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Addressing Risky Drinking Among Undergraduates: Pilot Evaluation Of A Nurse-Led Brief Motivational Intervention

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Abstract

Background: *The incidence of harmful alcohol use among young adults (aged 18-24) is rising in low-income and middle-income countries (LMIC). A pilot study was conducted from February to July 2024 among undergraduate students with the aim to determine the efficacy of a nurse-led brief motivational intervention for harmful alcohol use and related harms.*

Methods: *This quasi-experimental study employed a pre-test post-test non-equivalent control group design. Among the 360 undergraduates screened, 60 were identified as engaging in harmful alcohol use, based on an Alcohol Use Disorder Identification Test (AUDIT) score between 8 and 19. Alcohol related problems were assessed in the selected undergraduates using standardized Rutgers Alcohol Problem Index (RAPI). The experimental group (n=30) received brief motivational intervention based on the model of Feedback, Responsibility, Advice, Menu of options, Empathy, and Self-efficacy (FRAMES) consisting of two individualized sessions of Brief Negotiated Interviews of 15-20 mins. duration while the control group (n=30) received standard advice.*

Results: *At three months post-intervention, the mean AUDIT and RAPI scores were significantly lower in the experimental group compared to the control group.*

Conclusion: *These findings suggest that a FRAMES-based psychosocial intervention may effectively address alcohol use and related harms among undergraduate students.*

Keywords: *Brief intervention, psychosocial, motivational intervention, alcohol, undergraduates, students, FRAMES model, brief negotiated interviews, harmful alcohol use, alcohol-related harms, AUDIT, RAPI.*

INTRODUCTION

Alcohol misuse among undergraduate students in India remains a significant public health concern, with high rates of binge drinking and excessive alcohol consumption often reported during the critical developmental phase of young adulthood (18–25 years).[1] Studies indicate a wide range of alcohol use, with surveys showing prevalence rates of alcohol consumption ranging from 10.6 to 32.8% among adolescents and 21.4 % among college students in India.[1,2] These behaviors harm students' health, disrupt academics, and strain social relationships while raising the risk of long-term alcohol dependence.[3] Interventions targeted at this group are crucial for resolving these concerns. Among several approaches, psychosocial intervention like brief motivational intervention using FRAMES (Feedback, Responsibility, Advice, Menu of Options, Empathy, and Self-efficacy) model has emerged as a promising framework for reducing problematic alcohol consumption in college settings.[4] This psychosocial intervention focuses on motivating students to take responsibility for their actions and build confidence in changing their behavior. It offers personalized feedback on drinking habits, empathetic support, discussing the associated risks, and offering practical strategies for managing alcohol use and explores solutions together. Unlike confrontational methods, brief motivational intervention uses a non-judgmental approach, is time-efficient and culturally adaptable making it well-suited for the college demographic.[5] Addressing alcohol misuse among college students in the capital city, Delhi, is crucial, as the city hosts a diverse student body representing a wide range of cultural, regional, and socio-economic backgrounds, each contributing to unique drinking patterns. Delhi's urban environment, characterized by academic pressures and easy accessibility to alcohol, creates conditions that may exacerbate risky drinking behaviors.[6] Despite the growing prevalence of alcohol misuse among this group, there is limited research addressing tailored interventions to curb these patterns.

Therefore, the aim of the study was to determine the efficacy of nurse-led brief motivational intervention on alcohol usage and related harms among undergraduate students.

MATERIALS AND METHODS

Study design and setting: The pilot project was conducted from February 2024 to July 2024 in two co-educational colleges of a Public University in the capital city of India. Pre-test Post-test Nonequivalent Control Group Design was adopted for the study. Two colleges each from north and south zone were purposively selected based on their high uptake of undergraduate students. The colleges were then randomly assigned to control and experimental group to prevent sample contamination. Proportionate stratified random sampling using academic year (1st, 2nd and 3rd year) as strata was used for the selection of students from the selected colleges.

Eligibility criteria: Undergraduate students who consented for the study and screened positive for harmful alcohol use on Alcohol Use Identification Disorder Test (AUDIT) with score 8-19, were taken for the study. Students who scored less than 8 and more than 19 on AUDIT or who underwent treatment for alcoholism, were excluded from the study.

Sample size: The pilot project was conducted on 60 undergraduates (30 in experimental group and 30 in control group) that were classified as harmful alcohol users with AUDIT scores 8-19. A total of 360 undergraduates were screened to get the desired sample size of 60. As a part of proportionate stratified sampling, 72 students from 1st year, 50 students from 2nd year and 58 students from 3rd year were taken from North Zone College for screening. Similarly, 58 students from 1st year, 66 students from 2nd year, 56 students from 3rd year were screened in South Zone college.

Ethical considerations: Ethical permission to conduct the present study was obtained from the Research Ethics Committee, Sharda University. The official permission from the Head of the Institute of the concerned colleges was taken before screening and interventions.

Measures:

a. Alcohol Use Disorder Identification Test (AUDIT): The self-report version of WHO AUDIT was used to screen for harmful alcohol users among undergraduates. The tool consisted of 10 questions from 3 different domains-recent alcohol use, potential alcohol dependency and harmful consequences of alcohol use. Three levels of risk were identified in AUDIT Tool:

0 – 7 - Low risk or abstention
8-19 - High Risk or harmful alcohol use
20+ - Dependence.

The students with AUDIT scores of 8–19, i.e. level II or high risk/ or harmful alcohol use were recruited for the study.

b. **Rutgers Alcohol Problem Index (RAPI):** To assess alcohol related problems, 18-item self-administered version of RAPI was used. Students had to simply circle the number that corresponds to the number of times they had experienced each problem due to alcohol consumption in the last 3 months. Adding the number corresponding to circled responses would generate total score. The greater the score, the more alcohol related issues a student faced.

c. **Structured questionnaire to assess the demographic characteristics**

A structured questionnaire containing 19 items was prepared to elicit data about the demographic characteristics of participants such as age, gender, current residence, family structure, previous year academic performance, monthly income of parents, family history of alcohol use, and the factors accessing the alcohol use among the undergraduate students. The tool was developed by extensive review of literature, under the guidance of experts, supervisor and researcher's personal experience. Prior to administration, the questionnaire was pre-tested to ensure its reliability and validity in the target population.

Intervention:

The planned brief motivational intervention was delivered in the form of two intensive individualized Brief Negotiated Interview (BNI) sessions of 15-20 mins. duration to each participant in the experimental group.

This intervention was built upon a guide towards change called "FRAMES" that is an acronym used for six critical elements i.e. Feedback, Responsibility, Advice, Menu of options, Empathy and Self efficacy. The control group was provided with a standard advice.

Screening and collection of baseline data: First, informed consent was obtained from participants in a class room setting by providing them with detailed information about the study, including its purpose, procedures, and potential risks. After obtaining consent, AUDIT forms were distributed to screen for harmful alcohol use, with 20-25 students screened at a time. All the screened students were then asked to collect their AUDIT score in a quiet, secluded room provided by the college authorities to ensure confidentiality and create a safe space for open discussions. Students who scored between 8-19 were asked to fill demographic and RAPI questionnaire during their individual session, to collect baseline data.

For the experimental group: First BNI session was conducted in a non-confrontational manner and consisted of following stages: establishing a comfortable environment, seeking permission to discuss alcohol, exploring the benefits and drawbacks of alcohol use, offering information and feedback based on individual's baseline data, assessing the individual's readiness and confidence for change using a "confidence ruler," addressing ambivalence, reinforcing commitment, suggesting alternative options, creating a clear, goal-oriented action plan to be achieved within the next month, and concluding by expressing gratitude. This session concluded in 15-20 mins. Two weeks post first BNI session, second session was planned. The objective of the second session was revisiting the change plan aimed at improving drinking habits or progressing toward sobriety that was initially discussed in the first session.

For control group: Every participant received feedback on their AUDIT and RAPI scores. "Based on your responses, your AUDIT score was…..Your drinking puts you at higher risk for many health issues. Your RAPI score is….that means you are already facing alcohol related problems. So, you are advised to quit alcohol," was the standard advice given to all participants in the control group.

Follow up: The AUDIT and RAPI were administered during the follow-up survey at 3 months after the last intervention. No attrition was observed in both the groups. Students were reached out through their phone numbers. Each student was contacted 2 days prior to scheduled day of posttest data collection.

Outcome: The primary outcome was reduction in alcohol consumption and alcohol related harms in experimental group.

Results & Statistical Analysis: Statistical Package for Social Sciences (IBM SPSS Statistics v. 28.0) was used to analyze data. Table-1 depicts the frequency and percentage distribution of samples with the measure of association of homogeneity test. There was no significant difference between experimental and control group with respect to different socio-demographic factors and clinical characteristics.

Table 1: Socio-demographic characteristics of experimental and control group

Sample Characteristics		Experimental Group		Control Group		Chi-squarevalue	p value
		Frequency	Percentage	Frequency	Percentage		
Age (in completed years)	18 Years	1	3.3	3	10.0	2.27 (df=4)	0.1319 NS
	19 Years	3	10.0	4	13.3		
	20 Years	12	40.0	9	30.0		
	21 Years	9	30.0	11	36.7		
	>21 Years	5	16.7	3	10.0		
Gender	Male	24	80.0	21	70.0	0.8 (df=1)	0.3711 NS
	Female	6	20.0	9	30.0		
Current Residence	Off campus apartment/P. G.	12	40.0	9	30.0	0.722 (df=2)	0.3955 NS
	Shared house/flat	11	36.7	12	40.0		

	Living with parents/guardians	17	23.3	9	30.0		
Family structure	Nuclear	25	83.3	21	70.0	1.49 (df=1)	0.2222 NS
	Joint	5	16.7	9	30.0		
Previous year academic performance	71 % and above	3	10.0	5	16.7	1.286 (df=3)	0.2568 NS
	61-70%	6	20.0	8	26.6		
	51- 60%	18	60.0	14	46.7		
	Below 50%	3	10.0	3	10.0		
Monthly income of parents (in rupees)	Less than 30,000	3	10.0	5	16.7	0.618 (df=4)	0.4318 NS
	30,001-60,000	7	23.3	7	23.3		
	60,001-1,00,000	8	26.7	7	23.3		
	1,00,001 - 2,00,000	10	33.3	9	30.0		
	Above 2,00,000	2	6.7	2	6.7		
Do either of your parents drink alcohol?	Yes	23	76.7	20	66.7	0.778 (df=1)	0.377 NS
	No	7	23.3	10	33.3		
Do any of your friends drink alcohol?	Yes	27	90.0	25	83.3	0.576 (df=1)	0.4479 NS
	No	3	10.0	5	16.7		
Who introduced you to alcohol?	Parent	2	6.7	1	3.3	1.84 (df=5)	0.175 NS
	Sibling	4	13.3	3	10.0		
	Friend from school	10	33.4	12	40.0		
	Friend from college	12	40.0	10	33.4		
	Friend from neighbourhood	1	3.3	3	10.0		
	By own	1	3.3	1	3.3		
What is the main reason for starting consuming alcohol?	Peer Pressure	12	40.0	10	33.4	0.722 (df=4)	0.3955 NS
	Stress	6	20.0	8	26.7		
	Influence of media	5	16.7	4	13.3		
	Family influence	3	10.0	4	13.3		
	For fun	4	13.3	4	13.3		

How old were you when you had your first drink of alcohol?	13 to 14 yrs old	9	30.0	10	33.4	0.312 (df=2)	0.5675 NS
	15 to 17 yrs old	18	60.0	16	53.3		
	18yrs or older	3	10.0	4	13.3		
Which type of alcoholic beverage do you drink most often?	Beer	15	50.0	18	60.0	0.612 (df=2)	0.4340 NS
	Wine	6	20.0	5	16.7		
	Spirits	9	30.0	7	23.3		
How do you usually obtain alcohol?	Purchase myself (with or without fake ID)	9	30.0	12	40.0	0.668 (df=2)	0.4137 NS
	Given by friends/family	12	40.0	10	33.3		
	Parties or social events	9	30.0	8	16.7		
Where do you usually consume alcohol?	Social gatherings/parties	6	20.0	7	23.4	1.5 (df=3)	0.2207 NS
	Bars/clubs/ Restaurants	6	20.0	3	10.0		
	At a friend's place	12	40.0	15	50.0		
	At home/room	6	20.0	5	16.6		
How would you rate your current level of alcohol consumption ?	Very Responsible	6	20.0	5	16.6	1.366 (df=4)	0.2425 NS
	Responsible	7	23.3	6	20.0		
	Neutral	8	26.7	12	40.0		
	Irresponsible	6	20.0	4	13.4		
	Very Iresponsible	3	10.0	3	10.0		
Have you ever driven a vehicle after consuming alcohol?	Yes	6	20.0	8	26.7	0.372 (df=1)	0.5419 NS
	No	24	80.0	22	73.3		
Have you ever been a passenger in a vehicle driven by someone drunk?	Yes	10	33.3	8	26.6	0.318 (df=1)	0.5128 NS
	No	20	66.7	22	73.4		
Are you aware of the	Yes	27	90.0	21	70.0	3.75 (df=1)	0.0528 NS
	No	3	10.0	9	30.0		

legal consequences of drinking and driving?							
Have you ever participated in any alcohol education programs or workshops?	Yes	2	6.7	3	10.0	3.158 (df=1)	0.0756 NS
	No	28	93.3	27	90.0		

Level of significance, P<0.05. df-degree of freedom. NS-Not significant

The Chi-square test was applied to determine whether there were statistically significant differences between the Experimental and Control groups across categorical sample characteristics. All comparisons yielded non-significant results ($p > 0.05$), indicating no statistically significant baseline differences between groups across sample characteristics.

As depicted in table 1, most undergraduates in both groups were aged 20 or 21 years, accounting for around 70% in the experimental group and 66.7% in the control group. Males dominate in both groups (80% in the experimental group, 70% in the control group), while females make up 20% and 30% in experimental and control group respectively. A significant portion of undergraduates in both groups live off-campus in PGs/apartments or shared houses. The percentage of undergraduates living with parents/guardians is lower in the experimental group (23.3%) compared to the control group (30%). The majority of undergraduates belong to nuclear families (83.3% in the experimental group and 70% in the control group). A higher percentage of undergraduates in both groups scored below 50% in the previous year (60% in the experimental group and 46.7% in the control group). The majority of undergraduates belong to middle-income families with incomes between ₹60,001 - ₹2,00,000. Peer Pressure emerged as the dominant reason for starting alcohol consumption in both the groups. Majority of the undergraduates had their first drink between the ages of 15 and 17. Beer was the most commonly consumed type of alcohol by undergraduates, followed by spirits.

Efficacy of brief motivational intervention: To test the efficacy of intervention, a paired t-test was conducted to examine the mean difference between pre-test and post-test AUDIT and RAPI scores within the experimental group. Results showed a significant reduction in both measures:

- AUDIT scores decreased from $M = 10.2$ ($SD = 1.72$) to $M = 5.2$ ($SD = 1.46$), $t(29) = 13.15$, $p < 0.001$ (table 2).
- RAPI scores decreased from $M = 17.45$ ($SD = 3.4$) to $M = 6.4$ ($SD = 2.44$), $t(29) = 13.65$, $p < 0.001$ (table 3).

An independent t-test was conducted to compare the post-test scores of the experimental and control groups:

- Alcohol consumption (AUDIT scores) was significantly lower in the experimental group ($M = 5.2$, $SD = 1.46$) compared to the control group ($M = 9.86$, $SD = 1.94$), $t(58) = 10.36$, $p < 0.001$ (table 4).
- Alcohol-related harms (RAPI scores) were significantly lower in the experimental group ($M = 6.4$, $SD = 2.44$) compared to the control group ($M = 18.6$, $SD = 3.38$), $t(58) = 16.02$, $p < 0.001$ (table 5).

These results demonstrate the efficacy of the FRAMES-based intervention in reducing alcohol use and its associated harms.

Table-2: Comparison of Pre-test and Post-test AUDIT Scores in the Experimental Group

GROUP	AUDIT SCORE	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN	STANDARD ERROR OF DIFFERENCE	t value

Experimental group (n1= 30)	Pre-test	10.2	1.72	0.31	0.372	13.15*
	Post-test	5.26	1.46	0.27		

*Significant at $p < 0.001$. Degrees of freedom (df) = 29; critical t-value (two-tailed) = ±3.659.

Table- 3: Comparison of Pre-test and Post-test RAPI Scores in the Experimental Group

GROUP	RAPI SCORE	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN	STANDARD ERROR OF DIFFERENCE	t value
Experimental group (n= 30)	Pre-test	17.45	3.41	0.76	0.809	13.65*
	Post-test	6.4	2.44	0.54		

*Significant at $p < 0.001$. Degrees of freedom (df) = 29; critical t-value (two-tailed) = ±3.659.

Table-4: Comparison of Post-Test AUDIT Scores Between Experimental and Control Groups (N = 60)

GROUP	AUDIT SCORE	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN	STANDARD ERROR OF DIFFERENCE	t value
Experimental group (n1= 30)	Post-test	5.26	1.46	0.27	0.444	10.36*
Control group (n2= 30)	Post-test	9.86	1.94	0.35		

*Significant at $p < 0.001$. Degrees of freedom (df) = 58; critical t-value (two-tailed) = ±3.460.

Table- 5 Comparison of Post-Test RAPI Scores Between Experimental and Control Groups (N = 60)

GROUP	RAPI SCORE	MEAN	STANDARD DEVIATION	STANDARD ERROR OF MEAN	STANDARD ERROR OF DIFFERENCE	t value
Experimental group (n1= 30)	Post-test	6.4	2.44	0.45	0.761	16.02*
Control group (n2= 30)	Post-test	18.6	3.38	0.61		

*Significant at $p < 0.001$. Degrees of freedom (df) = 58; critical t-value (two-tailed) ≈ ±3.460

DISCUSSION

The present study aimed to examine the efficacy of FRAMES Based psychosocial intervention in reducing alcohol consumption and alcohol-related harms among undergraduate students. The findings also provide insights into the behavioral patterns and socio-economic factors influencing alcohol access and consumption among undergraduates.

Demographic Characteristics

Among the total samples, 75% were male undergraduates who were consuming alcohol at harmful level. Numerous earlier studies have indicated that alcohol use problems and maladaptive drinking practices are more common in men.[7-9] Residence patterns showed that a significant portion of undergraduates lived independently, either in off-campus accommodations (40% in the experimental group and 30% in the control group) or shared flats. Students who live away from parental supervision often feel more in control of their actions, which could result in them drinking more alcohol.[10] This finding is similar with the findings of a study conducted in public universities of United States where they found that students who lived with their parents were less likely to drink than those who lived on/off campus (OR=0.36, CI[0.26, 0.50]), highlighting the importance of individual independence in drinking patterns. [11]

Academic Performance and Financial Background

In the present study, with 60% of the experimental group and 46.7% of the control group scoring below 50% in their previous academic year, a significant percentage of undergraduates indicated below-average academic performance. Low academic performance, being suspended, and absenteeism have all been linked to excessive alcohol use in various studies. [12,13] Alcohol may have an effect on academic performance through two significant routes. In the first place, excessive alcohol use can impair cognitive performance. Secondly, binge drinking leads to an irregular sleep schedule along with hangovers, which impair academic performance. [14] Additionally, a study discovered that high alcohol usage was linked to less study hours. [15]

Parental income levels varied, but most undergraduates belonged to middle-income households (₹60,001 - ₹2,00,000 per month). A small proportion of undergraduates came from high-income backgrounds (6.7% in both groups). These findings suggest that alcohol consumption is not necessarily limited to a specific economic class but may be influenced by affordability and accessibility. [16] Similar trends were reported in a review, where middle-income students had higher alcohol consumption rates compared to low-income groups, largely due to financial feasibility and social influences. [17]

Factors accessing alcohol use

In the present study, majority of the undergraduates got introduced to alcohol by friends from college (40% in experimental and 33.4% in control group). The results are consistent with the findings of a study conducted among college students of western Punjab where in 42.7% of cases, friends introduced university students to alcohol, whereas 9.1% of students introduced themselves. [18]

In both the groups of present study, peer pressure emerged out as the main reason for starting consuming alcohol. Similar findings were documented by a study where peer influence was identified as one of the primary factors contributing to alcohol acquisition among university students. [19]

In majority of the undergraduates, the age of initiation of alcohol was found to be 15 to 17 years of age range. Similar findings were reported in a systematic review regarding adolescents drinking in India which concluded that the average age at which people started drinking is between 14.4 and 18.3 years old. [1]

Current study found that beer was the most preferred drink by students (50% in experimental group and 60% in control group) than any other alcoholic beverage. Several other studies reported that men drink beer more frequently. [20,21] In current study, control group was more likely to purchase alcohol independently (40%) compared to the experimental group (30%), highlighting their greater access to alcohol, possibly through legal or illicit means such as fake IDs. This indicates failure of legislature in controlling access to alcohol to underage youth in Delhi. According to a survey done in December, 2021 by "Community Against Drunken Driving", under-25-year-olds in Delhi have easy access to alcohol since they can purchase it from vendors, clubs, and pubs without providing identification. Delhi's legal drinking age is 25, yet according to the poll, over 67% of respondents in the 18–25 age range bought alcohol from liquor stores without ever being asked for evidence of age. [22] Similarly in a study carried out in western university, Columbia, it was reported that 51% of underage college students believed alcohol to be "very easy" to obtain, and 18% said they used false identification (fake ID) to obtain alcohol, despite legislative prohibitions on the sale of alcohol to minors both on and off campus.[23]

Present study found that 23.3% of total undergraduates consuming alcohol at harmful levels admitted to have ever driven a vehicle after consuming alcohol while 30% drove with an intoxicated driver that is an indicator of a dangerously alarming situation. This finding aligns with a study conducted on university students of mid-Atlanta examining alcohol-related road traffic risk behaviors where it was found that 38% of students rode with an inebriated driver, 42% of students drove after consuming any alcohol, and 17% of students drove while impaired.[24]

Efficacy of intervention

The results demonstrated a significant reduction in alcohol consumption and alcohol-related harms in the experimental group compared to the control group. The experimental group showed lower post-test AUDIT and RAPI scores, indicating that the brief motivational intervention delivered by a nursing officer was effective in modifying drinking behavior among undergraduate students. These findings align with previous studies that highlighted that the brief intervention using FRAMES model delivered by a nurse was effective in reducing alcohol use behaviors among adolescents and young adults.[25-27] Various systemic reviews also suggested that the nurse-conducted brief interventions are an effective strategy for reducing alcohol consumption.[28,29]

Limitations

This study, although providing key information surrounding the efficacy of brief motivational intervention, has few limitations which need to be acknowledged.

The study was based on self-reported measures of alcohol consumption and related harms, both of which may be subjected to recall bias and social desirability effects. While validated tools like AUDIT and RAPI were used in present study, recall of alcohol use may be underreported/overreported by undergraduates. The follow-up period was limited to three months post-intervention in the study. While the results indicate short-term effectiveness, the long-term sustainability of behavior change remains uncertain. Future research should incorporate extended follow-up assessments to evaluate the persistence of intervention effects.

CONCLUSION

This study offers valuable insights for shaping public health policies and initiatives. In India, student alcohol consumption is an increasing concern that often goes unaddressed. Key challenges include insufficient awareness, limited resources, and a lack of dedicated personnel to manage alcohol-related issues. The findings of the current study suggested that a feasible approach to overcoming these barriers is the implementation of an on-campus, nurse-led brief motivational intervention that is both practical and effective.

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Conflict Of Interest

Nil

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