sources of information. Section II included a 30-item knowledge questionnaire covering the physiological, psychological, and social effects of alcoholism, with scoring levels categorized as inadequate (1–10), moderate (11–20), and adequate (21–30). The questionnaire was pilot-tested, demonstrating a high-reliability score with a Cronbach's alpha of 0.85. The data collection process was conducted in three phases over five days. In the first phase, participants were administered a pre-test to assess baseline knowledge. This was followed by the intervention phase, which involved a structured teaching program delivered over three consecutive days. The program included interactive lectures, multimedia presentations, and group discussions designed to address common

misconceptions and enhance understanding of the physiological, psychological, and social consequences of alcohol misuse. In the final phase, a post-test was conducted on the fifth day using the same structured knowledge questionnaire to evaluate changes in knowledge levels.

Data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize the socio-demographic data and knowledge scores, including frequency, percentages, mean, and standard deviation. Inferential statistics were applied to determine the effectiveness of the intervention and identify associations between knowledge scores and socio-demographic variables. A paired t-test was used to compare pre-test and post-test scores, while chi-square tests were conducted to explore associations with variables such as family history of alcoholism and sources of information. The primary outcome measure was the improvement in knowledge about alcoholism among nursing students, while secondary outcomes included significant associations between knowledge levels and socio-demographic variables. Ethical approval for the study was obtained from the Institutional Ethics Committee of Shri Guru Ram Rai College of Nursing, Dehradun. Written informed consent was obtained from all participants, and confidentiality was maintained throughout the study.

3. RESULT:

The socio-demographic profile of the participants revealed that the majority (90%) were aged 18–22 years, with 10% aged 23–26 years. Female participants constituted 83.3%, and 61.6% of the respondents were from nuclear families. Regarding parental education, 53.3% of fathers and 50% of mothers had completed graduate-level or higher education. Most participants (58.3%) had fathers employed in salaried jobs, and 53.3% of families reported a monthly income exceeding ₹30,000. A significant proportion (75%) had no family history of alcoholism, while 41.6% relied on TV, radio, or the internet as their primary source of information about alcoholism (Table 1). Pre-intervention knowledge assessment revealed that 96.6% of participants exhibited moderate knowledge, while 3.3% demonstrated inadequate knowledge. None of the participants had adequate knowledge about alcoholism at the pre-test stage. The mean pre-test knowledge score was 14.88 ± 2.58 , indicating limited awareness regarding the physiological, psychological, and social impacts of alcoholism (Table 2). Post-intervention, there was a significant improvement in knowledge levels. The majority (68.3%) achieved adequate knowledge scores, while 31.6% demonstrated moderate knowledge. None of the participants remained in the inadequate category. The mean post-test score rose to 22.31 ± 3.32 , reflecting a substantial enhancement in knowledge levels (Table 3).

A paired t-test comparison of pre-test and post-test scores revealed a statistically significant improvement, with a t-value of 25.01 and $p < 0.001$. The mean difference in knowledge scores was 7.43 ± 0.74 , confirming the effectiveness of the educational intervention (Table 4). Chi-square analysis demonstrated significant associations between post-test knowledge levels and socio-demographic variables, including age ($p < 0.05$), gender ($p < 0.05$), family income ($p < 0.05$), and sources of information ($p < 0.05$). Participants with access to reliable sources like TV and the internet exhibited greater knowledge improvement compared to those without such exposure (Table 5).

4. DISCUSSION:

The findings revealed a significant improvement in post-test knowledge levels compared to the pre-test, with 68.3% of participants achieving "adequate" knowledge post-intervention, compared to none in the pre-test phase. These results demonstrate the efficacy of structured teaching programs in addressing gaps in health literacy, particularly among future healthcare professionals.

Comparatively, a study by Hegade and Nandagaon (2016)(17) on auto-rickshaw drivers found similar improvements in knowledge scores post-intervention, reinforcing the potential of structured education in diverse populations. Another study conducted in Greece by Carey et al. (2016)(18) on college students demonstrated short-term reductions in alcohol consumption behaviors following educational interventions, highlighting the broader applicability of such programs beyond knowledge enhancement to behavior modification. The socio-demographic analysis in this study identified significant associations between post-test knowledge scores and factors such as age, gender, family income, and sources of information. This aligns with findings from a systematic review and an cross-sectional study as well on alcohol use in India, which noted demographic variations in drinking patterns and the importance of targeted interventions tailored to specific groups.(19,20)

Additionally, the results of this study align with the World Health Organization's Global Status Report on Alcohol (2018),(1) which emphasized the need for state-specific educational programs to address the rising alcohol consumption rates in India. The focus on nursing students in this study also correlates with global findings indicating that future healthcare professionals play a crucial role in health promotion and disease prevention efforts.

In comparison to international studies, such as the one conducted in Canada by Holligan and Battista (2019)(21), which demonstrated the influence of early educational interventions on reducing risky drinking behaviors among adolescents, this study adds evidence from the Indian context, underscoring the importance of culturally sensitive and localized educational strategies.

Future research should explore longitudinal outcomes of similar interventions to assess their sustained impact on knowledge retention and behavior change. Expanding the study scope to include multi-institutional settings could also enhance the generalizability of findings and inform policy-level decisions on integrating structured educational programs into healthcare curricula.

5. CONCLUSION:

This study demonstrated that a structured educational intervention significantly improved knowledge about alcoholism among nursing students, highlighting its effectiveness in bridging knowledge gaps on critical health issues. The findings revealed a substantial shift in participants' knowledge levels post-intervention, with most achieving "adequate" knowledge, reinforcing the value of targeted educational programs in healthcare curricula. As one of the first studies in the Indian context to evaluate the impact of structured educational programs on alcoholism knowledge among nursing students, this research adds a unique perspective to the global evidence base. It underscores the pivotal role of future healthcare professionals in promoting awareness and addressing the growing burden of alcohol misuse in society. Future initiatives should build on this foundation by exploring long-term knowledge retention and evaluating the impact of similar interventions on behavior modification and clinical practice outcomes. Integrating such programs into nursing education can empower students to contribute effectively to public health advocacy and alcohol misuse prevention strategies, fostering healthier communities in India and beyond.

Strengths and Limitation:

This study stands out as one of the first to evaluate the effectiveness of a structured educational intervention on alcoholism knowledge among nursing students in the Indian context, contributing novel insights to the field. The use of a validated questionnaire with high reliability ensured accurate and consistent data collection. The pre- and post-test design effectively demonstrated the intervention's impact, showing significant knowledge improvement. Furthermore, the comprehensive teaching approach, including interactive lectures and multimedia presentations, enhanced participant engagement and learning outcomes. However, the study's limitations should be acknowledged. Conducting the research in a single institution with a small sample size limits the generalizability of the findings. The reliance on self-reported data may introduce biases, and the absence of a control group restricts the ability to attribute knowledge gains exclusively to the intervention. Addressing these limitations in future studies, such as expanding to multiple institutions and including a control group, would enhance the robustness and applicability of the findings.

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Conflict of Interest

Nil

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Tables

Table 1: Socio-Demographic Profile of study participants

Demographic Variables		Frequency(f) N=60	Percentage (%)
Age in years	18-22	54	90%
	23-26	6	10%
Gender	Male	10	16.6%
	Female	50	83.3%
Religion	Hindu	56	93.3%
	Muslim	3	5%
	Christian	1	1.6%
Type of family	Joint	22	36.6%
	Nuclear	37	61.6%
	Extended	1	1.6%
Father's education	Illiterate	0	0%
	Primary	23	38.3%
	High school	5	8.3%
	Graduate and more	32	53.3%
Mother's education	Illiterate	0	0%
	Primary education	10	16.6%
	High school	20	33.3%
	Graduate or more	30	50%
Father's Occupation	Salaried	35	58.3%
	Own business	19	31.6%
	Farmer	3	5%
	Skilled worker	3	5%
Family income per month	10,000-20,000	8	13.3%
	21,000-30,000	20	33.3%
	Above 30,000	32	53.3%
Family history of alcoholism	Father	7	11.6%
	Siblings	0	0%
	Relatives	8	8%
	No history	45	75%
Source of information about alcoholism	TV, Radio, internet	25	41.6%
	Newspaper	11	18.3%
	contact with health professionals	4	6.6%
	Friends and relatives	20	33.3%

Table 2: Distribution of Pre-Test Knowledge Scores

Level of Knowledge	Frequency (f)	Percentage (%)	Mean ± SD
Inadequate (≤50%)	2	3.3%	14.88 ± 2.58
Moderate (51–75%)	58	96.6%	
Adequate (≥76–100%)	0	0%	
Total	60	100%	

Table 3: Distribution of Post-Test Knowledge Scores

Level of Knowledge	Frequency (f)	Percentage (%)	Mean ± SD
Inadequate (≤50%)	0	0%	22.31 ± 3.32
Moderate (51–75%)	19	31.6%	
Adequate (≥76–100%)	41	68.3%	
Total	60	100%	

Table 4: Comparison of Pre-Test and Post-Test Knowledge Scores on Alcoholism

Group A	Mean ±SD	test-value	P- Value
Pre test	14.88 ± 2.58	25.009	0.001
Post test	22.31 ± 3.32		

Table 5: Association Between Post-Test Knowledge Levels on Alcoholism and Selected Socio-Demographic Variables Among Study participants

Demographic variables		Post-test knowledge level			Test value	P Value
		Inadequate	Moderate	Adequate		
Age:	18-22	0	14	39	60.99	<0.05
	23-26	0	3	4		
Gender:	Male	0	7	6	27.882	<0.05
	Female	0	12	35		
Religion:	Hindu	0	14	42	59.98	<0.05
	Muslim	0	1	2		
	Christian	0	1	0		
Type of family:	Joint	0	8	14	59.8	<0.05
	Nuclear	0	9	28		
	Extended	0	0	1		
Father's Education	Illiterate	0	0	0	54.99	<0.05
	Primary education	0	8	16		
	High school	0	2	3		
	Graduate or more	0	7	24		
Mother's education	Illiterate	0	0	0	59.98	<0.05
	Primary education	0	6	4		
	High school	0	12	8		
	Graduate or more	0	7	23		
Father's occupation:	Salaried	0	15	20	59.98	<0.05
	Own business	0	11	8		
	Farmer	0	1	2		
	Skilled worker	0	2	1		
Family income:	10-20k	0	3	5	60	<0.05
	21-30k	0	9	11		
	30k and above	0	12	20		
Family history of alcoholism:	Father	0	2	5	49.45	<0.05
	Siblings	0	0	0		
	Relatives	0	6	2		
	No history	0	13	32		
Source of information:	TV, Radio, internet	0	7	18	60	<0.05
	Newspaper, magazines	0	6	5		
	Contact with health professional	0	3	1		
	Friends, relatives & neighbors	0	11	9		
		0				