

Predicting Preventive Behaviors Toward Alcohol Consumption Among University Students Using the Theory of Planned Behavior

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Abstract

Background

Despite legal prohibitions and cultural norms, research evidence indicates a growing trend in alcohol consumption among Iranian youth and university students. Given the physical, psychological, and social consequences of this behavior, and the critical role of prevention, the present study aimed to assess preventive behaviors related to alcohol consumption among students of the School of Paramedical Sciences and Public Health at Islamic Azad University of Mashhad, based on the Theory of Planned Behavior (TPB).

Methods

This descriptive-analytical cross-sectional study was conducted in 2024 on 422 students selected through convenience sampling. Data were collected using a demographic questionnaire and a researcher-developed instrument based on the constructs of the TPB, whose validity and reliability had been confirmed. Data were analyzed using appropriate statistical tests, including Mann–Whitney, Kruskal–Wallis, and Pearson correlation coefficient, in SPSS version 27.

Results

The mean preventive behavior score related to alcohol consumption was 17.12 ± 3.54 out of 20. Significant associations were found between preventive behaviors and demographic variables such as gender, field of study, marital status, place of residence, mother's education, and mother's occupation ($P < 0.05$). All TPB constructs—including attitude ($r = 0.560$), subjective norms ($r = 0.514$), perceived behavioral control ($r = 0.360$), and behavioral intention ($r = 0.610$)—showed significant positive correlations with preventive behaviors ($P < 0.001$).

Conclusion

The Theory of Planned Behavior plays a significant role in predicting and explaining preventive behaviors related to alcohol consumption among university students. The significant associations between TPB constructs and preventive behavior highlight the importance of addressing attitudes, social norms, perceived behavioral control, and especially behavioral intention in designing effective educational and preventive interventions.

Introduction

Alcohol is a psychoactive and addictive substance and remains a major public health concern worldwide (1). According to the World Health Organization's 2019 report, harmful use of alcohol is responsible for

approximately 3 million deaths annually, accounting for 5.3% of all global deaths. Moreover, alcohol consumption contributes to 5.1% of the global burden of disease and injury, equaling 132.6 million years of healthy life lost (DALYs). The global average per capita alcohol consumption among individuals aged 15 and older is estimated at 6.4 liters per year, with a general prevalence rate of around 43% (2).

Despite legal prohibitions and strong cultural norms in Iran, recent evidence suggests a growing trend of alcohol consumption among youth and university students (3, 4). A study conducted during the 2017–2018 academic year on 450 students from various universities in Urmia reported an alcohol use prevalence of 15.82% (5). Additionally, a 2019 systematic review and meta-analysis of Iranian studies estimated that about 15% of young people had consumed alcohol (6). Another study in 2022 among students at Bojnourd University of Medical Sciences found that 7% had consumed alcohol within the past year (7). These findings indicate that, despite legal and religious restrictions, alcohol consumption is relatively prevalent among Iranian youth (6).

In addition to its addictive properties, alcohol has extensive negative effects on individual and public health. It is widely regarded as a chronic, progressive, and potentially fatal disease (8). Recent studies show that alcohol's net health impact is entirely negative and that the only safe level of consumption is none at all (9). Alcohol use can harm multiple systems in the body, leading to liver conditions such as fatty liver and cirrhosis, cardiovascular disorders, neurological damage, cognitive impairments, several types of cancer, infections, hormonal imbalances, diabetes, and diseases of the bones, kidneys, blood, and muscles (2, 10, 11). From a psychological perspective, alcohol use can cause mental health disorders, addiction, depression, anxiety, and specific syndromes like Wernicke–Korsakoff (12). It may also impair students' academic performance (13). Nevertheless, in some subcultures, drinking alcohol is viewed as a symbol of modernity and social prestige, particularly among youth and students (14, 15).

Globally, preventing alcohol use remains a critical priority in public health agendas (16). Identifying the factors that influence preventive behaviors—especially among young adults—is therefore essential (17). In this context, behavioral health theories offer a valuable framework for understanding and promoting such behaviors (18). One of the most widely applied models is the Theory of Planned Behavior (TPB), introduced by Ajzen in 1991, which is frequently used to analyze health-related and substance use behaviors, including alcohol consumption (19, 20). According to this theory, the strongest predictor of behavior is behavioral intention, which is influenced by three main constructs: attitude toward the behavior, subjective norms, and perceived behavioral control (19). Numerous international studies have confirmed the effectiveness of this model in predicting alcohol-related preventive behaviors among university students (21).

Given the rising prevalence of alcohol consumption among students, the importance of preventive interventions in this population, and the limited number of Iranian studies applying the TPB to alcohol use—most domestic research has focused instead on behaviors such as risky sexual activity (22), cigarette smoking (23), and drug use (24)—this study aimed to examine preventive behaviors related to

alcohol consumption among students of the School of Paramedical Sciences and Public Health at Islamic Azad University of Mashhad, based on the Theory of Planned Behavior.

Methods

Study Design

This research was a descriptive-analytical cross-sectional study conducted in 2024 (1403 in the Iranian calendar).

Sample Size and Sampling Method

The study population consisted of students from the School of Allied Medical Sciences and the School of Public Health at Islamic Azad University, Mashhad Branch. The minimum required sample size was initially estimated to be 332 participants based on a previous study by Hamidian Rad et al. (25), which reported an alcohol consumption prevalence of 15.82%, with a 5% Type I error and 4% precision, using the following formula:

$$n = \frac{z_{1-\alpha/2}^2 \times p(1-p)}{d^2}$$

However, due to the lack of similar studies in Mashhad, a conservative prevalence of 50% was assumed. Accordingly, the required sample size was calculated to be 386. Accounting for a 20% potential dropout rate, the final sample size was set at 420 participants.

A convenience sampling method was employed. Following the approval of the study by the Vice-Chancellor for Research at Mashhad University of Medical Sciences and obtaining the necessary permissions, initial coordination was made with the heads of the relevant faculties. The researcher then attended classrooms in person, explained the study's objectives, and invited eligible and willing students to participate. Of the students approached, 429 completed the questionnaire. After excluding 7 incomplete responses, data from 422 participants were included in the final analysis. The self-administered questionnaires were completed in-class within approximately 30 minutes, with the assistance of faculty officials and the presence of the researcher.

Inclusion criteria included Iranian nationality, willingness to participate, and current enrollment in one of the two relevant faculties at Islamic Azad University, Mashhad. The exclusion criterion was failure to complete the questionnaire.

Data Collection Tools

Two instruments were used for data collection. Demographic Questionnaire: This section gathered demographic and background information including age, gender, field and year of study, marital status, place of residence, parents' education and occupation, family income, personal alcohol use, alcohol use among relatives, having friends who consume alcohol, and history of emotional or psychological problems.

Preventive Behavior Questionnaire (Based on TPB): To assess preventive behaviors regarding alcohol use, a researcher-made instrument based on the Theory of Planned Behavior (TPB) was utilized. The questionnaire was developed with reference to credible sources and the core constructs of the TPB. To ensure face and content validity, the initial version was reviewed by 12 experts in health education and health promotion, and their feedback was incorporated. Quantitative content validity was assessed using the Content Validity Ratio (CVR) and Content Validity Index (CVI), which were found to be 0.81 and 0.97, respectively — indicating strong content validity.

To assess reliability, the questionnaire was administered to 20 individuals from the target population (excluding those in the main study), and re-administered after 10 days. Test–retest reliability was evaluated using Intraclass Correlation Coefficient (ICC), and internal consistency was assessed using Cronbach's alpha. ICC values were as follows: attitude (0.94), subjective norms (0.90), perceived behavioral control (0.79), behavioral intention (0.89), and preventive behavior (0.87). Cronbach's alpha values were: attitude (0.82), subjective norms (0.72), perceived behavioral control (0.70), behavioral intention (0.72), and preventive behavior (0.75) — all indicating satisfactory reliability.

The final questionnaire consisted of 23 items covering the five TPB constructs: Attitude (8 items, score range: 8–40): Focused on negative attitudes toward alcohol consumption; higher scores indicated more negative attitudes. Subjective Norms (4 items, score range: 4–20): Measured the influence of social norms promoting alcohol avoidance. Perceived Behavioral Control (4 items, score range: 4–20): Assessed perceived control over avoiding alcohol use; higher scores reflected stronger self-control. Behavioral Intention (3 items, score range: 3–15): Evaluated intentions to adopt preventive behaviors; higher scores indicated stronger intentions. Preventive Behavior (4 items, score range: 4–20): Assessed actual preventive behaviors regarding alcohol consumption. Items related to attitude, subjective norms, perceived behavioral control, and intention were rated on a 5-point Likert scale from "Strongly disagree" (1) to "Strongly agree" (5). Reverse-coded items were scored accordingly. Preventive behaviors were rated on a 5-point frequency scale from "Never" (1) to "Always" (5).

The English version of this researcher-developed questionnaire is available as a supplementary file for this article.

Data Analysis

Quantitative variables were described using means and standard deviations, while categorical variables were reported as frequencies and percentages. The normality of quantitative data was evaluated using the Kolmogorov–Smirnov test. To analyze relationships between variables, Mann–Whitney U, Kruskal–

Wallis, and correlation tests were used. All analyses were performed using SPSS version 27, with a significance level set at $p < 0.05$.

Results

A total of 422 questionnaires were completed and analyzed by students from the School of Paramedical Sciences and Public Health at Islamic Azad University of Mashhad. According to the findings in Table 1, the majority of participants were female students. In terms of academic major, laboratory sciences students made up the largest proportion. Most of the participants' parents had educational levels above a high school diploma. Regarding occupation, self-employment was the most common among fathers, while homemaking was most common among mothers. Additionally, most participants reported a moderate economic status.

In terms of alcohol consumption patterns, the majority of participants were non-users of alcohol and reported no history of alcohol use among their close relatives or friends. However, a percentage of participants reported either personal use or exposure to alcohol use in their social circles. Some individuals also reported a history of psychological or emotional issues.

Based on the results shown in Table 2, several demographic variables were significantly associated with preventive behavior scores related to alcohol consumption. The mean preventive behavior score was significantly higher among female students compared to males ($P < 0.001$). Students majoring in public health and surgical technology had significantly higher preventive behavior scores compared to those in other fields ($P < 0.001$). Married individuals demonstrated significantly higher levels of preventive behavior than single students ($P = 0.012$). Place of residence also showed a significant relationship: students living with their parents or spouse scored higher than those living alone or with friends ($P = 0.002$). Mother's education level was significantly associated with preventive behavior scores, with the highest mean scores observed among students whose mothers had a high school diploma ($P = 0.026$). Mother's occupation was also influential; students whose mothers were homemakers demonstrated better preventive behavior ($P = 0.026$). There was a statistically significant relationship between preventive behavior scores and alcohol use among relatives: the highest scores were observed in students with no relatives who consumed alcohol, while the lowest scores were among those with both close and distant relatives who consumed alcohol ($P < 0.001$). A significant relationship was also found between alcohol consumption by close friends and preventive behavior scores: students whose close friends did not consume alcohol had higher preventive scores ($P < 0.001$). Moreover, there was a positive and significant correlation between the age of alcohol use initiation and preventive behavior scores—meaning that the later the initiation age, the higher the preventive behavior score ($P = 0.043$).

Table 3 presents the frequency distribution of scores related to the Theory of Planned Behavior (TPB) constructs and alcohol-related preventive behaviors. The results indicate that participants scored highest in the constructs of attitude and perceived behavioral control, while the lowest scores were observed in behavioral intention and subjective norms. The mean preventive behavior score across all

participants was 17.12 (SD = 3.54) out of a maximum score of 20, indicating that participants achieved approximately 85.6% of the total possible score.

As shown in Table 4, there were statistically significant and positive correlations between all TPB constructs and alcohol-related preventive behaviors ($P < 0.001$). The strongest correlation was observed between behavioral intention and preventive behaviors, followed by attitude, subjective norms, and perceived behavioral control.

Table 1
The demographic details of the study participants

Variable		Number	Percentage
Gender	Female	327	77.5
	Male	95	22.5
Field of Study	Public Health	72	17.1
	Laboratory Sciences	164	38.9
	Radiology	32	7.6
	Surgical Technology	76	18
	Anesthesiology	78	18.5
Semester	Lower semesters (1st to 4th)	277	65.6
	Upper semesters (5th to 8th)	145	34.4
Marital status	Single	392	92.9
	Married	30	7.1
Residence status	Living with parents	337	79.9
	Dormitory	47	11.1
	Living alone/with friends	26	6.2
	Living with spouse	12	2.8
Father's education level	Below high school diploma	58	13.7
	High school diploma	122	28.9
	Above high school diploma	242	57.3
Mother's education level	Below high school diploma	60	14.2
	High school diploma	152	36
	Above high school diploma	210	49.8
Father's occupation	Worker	15	3.6
	Employee	118	28
	Self-employed	203	48.1
	Retired	80	18.9
	Deceased	6	1.4
Mother's occupation	Housewife	304	72

Variable		Number	Percentage
	Employed	95	22.5
	Retired	23	5.5
Family income status	Low	18	4.3
	Moderate	276	65.4
	High	128	30.3
Alcohol use status	User	73	17.3
	Non-user	349	82.7
Relatives' alcohol consumption status	Close relatives	12	2.9
	Distant relatives	16	3.9
	Both close and distant relatives	7	1.7
	No relatives consume alcohol	373	91.4
Close friends' alcohol use	Yes	134	31.8
	No	288	68.2
Mental health history	Yes	86	20.4
	No	336	79.6
Variable	Mean $\pm$ SD	Minimum	Maximum
Age	20.56 $\pm$ 1.87	18	33
Age at first alcohol use	18.22 $\pm$ 2.13	13	24

Table 2
Relationship between Demographic Variables and Alcohol-Related Preventive Behaviors

Variable		Preventive behaviors score (mean ± sd)	P-value	Statistic
Gender	Female	17.49 ± 3.20	< 0.001 ^{\$}	3.562
	Male	15.83 ± 4.31		
Field of Study	Public Health	18.04 ± 2.83	< 0.001 [*]	17.969
	Laboratory Sciences	16.21 ± 4.03		
	Radiology	16.44 ± 3.80		
	Surgical Technology	18.18 ± 2.20		
	Anesthesiology	17.41 ± 3.51		
Semester	Lower semesters (1st to 4th)	17.53 ± 3.07	0.823 ^{\$}	0.224
	Upper semesters (5th to 8th)	16.67 ± 4.29		
Marital status	Single	17.01 ± 3.59	0.012 ^{\$}	2.517
	Married	18.50 ± 2.58		
Residence status	Living with parents	17.24 ± 3.46	0.002 [*]	15.247
	Dormitory	17.53 ± 2.78		
	Living alone/with friends	14.23 ± 4.71		
	Living with spouse	18.25 ± 2.92		
Father’s education level	Below high school diploma	16.69 ± 3.81	0.531 [*]	1.265
	High school diploma	17.34 ± 3.33		
	Above high school diploma	17.10 ± 3.58		
Mother’s education level	Below high school diploma	17.43 ± 3.61	0.026 [*]	7.296
	High school diploma	17.68 ± 2.91		
	Above high school diploma	16.62 ± 3.87		
§Mann-Whitney U test, *Kruskal–Wallis H test, ∅Spearman test, ccCorrelation Coefficient				

Variable		Preventive behaviors score (mean $\pm$ sd)	P-value	Statistic
Father's occupation	Worker	17.53 $\pm$ 3.46	0.747*	1.940
	Employee	17.24 $\pm$ 3.52		
	Self-employed	16.92 $\pm$ 3.65		
	Retired	17.34 $\pm$ 3.43		
	Deceased	17.33 $\pm$ 2.65		
Mother's occupation	Housewife	17.26 $\pm$ 3.57	0.047*	6.112
	Employed	16.54 $\pm$ 3.50		
	Retired	17.48 $\pm$ 3.21		
Family income status	Low	17.83 $\pm$ 3.89	0.382*	1.925
	Moderate	17.15 $\pm$ 3.54		
	High	16.95 $\pm$ 3.51		
Alcohol use status	User	12.88 $\pm$ 3.46	< 0.001 ^{\$}	10.545
	Non-user	18.00 $\pm$ 2.85		
Relatives' alcohol consumption status	Close relatives	13.67 $\pm$ 3.02	< 0.001*	26.670
	Distant relatives	17.00 $\pm$ 2.78		
	Both close and distant relatives	12.86 $\pm$ 2.79		
	No relatives consume alcohol	17.44 $\pm$ 3.43		
Close friends' alcohol use	Yes	15.04 $\pm$ 3.88	< 0.001 ^{\$}	8.979
	No	18.08 $\pm$ 2.92		
Mental health history	Yes	16.37 $\pm$ 4.02	0.075 ^{\$}	1.783
	No	17.31 $\pm$ 3.39		
Age	-		0.736 [∅]	-0.016 ^{cc}
Age at first alcohol use (years)	-		0.043 [∅]	0.238 ^{cc}
^{\$} Mann-Whitney U test, *Kruskal–Wallis H test, [∅] Spearman test, ^{cc} Correlation Coefficient				

Table 3
Mean, SD, and Score Range of TPB Constructs and Alcohol-Related Preventive Behaviors

Variable	Mean $\pm$ SD	Minimum	Maximum
Attitude	29.49 $\pm$ 5.82	12	40
Subjective Norms	15.40 $\pm$ 3.02	6	20
Perceived Behavioral Control	17.20 $\pm$ 3.00	6	20
Behavioral Intention	11.29 $\pm$ 2.70	3	15
Preventive Behaviors	17.12 $\pm$ 3.54	4	20

Table 4
Correlation Results between TPB Constructs and Alcohol-Related Preventive Behaviors

Variable	Preventive Behaviors	
	Correlation Coefficient Spearman	P-value
Attitude	0.560	< 0.001
Subjective Norms	0.514	< 0.001
Perceived Behavioral Control	0.360	< 0.001
Behavioral Intention	0.610	< 0.001

Discussion

The present study aimed to identify preventive behaviors related to alcohol consumption among students of the Faculty of Paramedicine and Health at Islamic Azad University of Mashhad, based on the Theory of Planned Behavior (TPB). The findings revealed statistically significant relationships between preventive behaviors and the constructs of TPB, including attitude, subjective norms, perceived behavioral control, and behavioral intention. The strongest correlation was found between behavioral intention and preventive behaviors, followed by attitude, subjective norms, and perceived behavioral control, respectively. These findings align with the results of the study by Delpia et al. (26), which examined preventive behaviors regarding alcohol and tobacco use among students in West Kalimantan. They also reported that the four main constructs of the TPB significantly influenced preventive behaviors, with behavioral intention being the strongest predictor.

Similarly, Mobasheri et al. (27) found that intention was the most significant predictor of behavior, underscoring the importance of fostering healthy behavioral intentions in reducing high-risk behaviors. The present findings are also consistent with the study by Tavakoli Ghoochani et al. (24), which was conducted among students at North Khorasan University of Medical Sciences. That descriptive study found significant associations between behavioral intention and the TPB constructs of attitude,

subjective norms, and perceived behavioral control. Among these constructs, attitude toward substance use was identified as the strongest predictor of behavioral intention. This convergence in results highlights the critical role of personal attitudes toward the consequences of behavior in shaping intentions and ultimately engaging in or avoiding risky behaviors.

In the present study, 17.3% of students reported alcohol use, with a mean age of initiation at 18.22 ± 2.13 years. These results are consistent with those of Mozaffari-Nia et al. (28), conducted at Tehran University of Medical Sciences, where 19.9% of students had consumed alcohol at least once in their lifetime, with an average initiation age of 18.6 years. However, the slightly lower prevalence reported in the current study may be attributed to several factors, such as cultural and religious differences between Mashhad and Tehran, as well as variations in data collection methods and participants' honesty in responding. This underscores the importance of considering cultural and social contexts in the design and implementation of preventive programs.

The findings also showed that the mean score of preventive behaviors was significantly higher among female students compared to males. This is in line with the results of Yıldırım and Özaslan (29), who, during the COVID-19 pandemic, found that women were more likely than men to engage in protective behaviors, including adherence to health guidelines and avoiding public gatherings. Similarly, a report by the National Institute on Drug Abuse (NIDA) (30) indicates that men in most age groups are more likely than women to consume alcohol and face a higher risk of alcohol-related disorders. Although the gender gap in alcohol consumption has been narrowing in recent years—especially among younger generations—women remain biologically more sensitive to the harmful effects of alcohol and are at greater risk of severe health consequences (31).

This study also found that married individuals demonstrated more preventive behavior against alcohol use. This finding corresponds with the results of Pollitt et al. (32), who found that married couples consumed less alcohol and exhibited lower rates of alcohol use disorder compared to single individuals, a pattern attributed to social control norms and mutual monitoring within marital relationships. However, a study involving monozygotic and dizygotic twin pairs revealed that under certain conditions, married men might consume more alcohol than their single counterparts, indicating the complex and multifaceted influence of marriage on consumption behaviors (33). Furthermore, the present study indicated that students living with their parents or spouse displayed more preventive behaviors compared to those living alone or with friends. Similar findings were reported by Pape et al. (34), who observed that single individuals or those living with peers were more frequently exposed to environments where alcohol consumption is normalized or even encouraged.

The study also found that students whose mothers were homemakers exhibited better preventive behavior toward alcohol consumption. This is consistent with the results of Mobasheri et al. (27), who also reported that having a homemaker mother had a positive impact on reducing both the intention and behavior related to alcohol use, with this effect being stronger than that of working mothers. Other studies have emphasized that homemaker mothers, due to having more time to monitor and establish

effective emotional connections with their children, play a significant role in reducing high-risk behaviors such as alcohol, tobacco, and drug use (35–37).

In this study, alcohol consumption by close and distant relatives was significantly associated with students' preventive behavior scores. Students whose relatives did not consume alcohol had the highest preventive behavior scores, while those with both close and distant relatives who drank had the lowest. This finding highlights the negative impact of familial alcohol use patterns on preventive behaviors. Ólafsdóttir and Marinósson (38) reported similar results, showing that individuals who lived with alcohol-using relatives during childhood were more likely to consume alcohol in adulthood. Additionally, Stephenson et al. (39) emphasized that parental alcohol use is associated with earlier and more intense alcohol consumption in their children. These findings underline the importance of family role models and subjective norms as key factors in shaping preventive behaviors or tendencies toward risky behaviors.

Finally, the results showed that students whose close friends did not consume alcohol had higher scores in preventive behaviors. This finding is consistent with the study by Bazazian et al. (40), which demonstrated that peer alcohol use was significantly and positively associated with students' inclination to drink. Within the framework of the Theory of Planned Behavior, these findings highlight the critical role of subjective norms in influencing preventive behaviors.

Limitations

This study has several limitations that should be considered when interpreting the findings. Firstly, the data were collected using self-reported questionnaires, which may introduce response bias, particularly given the sensitive nature of alcohol consumption. Secondly, the sample was limited to students from the School of Paramedical Sciences and Health at Mashhad Azad University, which restricts the generalizability of the results to other student populations or age groups. Additionally, the cross-sectional design of the study does not allow for the assessment of behavioral changes over time or the long-term effects of preventive factors. Finally, certain cultural, social, and psychological variables influencing alcohol consumption behavior—such as religious beliefs, family pressures, and media influence—were not examined in this study.

Recommendations

Based on the limitations noted, future research should consider expanding the sampling frame to include a more diverse range of universities and demographic groups to enhance the generalizability of the findings. Employing mixed-method approaches, including in-depth interviews and focus groups, could provide a more comprehensive understanding of the factors influencing preventive behaviors. Designing and implementing educational interventions grounded in the Theory of Planned Behavior, with an emphasis on strengthening positive attitudes, modifying subjective norms, and increasing perceived behavioral control, may effectively reduce high-risk behaviors. Furthermore, addressing the roles of

family and peers through peer-pressure coping skills programs is recommended. Finally, longitudinal studies are encouraged to evaluate behavioral changes over time and the effectiveness of interventions.

Conclusion

The findings of this study revealed that despite legal prohibitions and cultural restrictions, alcohol consumption exists among a portion of students at the School of Paramedical Sciences and Health, Mashhad Azad University. The study also demonstrated that preventive behaviors against alcohol consumption are associated with certain demographic characteristics, including gender, field of study, marital status, and living conditions. Notably, female students, married individuals, and those living with their parents scored higher on preventive behaviors.

According to the Theory of Planned Behavior (TPB), preventive behaviors were significantly correlated with negative attitudes toward alcohol consumption, supportive subjective norms for prevention, high perceived behavioral control, and a strong intention not to consume alcohol. These findings confirm that TPB provides a suitable framework for designing educational and behavior change interventions in this context.

Therefore, given the effectiveness of TPB components in explaining preventive behaviors related to alcohol use, it is recommended that university educational programs focus on enhancing negative attitudes toward alcohol consumption, strengthening social norms that support abstinence, and increasing students' self-efficacy to resist social pressures. Such interventions could play a crucial role in reducing the inclination to consume alcohol among students and contribute to the improvement of their physical, psychological, and social health.

Declarations

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Authors Contributions

M.V.Sh and N.Kh designed the study. M.V.Sh, N.Kh, E.Ch.Kh, N.G, M.R.R and H.E participated in the conception of the study. H.E and M.V.Sh managed and conducted the statistical analyses and interpreted the data. M.V.Sh and N.Kh wrote the first draft and E.Ch.Kh revised it to make the final manuscript. All authors have approved the final manuscript. All authors read and approved the final manuscript.

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Availability of Data and Materials

The datasets generated and/or analyzed during the current study are not publicly available due to confidentiality of participants but are available from the corresponding author on reasonable request. The English version of the questionnaire developed for this study is provided as a supplementary file.

Ethics approval and consent to participate

This study was conducted with permission from the Ethics Committee for Human Research at Mashhad University of Medical Sciences (Code: IR.MUMS.FHMPM.REC.1403.170) and in accordance with the ethical principles of the Declaration of Helsinki. All participants were informed about the study's objectives and gave their informed verbal consent prior to participation. They were assured that their responses would remain confidential, and each participant was assigned a unique code to protect their identity.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

References

1. Görgülü Y, Çakir D, Sönmez MB, Köse Çinar R, Vardar ME. Alcohol and Psychoactive Substance Use among University Students in Edirne and Related Parameters. *Noro Psikiyatr Ars.* 2016;53(2):163-8.
2. World Health O. Global status report on alcohol and health 2018. Geneva: World Health Organization; 2019 2018.
3. Aliverdinia A, Mirzaee S. An Explanation of Students' Attitude toward Alcohol Consumption from Rational Choice Theory Perspective: A Case Study of Social Science Faculty of Tehran University Students. *Quarterly of Social Studies and Research in Iran.* 2017;5(4):511-37.
4. Nikkhah H, Raoufi M, Sheikh A. Investigating the Social Factors Influencing the Tendency to Consume Alcoholic Beverages among Men Aged 53–81 Living in Bandar Abbas. *The first scientific research conference on psychology, educational sciences and social pathology* 2015.
5. HamidianRad M, Zeinali A. The Prevalence of Drug and Alcohol Use among Students of Urmia Universities. *Research on Addiction.* 2019;12(50):175-92.
6. Chegeni M, Kamel Khodabandeh A, Karamouzian M, Shokoohi M, Abedi L, Khalili M, et al. Alcohol consumption in Iran: A systematic review and meta-analysis of the literature. *Drug Alcohol Rev.* 2020;39(5):525-38.

7. Ghaderi M, Jajarmi SMM, Haresabadi M, Majlesi S, Bakhshabadi M, Feyzi P. Investigating of the Prevalence and Underlying Factors of Substance Abuse among Students of North Khorasan University of Medical Sciences. *Iranian Journal Of Anaesthesiology and Critical Care*. 2019;41(1):29-38.
8. Gholami Kotnaee K, Seyyedranjbarsaqquezchi SM, Abdollahi D. The Relationship between Social Bonding and Tendency to Alcohol Consumption (Case Study of Students of Mohaghegh Ardabili University). *Ferdowsi University of Mashhad Journal of Social Sciences*. 2020;17(1):194-65.
9. Burton R, Sheron N. No level of alcohol consumption improves health. *Lancet*. 2018;392(10152):987-8.
10. Meza V, Arnold J, Díaz LA, Ayala Valverde M, Idalsoaga F, Ayares G, et al. Alcohol Consumption: Medical Implications, the Liver and Beyond. *Alcohol Alcohol*. 2022;57(3):283-91.
11. Rumgay H, Shield K, Charvat H, Ferrari P, Sornpaisarn B, Obot I, et al. Global burden of cancer in 2020 attributable to alcohol consumption: a population-based study. *Lancet Oncol*. 2021;22(8):1071-80.
12. Hendriks HFJ. Alcohol and Human Health: What Is the Evidence? *Annu Rev Food Sci Technol*. 2020;11:1-21.
13. Thørrisen MM, Bonsaksen T, Hashemi N, Kjeker I, van Mechelen W, Aas RW. Association between alcohol consumption and impaired work performance (presenteeism): a systematic review. *BMJ Open*. 2019;9(7):e029184.
14. Ashayeri T, Jahanparvar T, Ahmadi Milasi M, Souri M. A systematic review of Iranian social issues:2000-2020. *Iranian Journal of Sociology*. 2021;22(3):120-52.
15. Ashayeri T, Jahanparvar T, Raghmi F. Sociological analysis of the prevalence of alcohol consumption as a risky lifestyle: Iranian youth group. *Sociological Studies of Youth*. 2024;15(53):25-52.
16. Rowland BC, Williams J, Smith R, Hall JK, Osborn A, Kremer P, et al. Social marketing and community mobilisation to reduce underage alcohol consumption in Australia: A cluster randomised community trial. *Preventive Medicine*. 2018;113:132-9.
17. Jiang H, Xiang X, Hao W, Room R, Zhang X, Wang X. Measuring and preventing alcohol use and related harm among young people in Asian countries: a thematic review. *Global Health Research and Policy*. 2018;3(1):14.
18. Glanz K, Rimer BK, Viswanath K. *Health Behavior and Health Education: Theory, Research, and Practice*. 5 ed. San Francisco, CA: Jossey-Bass; 2015.
19. Sharifirad G, Mostafavi F, Reisi M, Mahaki B, Javadzade H, Heydarabadi AB, et al. Predictors of nurses' intention and behavior in using health literacy strategies in patient education based on the theory of planned behavior. *Mater Sociomed*. 2015;27(1):22-6.
20. Zhao X, Kelly AB, Rowland B, Williams J, Kremer P, Mohebbi M, et al. Intention to drink and alcohol use before 18 years among Australian adolescents: An extended Theory of Planned Behavior. *Addictive Behaviors*. 2020;111:106545.

21. Cooke R, Dahdah M, Norman P, French DP. How well does the theory of planned behaviour predict alcohol consumption? A systematic review and meta-analysis. *Health Psychol Rev.* 2016;10(2):148-67.
22. Darabi F, Yaseri M, Kaveh MH, Khalajabadi Farahani F, Majlessi F, Shojaeizadeh D. The Effect of a Theory of Planned Behavior-based Educational Intervention on Sexual and Reproductive Health in Iranian Adolescent Girls: A Randomized Controlled Trial. *J Res Health Sci.* 2017;17(4):e00400.
23. Barfi M, Miri MR, Ramazani AA, Norozi E. The effect of education based on the Theory of Planned Behavior in smoking. *Journals of Birjand University of Medical Sciences.* 2018;25(1):42-51.
24. Tavakkoli Ghouchani H, Hojjat SK, Afshari-Safavi A, Kaviyani F, Shayanfar F. Evaluation of the Students' Drug Use Intention based on the Theory of Planned Behavior Model (TPB) in North Khorasan University of Medical Sciences. *North Khorasan University of Medical Sciences.* 2024;16(2):69-75.
25. HamidianRad M, Zeinali A. The prevalence of drug and alcohol use among students of Urmia universities. *Scientific Quarterly Research on Addiction.* 2019;12(50):175-92.
26. Delpia YV, Murti B, Suryani N. Theory of Planned Behavior: Analysis of Factors Affecting the Preventive Behaviors of Alcohol Consumption and Smoking among Students from West Kalimantan, in Yogyakarta. *Journal of Health Promotion and Behavior.* 2017;1(2):62-9.
27. Mobasheri N, Ghahremani L, Asadollahi A, Kaveh MH. What are the Psychosocial Predictors of Not Drinking Alcohol in Iranian Adolescents? Applying the Theory of Planned Behavior. *Journal of Health Sciences & Surveillance System.* 2024;12(4):410-7.
28. Mozafarinia R, Assarian M, Ziaaddini A. Prevalence of Substance Abuse among Students of Tehran University of Medical Sciences, Iran. *Addict Health.* 2017;9(2):103-9.
29. Yıldırım M, Özaslan A. Worry, Severity, Controllability, and Preventive Behaviours of COVID-19 and Their Associations with Mental Health of Turkish Healthcare Workers Working at a Pandemic Hospital. *Int J Ment Health Addict.* 2022;20(4):2306-20.
30. (NIDA) NIDA. Sex Differences in Substance Use: National Institute on Drug Abuse; 2020 [Available from: <https://nida.nih.gov/publications/research-reports/substance-use-in-women/sex-differences-in-substance-use>].
31. White AM. Gender Differences in the Epidemiology of Alcohol Use and Related Harms in the United States. *Alcohol Res.* 2020;40(2):01.
32. Pollitt AM, Donnelly R, Mernitz SE, Umberson D. Differences in how spouses influence each other's alcohol use in same- and different-sex marriages: A daily diary study. *Social Science & Medicine.* 2020;264:113398.
33. Kendler KS, Lönn SL, Salvatore J, Sundquist J, Sundquist K. Effect of Marriage on Risk for Onset of Alcohol Use Disorder: A Longitudinal and Co-Relative Analysis in a Swedish National Sample. *American Journal of Psychiatry.* 2016;173(9):911-8.
34. Pape H, Rossow I, Brunborg GS. Adolescents drink less: How, who and why? A review of the recent research literature. *Drug Alcohol Rev.* 2018;37 Suppl 1:S98-s114.

35. soruri m, Bayat A, Hosseinzade A. Mediating Role of Emotional Security in Relationship between High-risk Behaviors and Family Communication Patterns in Adolescents. *Journal of Family Research*. 2023;19(3):533-50.
36. Hosseinlu A, Rostami R, Chehrehsa A. Etiology and family-centered therapy of addiction; A review study. *Rooyesh-e-Ravanshenasi Journal(RRJ)*. 2021;9(11):149-58.
37. Talebi M, Khorashadizadeh Z. Peer relationships and parental supervision as predictors of high-risk behaviors among female students of the second year of high school, Birjand city. *Journal of Southern Khorasan Disciplinary Knowledge*. 2022;11(3):23-35.
38. Ólafsdóttir J, Marinósson SS. Childhood with a relative's excessive alcohol use, and own drinking in adult years. *Nordic Studies on Alcohol and Drugs*. 2022;39(1):105-18.
39. Stephenson M, Heron J, Bountress K, Hickman M, Kendler KS, Edwards AC. The effect of parental alcohol use on alcohol use disorder in young adulthood: Exploring the mediating roles of adolescent alcohol expectancies and consumption. *J Adolesc*. 2023;95(4):716-28.
40. Bazazian S, Afsari L. The role of self-control in the relationship between peers' consumption and students' tendency to consume cigarettes and alcoholic beverages. *QJ Behav Sci*. 2015;22:25-40.

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