Research Article

Evaluating the Effectiveness of Peer-led Anti-Alcohol Educational Intervention on Reducing Alcohol Use among School Students

Bhagawoti Sharma[1*], Bhimsen Devkota[2]

[1]PhD Scholar, Graduate School of Education,
Faculty of Education, Tribhuvan University, Nepal
[2]Mahendra Ratna Campus, Tahachal, Kathmandu
* Corresponding Author
  bhagawoti39kafle@gmail.com
  https://orcid.org/0000-0002-8712-0712

Abstract

Alcohol use is a major public health concern worldwide, and school students are vulnerable to alcohol use. School-based interventions aim to prevent or delay the initiation of alcohol use among adolescents. The purpose of the study is to assess the impact of the peer-led anti-alcohol educational intervention on students' knowledge, perception, and practice related to alcohol use. Using a quasi-experimental (one group; pre, and post-test) design, a non-probability convenience sampling technique was employed to collect a sample of 60 students amongst four classes (9th to 12th) in a selected school. A self-administered questionnaire was used as a tool for collecting pre-test and post-test data. Intervention was developed based on the need assessment results and a review of the literature. The anti-alcohol educational intervention included thirteen sessions, all delivered by peer-educators. Data were analyzed using a paired t-test and the Wilcoxon Signed-Rank Test. The results show that students' post-test mean knowledge scores (14.55) on alcohol use were significantly ($P<0.05$) increased from the pre-test score (13.32). Likewise, the student's post-test mean score (88.75) on perception of alcohol use was significantly ($P<0.05$) higher than pre-test mean perception scores (88.75). Furthermore, the student's post-test mean alcohol practice score (2.98) was significantly ($P<0.05$) decreased compared to the pre-test mean alcohol practice score (5.53). These results indicate that students' knowledge and perception scores on alcohol use significantly increased after the anti-alcohol educational intervention, indicating a better awareness and more negative attitudes toward alcohol consumption. Meanwhile, their practice scores, which gauged self-reported alcohol use behaviors, significantly decreased, indicating a decline in alcohol-related behaviors. Therefore, the study suggests that integrating peer-led anti-alcohol educational interventions into secondary school education could improve knowledge, and attitudes, and decrease alcohol consumption among students.

Introduction

Alcohol use and abuse among young people are significant public health problems (Caluzzi et al., 2020). Heavy drinking and binge drinking, especially among young people, are associated with risk-taking behavior and many serious unintentional and intentional health issues (Baskar et al., 2022; Kolind et al., 2025). Alcohol consumption causes severe

consequences like loss of life, financial loss, social crime, harm to children's health, marriage issues, vision impairment, injuries, and impaired thinking (Jani et al., 2014). Likewise, drinking alcohol at a young age can increase the risk of dependence, risky behavior, health issues, and accidents (World Health Organization, 2018). In 2019, 22 percent of the adolescent aged 15–19-year-olds consumed alcohol and alcohol contributes to 31 health conditions, leading to 2.6 million deaths (4.7% of total) (World Health Organization, 2024). Studies in Nepal indicate that there is a tendency of alcohol consumption at young age. Sapkota and Paneru (2021) found that 16.3 percent of adolescents consumed alcohol in Nawalpur district and Khadka et al.'s study (2024) revealed that 58.2 percent of the undergraduate students consumed alcohol in Bhaktapur district. Similarly, another study alo found that 78.66 percent of the participants were nondrinkers, 14.63 percent were occasional drinkers, and 6.71 percent were current drinkers (Tamrakar, 2018). These findings suggest that adolescent alcohol use in Nepal follows the global trends. Cultural practices, lack of effective enforcement of laws, limited access to anti-alcohol education might have led to the increased adolescent alcohol consumption in Nepal and this is a serious health and a socio-cultural challenge.

Schools play a crucial role in implementing interventions to prevent alcohol use among adolescents and young people can be reached for programs (Jackman et al., 2022; Skivington et al., 2021). School-based interventions are found useful in preventing alcohol abuse among adolescents and in developing behaviors that promote healthy lifestyle, the effects of which may extend beyond the early years of youths (Liu et al., 2023; Wolfenden et al., 2022). Developed countries have implemented school-based interventions since the second half of the 20th century, many of which are peer-based interventions (Chatterjee & Nirgude, 2024). Champion et al. (2013) found that school-based interventions effectively reduced alcohol use among students by increasing awareness, increasing refusal skills, and promoting positive attitudes toward alcohol. Furthermore, Stigler et al. (2011) found that most school-based interventions targeted school students to delay or prevent alcohol use..

Previous studies have demonstrated the effectiveness of peer-led interventions in changing health-related behaviors. For example, Lavilla-Gracia et al. (2023) found that peer-led interventions were effective in changing alcohol consumption among university students. Similarly, Georgie et al. (2016) found that peer interventions can be effective in preventing alcohol consumption among youth aged 11–21 years. Similarly, a study conducted by (Pueyo-Garrigues et al., 2023) demonstrates that peer-led intervention significantly reduced self-reported alcohol use among high school students. Furthermore, Goldstein (2020) found that peer-led interventions were more effective than adult-led interventions.

Peer-led interventions are particularly appropriate for adolescents because peers are often more influential than adults in shaping norms, attitudes, and behaviors during this developmental stage. Turner and Shepherd (1999) have noted that adolescents view their peers as a reliable source of information and are more likely to adopt the behaviors they model. Similarly, relationships and shared experiences among peers increase engagement, participation, and openness, making peer-led education a promising approach for health behavior (Mellanby et al., 2000).

Since school-aged children tend to believe that peers provide reliable information, peer-led education can have a positive impact on adolescents' attitudes and behaviors. In Nepal, little attention has been paid to preventive educational interventions on alcohol consumption for

school-aged children. Many studies have been conducted on school-based interventions worldwide. However, in the context of Nepal, research on the effectiveness of such interventions on alcohol consumption among school students is still limited and no studies have been conducted on peer-led anti-alcohol educational interventions. This study was an attempt to fill this knowledge gap by evaluating the effectiveness of peer-led educational interventions to prevent alcohol use among school students. It aimed to measure the impact of the intervention in improving students' knowledge, perceptions, and practices regarding alcohol consumption among school students.

Methods and Materials

Study Design
This study employed a one-group pre-test and post-test quasi-experimental design for evaluating the effectiveness of a peer-led anti-alcohol educational intervention.

Study Area
This study was conducted in a public school, located in Kohalpur Municipality of Banke District. Sixty students from grades 9 –12 were selected using a non-probability convenience sampling approach.

Intervention Development
The researcher developed a peer-led anti-alcohol educational intervention based on the literature review and needs assessment. The intervention consisted of thirteen 45-minute sessions using a peer-led approach. Twelve students (six male and six female) from grades 9 to 12 (three students from each class) were purposively selected as peer educators with the assistance of classroom teachers. Students with leadership skills and the ability and willingness to share their knowledge were chosen for the Peer Educator training. They were engaged in a five-day training that included lectures, discussions, activities, role-playing, and multimedia presentations. The five-day peer-educator training was conducted from 2022 August 21 to 2022 August 25. After training, they received materials to effectively conduct the intervention. Over sixteen days, these peer educators implemented the activities for their classmates, using demonstrations, role play, discussions, and quizzes, all supervised by the researcher. The intervention was conducted among the trained peer-educators from 2022 august August 26, 2022, to September 16. The timing was set by the school principal during school hours.

Table 1. *Summary Table of Intervention Timeline and Components*

Intervention Sessions	Contents	Techniques	Timeline
1	Introduction to alcohol	Discussion, brainstorming	45 minutes
2	Origin or historical development of alcohol use	Demonstration, Lecture	45 minutes
3	Classification of alcohol or alcoholic beverages	Demonstration, lecture	45 minutes
4	Factors influencing alcohol use, misuse, and abuse	Small group discussion, storytelling, poem presentation, demonstration	45 minutes
5	Introduction and causes of alcoholism	Small group discussion, presentation, and demonstration	45 minutes
6	Symptoms and stages of alcoholism	Small group discussion, presentation, lecture,	45 minutes

		demonstration	
7	Short-term effects of alcohol use	Demonstration, lecture	45 minutes
8	Long-term effects of alcohol use	Demonstration, lecture	45 minutes
9	Social and health effects of alcohol use	Demonstration, lecture, storytelling	45 minutes
10	Control measure of alcohol use	Small group discussion, presentation, lecture	45 minutes
11	Strategies, Myths, and facts about alcohol use	Small group discussion, presentation, lecture	45 minutes
12	Strategies, Myths, and facts related to alcohol advertising	Small group discussion, presentation, lecture	45 minutes
13	Effect of alcohol advertising, promotion, and sponsoring	Small group discussion, presentation, lecture	45 minutes

Data Collection Tools

Following a comprehensive review of existing literature and consultation with experts, a structured questionnaire was developed to evaluate the knowledge, perceptions, and practices related to alcohol consumption among school students. The researcher administered the questionnaire by conducting a pilot test. The results of the pilot test data for the questionnaire showed Cronbach's alpha values of 0.807, 0.832, and 0.892 for knowledge, perceptions, and practice, confirming reliability.

Data Collection Procedure

Per-test was conducted one week before the intervention and post-test was conducted one week after the intervention. The researcher independently gathered both pre-test and post-test data by using a self-administered structured questionnaire.

Ethical Consideration

The researcher obtained ethical approval from the Nepal Health Research Council and the research committee of the Graduate School of Education, Faculty of Education, Tribhuvan University, Kirtipur, Kathmandu. Additionally, informed consent was obtained in this study through a two-step process. At first, the researcher obtained the formal permission from the selected secondary school to conduct the study. Then, written informed consent was obtained from the students and their parents. The researcher clearly explained the study objectives, procedures, potential risks, and benefits to the students in the Nepali language. In addition, the researcher assured the students that participation was voluntary, that the data obtained from them would be kept confidential, that it would be used only for research purposes, and that anonymity would be guaranteed.

Measurement

Students' knowledge, perceptions, and practices regarding alcohol consumption were calculated based on the sum of the scores students scored in each question. The knowledge section consisted of 13 questions, where students scored 1 point for a correct answer and 0 points for an incorrect answer. Knowledge levels were categorized as inadequate (less than 50% of scores), moderate (50-75%), and adequate (more than 75%).

The perception part of the questionnaire included 26 statements on alcohol facts and misconceptions. Positive statements were scored as strongly agree = 5, agree = 4, neutral = 3, disagree = 2, and strongly disagree = 1. Negative statements were scored in reverse: strongly agree = 1, agree = 2, neutral = 3, disagree = 4, and strongly disagree = 5. In addition, the alcohol consumption practice questionnaire consisted of 10 items. Items 1, 4, and 10 were yes/no, with

1 point for "yes." Item 2 assessed the age at first drinking, receiving 3 points for ages 10–14, 2 points for ages 15–19, 1 point for ages 20–24, and 0 points for never. Item 3 provided multiple responses, each receiving 1 point. Item 5 assessed the types of alcohol: beer (1), wine (2), spirits (3), vodka (4), home-brewed (5), never-brewed (0). Item 6 measured the amount consumed, ranging from 0 to 4 for four or more glasses. Item 7 looked at the places of consumption, ranging from 1 point for home to 5 points for community events. Item 8 tracked time, ranging from 4 points for the pre-15 days. Question 9 measured the frequency of alcohol consumption, ranging from 1 to 4 points.

Data Analysis Techniques

Data for the present study were organized using SPSS version 27.0 for the current study. The collected data were analyzed in relation to the study objectives by employing both descriptive and inferential statistical methods. Frequency and percentage were utilized for analyzing demographic information. Additionally, mean and standard deviation were computed for pretest and posttest scores. Before the conducting paired t-test normality test was performed. For normally distributed data, a paired t-test was conducted, whereas for non-normally distributed data, the Wilcoxon Signed-Rank test was used. A paired t-test was applied to assess the effectiveness of peer-led anti-alcohol educational intervention on students' knowledge and perceptions regarding alcohol use, while the Wilcoxon Signed-Rank Test was used to evaluate the effectiveness of peer-led anti-alcohol educational interventions regarding the alcohol consumption practices.

Results

Demographic Information

More than half (63.3%) of the respondents were female, whereas, 36.7 percent of the respondents were male. Likewise, most respondents (73.33%) were aged 15-19, while only 26.7 percent of the respondents were aged 10-14. By religion, 76.7 percent of the respondents were Hindu, and 8.3% were Buddhist. Regarding caste, Chhetri respondents were the largest group (26.7 %), and the Terai caste represented the smallest group (3.3%). About 53.3 percent of the respondents lived in nuclear families, with 46.7 percent in joint families. Concerning the father's educational status, the basic education level reflects the highest percentage at 41.66 percent, while the illiterate category has the lowest percentage at 6.7 percent. For mother's educational status, the basic education level shows the highest percentage at 38.33 percent, while the category of bachelor level or above represents the lowest at 11.66 percent (Table 2).

Table 2. *Personal Information of the Respondents*

Variables	Category	Frequency	Percentage
Sex of the respondents	Female	38	63.3
	Male	22	36.7
Age of the respondents	10-14	16	26.7
	15-19	44	73.33
Religion of the respondents	Hindu	46	76.7
	Buddhist	5	8.3
	Christian	9	15.0
Caste of the respondents	Brahmin	13	21.7
	Chhetri	16	26.7
	Janajati	9	15.0
	Dalit	10	16.7
	Thakuri	10	16.7
	Terai caste	2	3.3

Types of family of the respondents	Nuclear Family	32	53.3
	Joint Family	28	46.7
Father's Educational status	Illiterate	4	6.7
	Basic education level	25	41.66
	Secondary level	16	26.7
	Bachelor Level or above	16	26.7
Mother's Educational Status	Illiterate	11	18.3
	Basic education level	23	38.33
	Secondary Level	19	31.7
	Bachelor level or above	7	11.66

Students' Pre-Test and Post-Test Knowledge regarding Alcohol Use

The students' knowledge regarding alcohol use is assessed in terms of knowledge level, alongside a comparison of their pre-test and post-test scores. The findings regarding the students' knowledge about alcohol consumption are presented in the following sections:

Knowledge Level

Pre-test results indicated that most of the respondents had inadequate knowledge (90%), a few had moderate knowledge (10%), and none had adequate knowledge. In the post-test, respondents' inadequate knowledge slightly decreased (85 %), moderate knowledge remained the same (10%), and a small proportion achieved adequate knowledge (5%). When classified into levels of knowledge (inadequate, moderate, and sufficient), only a limited number of students moved to higher grades after the intervention. These results indicate that a little drop in inadequate knowledge and an increase in students' reaching appropriate knowledge show that the intervention resulted in a slight improvement in knowledge. (Table 3).

Table 3. *Associations of Students' Pre-test and Post-test Knowledge Level Regarding Alcohol Use*

Time	Inadequate Knowledge (<50%) N (%)	Moderate Knowledge (>50% <75%) N (%)	Adequate Knowledge (>75%) N (%)	Fishers Exact	P
Pre-test	54 (90)	6(10)	-		
Post-test	51 (85)	6(10)	3(5)	2.736	0.338

*Significant at <0.05.

Comparison of pre-test and post-test Knowledge

The students' knowledge regarding alcohol use was assessed through pre-test and post-test evaluations using a paired sample t-test, as detailed below:

The students' mean post-test score (14.92) regarding alcohol use was significantly increased (t= -3.644, P<0.05) from the pre-test score (13.32). The paired mean difference was -1.60, indicating improved knowledge after the anti-alcohol educational intervention (Table 4).

Table 4. *Comparison of Pre-test and Post-test Knowledge Score of the Students*

Variables	Time	Mean	SD	MD	95% CI Lower	Upper	T	P	Effect size
Knowledge score	Pre-test	13.32	5.890	-1.60	-2.479	-0.721	-3.644	<0.001*	-0.470
	Post-test	14.92	7.370						

*Significant at <0.05.

Perception Regarding Alcohol Use

The mean post-test perception score (88.75) regarding the alcohol use among school students significantly increased (t= -3.017, P<0.05) from the pre-test score (86.40). The paired mean difference was -2.350, with a 95% Confidence Interval ranging from -3.909 to -0.791. The

effect size is -0.390. This indicates the improved perceptions after the peer-led anti-alcohol educational intervention (Table 5).

Table 5. *Comparison of Pre-test and Post-test Perception Score of the Students*

Variables	Time	Mean	SD	MD	95% CI Lower	Upper	T	P	Effect size
Perception score	Pre-test	86.40	10.745	-2.350	-3.909	-0.791	-3.017	0.004*	-0.390
	Post-test	88.75	10.157						

*Significant at <0.05.

Students' Alcohol Consumption Practice

The assessment of students' alcohol consumption was conducted by evaluating the prevalence of alcohol use and comparing alcohol practice scores, as well as analyzing pre-test and post-test scores. The results concerning students' alcohol consumption given below:

Prevalence of Alcohol Consumption

The research indicated that 36.66 percent of participants acknowledged consuming alcohol at least once in their lifetime during both the pre-test and post-test phases. In terms of the age at which individuals first began using alcohol, 31.66 per cent reported starting between the ages of 10 and 14 years, while 5 per cent initiated use between 15 to 19 years of age, consistent in both pre-test and post-test results. The average age for the onset of alcohol consumption was calculated to be 13.60 ± 0.82078 years across both assessment periods. Over the past year, 33.3 percent of respondents indicated alcohol use in the pre-test, which decreased to 25 percent in the post-test. Regarding the more recent consumption patterns, 11.7 percent reported drinking alcohol within the previous six months during the pre-test, which diminished to 8.3 percent in the post-test. The proportion of individuals who had consumed alcohol within the last three months remained unchanged at 3.3 percent, while those who had consumed alcohol within the last month fell from 18.4 percent to 13.33 percent (Table 6).

Table 6. *Prevalence of Alcohol Consumption Among School Students*

Characteristics	Responses	Pre-test	Post-test
Ever consumed alcohol	Yes	22 (36.66%)	22 (36.66%)
	No	38 (63.33%)	38 (63.33%)
Age at initiation of alcohol consumption	10-14	19 (31.66)	19 (31.66)
	15-19	3(5%)	3(5%)
Mean age		13.60 ±0.82078	13.60±0.82078
Past 12 months	Yes	20 (33.3%)	15 (25%)
	No	40 (66.7%)	45 (75%)
Time of alcohol consumption	Before 6 months	7 (11.7%)	5 (8.3%)
	Before 3 months	2 (3.3%)	2 (3.3%)
	Before one months	11 (18.4%)	8 (13.33%)

Comparison of Pre-test and Post-test Alcohol Consumption Practice

The study revealed that the mean score for the pre-test is 5.53, with a standard deviation (SD) of 6.675, a minimum score of 0, and a maximum score of 18. In contrast, the post-test shows a mean score of 2.98, with a standard deviation of 4.619, a minimum score of 0, and a maximum score of 15. The computed Z value is -5.445, and the associated P is less than 0.05,

indicating a statistically significant difference between the pre-test and post-test assessment (Table 7).

Table 7. *Comparison of Pre-test and Post-test Alcohol Consumption Practice Score of the Students*

Time	Mean	SD	Min.	Max.	Z	P
Pre-test	5.53	6.675	0	18	-5.445	<0.001*
Post-test	2.98	4.619	0	15		

Discussion

This study revealed that there was a minor decrease in students inadequate knowledge and a slight rise in adequate knowledge, regarding alcohol use but the change was not significant (P>0.05). These results are consistent with those of a similar previous study conducted by Kasturkar et al. (2020) in which 50 percent of college students had average knowledge and 50 percent had good knowledge regarding the ill effects of alcoholism in the pre-test. Similarly, 66 percent students had excellent knowledge and 34 percent had very good knowledge in the post-test. Similarly, the results also align with the results of another study conducted by Anju and Rajamani (2019), which showed that the majority of adolescents (80%) had moderately adequate knowledge about alcohol's ill effects and 20 percent adolescents showed inadequate knowledge in the pre-test. In the post-test, 83.30 percent reported moderately adequate knowledge, while only 16.70 percent had inadequate knowledge. This reflects the intervention's success in enhancing awareness. A study conducted by Manikandan et al. (2023) revealed that in the pre-test phase 24 percent of secondary school students had inadequate knowledge, dropping to 5 percent post-test. Likewise, most of the students (76%) displayed moderate knowledge in the pre-test while decreasing to 31 percent in the post-test, whereas adequate knowledge spiked from 0 percent to 64 percent, indicating significant overall improvement in knowledge levels.

The current research demonstrates a significant difference (t= -3.644, P<0.05) in the average knowledge scores of students from pre-test to post-test concerning alcohol use. This suggests that the peer-led anti-alcohol educational intervention has a significant effect on enhancing students' understanding of alcohol use. While a previous study conducted by Kumar and Huidrom (2016) shows that a significant improvement in students' knowledge regarding substance use, with an average knowledge score increase from 10.53 to 24.23 (t=49.92, P<0.05) after the intervention. Likewise, a study by Kasturkar et al. (2020) found that students' post-test knowledge score on the ill-effects of alcoholism (25.19) significantly surpassed the pre-test score (12.27), with a notable improvement (t=58.96, P<0.05) after intervention. Similarly, the results of the previous research indicate that a peer education intervention positively influences and markedly improves the secondary school students' knowledge regarding drug abuse (Mokadem et al., 2021). The studies in thesed different contexts show similar results due to the similarity of interventions, study population, study methodology, and data collection technique that effectively enhance knowledge regarding alcohol consumption, leading to shifts in students' understanding from inadequate to moderate and adequate levels post-assessment.

The data presented in this study indicate that there was a statistically significant difference (t= -3.017, P< 0.05) between the pre-test and post-test mean perception score

regarding alcohol use among school students. This indicates that peer-led anti-alcohol educational intervention impact to increase students' perception regarding alcohol use. These results are consistent with the previous study results of Van Roozendaal et al. (2024), which showed that a social norms campaign-related intervention effectively corrects misperceptions about alcohol use among university students. However, these results are different from a study by Webster et al. (2002), which explored that the peer support program did not demonstrate any significant positive effect on adolescents' perception regarding alcohol consumption.

However, the previous study findings are no different from a similar study by Arevian and Khasholian (2014), which revealed that the average positive attitude of adolescents regarding alcohol consumption demonstrated a notable decrease following the peer-led educational program (P<0.05). This suggests that the peer-led educational initiative effectively reduced adolescents' positive perceptions of alcohol use. Among those contextual studies, some showed similar results while others differed. This may stem from variations in intervention design, measurement tools, baseline perceptions, sample size, statistical power, duration or time of intervention, and quality of implementation.

The present study shows that the lifetime prevalence of students using alcohol remains at 36.66 percent from pre-test to post-test, with the average age of first use stable at 13.6 years, mostly between 10 and 14. However, recent usage has improved: alcohol consumption in the last year fell from 33.3 percent to 25 percent, and in the last month from 18.4 percent to 13.3 percent. This suggests the intervention effectively reduced recent alcohol consumption among students. Whereas, the lifetime prevalence of alcohol use remained largely unchanged. This is an important finding, as it highlights the challenges of changing long-standing behavior within a short intervention period. Lifetime alcohol use reflects cumulative exposure and experience, which may not be easily influenced through a short educational program of this kind of one-shot interventions. The results of the present study are consistent with the previous study results conducted on the Theni district of the Tamil Nadu in India by Shankareswari et al. (2020). They found that the prevalence of alcohol use among higher secondary school students was 31.06 percent. Likewise, nearly 50% of higher secondary school students had their first drink between the ages of 15 and 17 years. The results also align with the previous study results of Australian Institute of Health Welfare (2024), which revealed that in 2019, individuals aged 18–24 drank alcohol monthly more often than weekly. From 2022–2023, monthly drinking fell from 34 percent to 29 percent.

The current study revealed that the mean post-test alcohol consumption practice score (5.53) among school students significantly decreased (Z= -5.445, P<0.05) from the pre-test score (2.98). This indicates a notable reduction in alcohol consumption among school students following the peer-led anti-alcohol educational intervention. The previous study conducted by Manikandan et al. (2023)mentioned that peer-led interventions play a significant role in mitigating alcohol consumption among adolescents. These results confirm the existing evidence from the previous study by (Lavilla-Gracia et al., 2022), which showed that peer interventions have the potential to be effective in reducing alcohol consumption among college students. Similarly, a systematic study conducted by (Macarthur et al., 2015) showed that peer interventions have shown potential effectiveness in reducing alcohol consumption in adolescents. Furthermore, Pueyo-Garrigues et al. (2023) revealed that a peer-led BASICS intervention may effectively reduce binge drinking rate among Spanish nursing students. This body of research supports the effectiveness of peer-led interventions in addressing alcohol

consumption issues, while also indicating variations in outcomes based on the specific populations, availability of resources, and study settings.

Limitations of the Study

The study has limitations such as a one-group pretest-posttest quasi-experimental design, reliance on self-administered questionnaires, and a small sample of 60 students, which may affect validity and generalizability.

Conclusion

Early initiation of alcohol use is associated with a higher likelihood of developing alcohol-related problems, which can negatively impact adolescents' academic achievement. This study found that a peer-led anti-alcohol education intervention significantly improved students' knowledge and perceptions of alcohol use and reduced their levels of alcohol consumption. The results of this study suggest that school students' knowledge of alcohol use can be increased by implementing peer-led anti-alcohol education interventions at schools. However, the unchanged lifetime prevalence of alcohol use and limited improvement in knowledge scores suggest that the effects of the intervention should be interpreted with caution. The short duration of the program and the lack of a control group may have hindered its ability to produce more substantial and sustained effects. This study highlights the potential of peer-led educational interventions as a feasible and attractive approach for alcohol prevention in school settings. Future interventions should consider long-term follow-up, inclusion of control groups, and broad community or parent involvement to reinforce and sustain the positive changes observed. Therefore, stakeholders should develop and implement anti-alcohol programs to raise awareness about the effects of alcohol.

Acknowledgements

Authors' Contributions

BS conceived the study, designed the research design, and drafted the initial version of the manuscript. She was responsible for data collection and preparation of the first draft of the paper. BD critically reviewed the draft, conducted a thorough review of relevant literature, and collaborated closely with BS to refine and finalize the manuscript. Both authors contributed significantly to the intellectual content and approved the final version for submission.

Conflict of Interest

The authors declare that they have no conflicts of interest related to this research.

Funding

References

Anju, A., & Rajamani, S. (2019). A true experimental study to evaluate the effectiveness of structured teaching programme on knowledge regarding iii–effects of alcohol consumption among adolescents

in selected senior secondary school at Panipat Haryana. *International Journal of Nursing Education*, *11*(4), 24-28. https://doi.org/10.5958/0974-9357.2019.00081.3

Arevian, M., & Khasholian, T. K. (2014). Impact of a peer-led educational program on knowledge and attitudes about prevention of substance abuse among Lebanese/Armenian adolescents. *Journal of Community Medicine Health Education*, *4*(5), 1-6. https://doi.org/10.4172/2161-0711.1000326

Australian Institute of Health Welfare. (2024). *Young people's consumption of alcohol*. https://www.aihw.gov.au/reports/alcohol/young-people-alcohol

Baskar, B., Avinash, N., & Nagar, K. (2022). Factors leading to alcohol use among adolescents in Asia: A systematic review. *International Journal of Health Sciences*, *6*(S6), 11365-11380. https://doi.org/10.53730/ijhs.v6nS6.131

Caluzzi, G., MacLean, S., Livingston, M., & Pennay, A. (2020). No one associates alcohol with being in good health: Health and wellbeing as imperatives to manage alcohol use for young people. *Sociology of Health and Illness*, *43*, 493-509. https://doi.org/10.1111/1467-9566.13237

Champion, K. E., Newton, N. C., Barrett, E. L., & Teesson, M. (2013). A systematic review of school-based alcohol and other drug prevention programs facilitated by computers or the internet. *Drug Alcohol Review*, *32*(2), 115-123. https://doi.org/10.1111/j.1465-3362.2012.00517.x

Chatterjee, P., & Nirgude, A. (2024). A Systematic Review of School-Based Nutrition Interventions for Promoting Healthy Dietary Practices and Lifestyle Among School Children and Adolescents. *Cureus*, *16*(1), e53127. https://doi.org/10.7759/cureus.53127

Georgie, J. M., Sean, H., Deborah, M. C., Matthew, H., & Rona, C. (2016). Peer-led interventions to prevent tobacco, alcohol and/or drug use among young people aged 11-21 years: a systematic review and meta-analysis. *Addiction*, *111*(3), 391-407. https://doi.org/10.1111/add.13224

Goldstein, A. (2020). Youth-and peer-led sex education. In *Oxford Research Encyclopedia of Education*. https://doi.org/10.1093/acrefore/9780190264093.013.1310

Jackman, M., Sakzewski, L., Morgan, C., Boyd, R. N., Brennan, S. E., Langdon, K., AM Toovey, R., Greaves, S., Thorley, M. & Novak, I. (2022). Interventions to improve physical function for children and young people with cerebral palsy: international clinical practice guideline. *Developmental Medicine & Child Neurology*, *64*(5), 536-549. https://doi.org/10.1111/dmcn.15055

Jani, V., PGN, S., H.N, R., & Varghese, R. (2014). Effectiveness of planned teaching programme on knowledge regarding ill effects of alcohol consumption. *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, *3*(5), 16-21. www.iosrjournals.org

Kasturkar, P. R., Nandeshwar, P., Mahabudhe, N., Mohite, P., More, P., & Naik, S. (2020). Efficacy of role Play on Ill effects of alcoholism among college going students. *Indian Journal of Forensic Medicine & Toxicology*, *14*(4), 6658-6664. https://shorturl.fm/OSgQr

Kolind, T., Airi-Alina, A., Gaia, C., Athena, F. V., & and Rolando, S. (2025). Culturally informed risk perceptions among young adult drinkers in Denmark, Estonia and Italy. *Health, Risk & Society*, *27*(1-2), 89-106. https://doi.org/10.1080/13698575.2025.2456272

Kumar, D., & Huidrom, H. (2016). Knowledge regarding substance abuse among higher secondary school students. *International Journal of Research and Review*, *3*(7), 70-73. https://ijrrjournal.com/IJRR_Vol.3_Issue.7_July2016/IJRR0014.pdf

Lavilla-Gracia, M., Pueyo-Garrigues, M., Calavia Gil, D., Esandi-Larramendi, N., Alfaro-Diaz, C., & Canga-Armayor, N. (2023). Peer-led BASICS intervention to reduce alcohol consumption and alcohol-related consequences among university students: a randomized controlled trial. *Frontiers in public health*, *11*, 1280840. https://doi.org/10.3389/fpubh.2023.1280840

Lavilla-Gracia, M., Pueyo-Garrigues, M., Pueyo-Garrigues, S., Pardavila-Belio, M. I., Canga-Armayor, A., Esandi, N.,Alfaro-Diaz, C. & Canga-Armayor, N. (2022). Peer-led interventions to reduce alcohol consumption in college students: A scoping review. *Health Social Care in the Community*, *30*(6), e3562-e3578. https://doi.org/10.1111/hsc.13990

Liu, X. Q., Guo, Y. X., & Wang, X. (2023). Delivering substance use prevention interventions for adolescents in educational settings: A scoping review. *World Journal Psychiatry*, *13*(7), 409-422. https://doi.org/10.5498/wjp.v13.i7.409

Macarthur, G., Harrison, S., Caldwell, D. M., & Campbell, R. (2015). Peer-led interventions to prevent tobacco, alcohol and/or drug use among young people aged 11-21 years: A systematic review and meta-analysis. *Addiction*, *111*(3), 391-407. https://doi.org/10.1111/add.13224

Manikandan, S., Lora, S., Vijayan, L., & Ashokan, A. (2023). Effectiveness of structured teaching programme on level of knowledge regarding ill effects of alcoholism among higher secondary school students: A pre-experimental study. *International Journal of Research Publication and Reviews*, *4*(7), 1939-1946. https://ijrpr.com/uploads/V4ISSUE7/IJRPR15488.pdf

Mellanby, A. R., Rees, J. B., & Tripp, J. H. (2000). Peer-led and adult-led school health education: a critical review of available comparative research. *Health Education Research*, *15*(5), 533-545. https://doi.org/10.1093/her/15.5.533

Mokadem, N., Shokr, E. A., Salama, A. H., Shereda, H. M. A., Radwan, H. A., & Amer, H. M. (2021). Peer education intervention to promote drug abuse prevention among secondary schools students. *Neuro Quantology*, *19*(5), 68-78. https://doi.org/10.14704/nq.2021.19.5.NQ21050

Pueyo-Garrigues, S., Pardavila-Belio, M. I., Pueyo-Garrigues, M., & Canga-Armayor, N. (2023). Peer-led alcohol intervention for college students: A pilot randomized controlled trial. *Nursing Health Sciences*, *25*(3), 311-322. https://doi.org/10.1111/nhs.13023

Sapkota, N., & Paneru, D. P. (2021). Prevalence and correlates of tobacco and alcohol use among adolescents in Nawalpur district, Nepal. *Journal of Chitwan Medical College*, *11*(4). https://www.nepjol.info/index.php/JCMC/article/view/41691

Shankareswari, S., Jayapriya, B., Sandeep, K., & Lourdu Jafrin, A. (2020). A study on prevalence of alcohol consumption among higher secondary school students in Theni district, Tamil Nadu. *International Journal of Basic & Clinical Pharmacology*, *9*(2), 226-232. https://doi.org/10.18203/2319-2003.ijbcp20200168

Skivington, K., Matthews, L., Simpson, S. A., Craig, P., Baird, J., Blazeby, J. M., Anne Boyd., K., Craig, N., French, D.P., Mclntosh, E., Petticrew, M., Rycroft-Malone, J., White, M. & Moore, L. (2021). A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *Bmj*, *374*, n2061. https://doi.org/10.1136/bmj.n2061

Stigler, M. H., Neusel, E., & Perry, C. L. (2011). School-based programs to prevent and reduce alcohol use among youth. *Alcohol Research and Health*, *34*(2), 157-162. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3860568/pdf/arh-34-2-157.pdf

Tamrakar, N. (2018). *Alcohol expectancies among students in the city of Pokhara, Nepal* (Publication Number 32) University of Nebraska - Lincol]. Lincol. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1331&context=cehsdiss

Turner, G., & Shepherd, J. (1999). A method in search of a theory: peer education and health promotion. *Health Education Research*, *14*(2), 235-247. https://doi.org/10.1093/her/14.2.235

Van Roozendaal, H., Derickx, K., Ponnet, K., Deforche, B., Thienpondt, A., Glazemakers, I., Verhulst, S., De Dooy, J., Van Der Lely, N. & Van Hal, G. (2024). Process and outcome evaluation of a social norms approach intervention on alcohol use among Flemish university students: a quasi-experimental study. *Archives of Public Health*, *82*(1), 45. https://doi.org/10.1186/s13690-024-01265-w

Webster, R. A., Hunter, M., & Keats, J. A. (2002). Evaluating the effects of a peer support programme on adolescents' knowledge, attitudes and use of alcohol and tobacco. *Drug Alcohol Review*, *21*(1), 7-16. https://doi.org/10.1080/09595230220119282

Wolfenden, L., McCrabb, S., Barnes, C., O'Brien, K. M., Ng, K. W., Nathan, N. K.,Sutherland, R., Hodder, K., Tzelepis, F., Nolan, E., Williams, C.M. & Yoong, S. L. (2022). Strategies for enhancing the implementation of school-based policies or practices targeting diet, physical activity, obesity, tobacco or alcohol use. *Cochrane Database Systematic Review*, *8*(8), Cd011677. https://doi.org/10.1002/14651858.CD011677.pub3

World Health Organization. (2018). *Global status report on alcohol and health 2018* (9241565632). https://iris.who.int/bitstream/handle/10665/274603/9789241565639-eng.pdf

World Health Organization. (2024). *Global status report on alcohol and health and treatment of substance use disorders*. https://iris.who.int/bitstream/handle/10665/377960/9789240096745-eng.pdf?sequence=1