Extent, pattern and risk factors of alcohol and tobacco use among undergraduate students in a university in Kathmandu: A cross-sectional study

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Abstract

Background:

Alcohol and tobacco use disproportionately affect young people and can lead to significant morbidity and mortality. High-risk factors often begin during adolescence and there is a long interval between exposure and disease development. This study aims to examine the prevalence and patterns of alcohol and tobacco use among undergraduates and to identify the risk factors associated with their use.

Methods and Materials:

A structured self-administered web-based questionnaire using a cross-sectional design and stratified proportionate sampling was conducted. The questionnaire was based on the World Health Organization's (WHO) Stepwise approach to surveillance of risk factors. The data was analyzed using SPSS version 25.

Results:

Proportion of male and female participants was nearly equal. One-tenth of the participants were current tobacco users with cigarettes being the most used tobacco product while more than one-fourth currently consumed alcohol. Males were associated with lifetime alcohol and tobacco use, as well as current tobacco use. Senior-year students had a significant association with lifetime alcohol use, while insufficient intake of fruits and vegetables was associated with current alcohol use. Additionally, non-medical campus and junior-year students were associated with current tobacco use.

Conclusion:

Alcohol and tobacco use among undergraduate students in a Tribhuvan University show serious concern. Health professionals, faculty, stakeholders, and policymakers should take note of these findings and design interventions to promote the mental and physical health of young people and prevent addictive disorders.

Key words:
Risk factors, alcohol, tobacco, undergraduate students

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INTRODUCTION

Alcohol and tobacco use among young people have been a significant public health concern. Globally, alcohol is responsible for 7.2% of premature deaths among those aged 69 years and younger, disproportionately affecting younger age groups (20-39 years) i.e. 13.5%. Heavy Episodic Disorder (HED) prevalence rates among drinkers aged 15-24 years are higher than in the total population, with young men being particularly affected.[1] Meanwhile, an estimated 155 million individuals aged 15-24 were tobacco smokers in 2019, with 82.6% of current smokers between ages 14 and 25.[2]

Steps Survey Nepal 2019 reported that 32.9% of adults in the age group 15-24 years were found to be indulged in HED with both beer and rakshi being the most consumed alcoholic product i.e. 35 %. Similarly, 15.1% of them were found to be current tobacco users and increasing to 42.7% among 55-69 years of age with cigarettes being the most widely used tobacco product i.e. 79% followed by Hukkah i.e. 12.6% which was interestingly higher among 15-24 years of age than other age groups.[3] In another study among medical students in Nepal, 20.4% of the respond-

ents were current tobacco users, and 29.3% were current drinkers.[4]

Research has shown that most behavioral and dietary risks are initiated during adolescence and young adulthood[5] and lengthy-time intervals occur between exposure to high-risk factors and the development of disease; such high risk exposures begin in young adolescence.[6] Further, male gender, senior year of education, intake of FnV, parental relationship, peer pressure, antisocial behavior and risk perception are main factors associated with alcohol use.[7,8] Male gender, low education level and socioeconomic status, alcohol use, mental disorders correlate with smoking.9 Thus, it is important to study alcohol and tobacco use among university students to identify at-risk students and develop intervention programs to reduce substance use disorder and morbidity. It is crucial to address the problem of alcohol and tobacco use among young people to prevent premature deaths and reduce the burden of disease.

The objective of the study are i) to determine the extent and pattern of tobacco and alcohol use among undergraduates, and ii) to identify the risk factors associated with tobacco and alcohol use.

Materials And Methods

This was a descriptive cross-sectional study conducted among the undergraduate students of the Institute of Medicine (IOM), Tribhuvan University from March 2022 to May 2022. Stratified proportionate random sampling was done. IOM has four campuses i.e. Maharajgunj Medical Campus (MMC), Maharajgunj Nursing Campus (MNC), Central Department of Public Health (CDPH), and Ayurveda Campus. The total number of undergraduate students in constituent campuses of IoM was 1365. The campuses were stratified and a proportionate sample was collected from each faculty. Student contact information was obtained from class representatives and the administration. Simple random sampling was used within each stratum, and participants were randomly selected to receive self-administered web-based questionnaires via email. Dropouts were excluded from the study.

Instrument:

A structured self-administered web-based questionnaire was prepared through google forms to collect responses from the participants. There was a total of 31 questions among which 8 questions were related to socio-demographic factors while 23 questions were related to behavioral measurements. The experts were consulted to ensure the face and content validity of the questionnaire.

i. Sociodemographic profile: A semi-structured questionnaire was used to assess the basic socio-demographic profile of participants (i.e. age, gender, campus, year of study, ethnicity, religion, and province)

ii. Behavioral profile: The questionnaire was based on the World Health Organization's (WHO) Stepwise approach to surveillance of risk factors for NCD.3, 10 The category included four sub-sections i.e. Tobacco use, Alcohol consumption, Diet, and Physical activity. The questionnaire had a tobacco use sub-section with six items and an alcohol consumption sub-section with four items. They measured the frequency and pattern of tobacco and alcohol use, with current tobacco and alcohol users defined as those who consumed these products in the last 30 days. The diet sub-section had seven items and assessed the consumption pattern of FnV, ultra-processed foods, and salt intake. The physical activity sub-section had six items and measured physical activity during work, travel, and recreation. For moderate-intensity activity, 150 or more minutes per week was considered sufficient, and for vigorous-intensity activity, 75 or more minutes per week was considered sufficient.

Ethical issues:

Participants were assured that their participation or non-participation in the study would not affect their academics, and they could withdraw at any time without providing a reason. The confidentiality of participants was maintained by not including their names or any identifying information on the questionnaire. No incentives were offered for participation. Ethical approval from Institutional Review Committee (IRC), IOM was obtained (Reference number: 380 6-11 E2 078/79). Permission was granted to conduct the study on all of the constituent campuses.

Statistical Analysis:

The collected data were entered in MS Excel while for statistical analysis, SPSS version 25 was used. A descriptive analysis of the number and frequencies was done. The association between sociodemographic and behavioral risk factors with alcohol use (current and lifetime) and tobacco use (current and lifetime) was done using the Chi-square test. A p-values ≤0.05 was considered statistically significant.

Results

About 1365 participants were contacted out of which 289 participated in the study. Table 1 includes the socio-demographic profile of the participants. The mean age of the participants was 22.39 (S.D. = 2.585) with the majority belonging to the 18-34 age group (n=287, 99.3%), studying in MMC campus (n=162, 56.0%), belonging to Brahmin/Ch-

hetri ethnicity group (n=156, 54.0%) followed by Madhesi i.e. (n=63, 22.0%), following Hindu religion (n=268, 92.7%) and residing in the Central region of Nepal (n=146, 50.51%). The male and female proportion was nearly equal. About one-fourth of the responses were from the participants who were studying in 3rd year (n=78, 27.0%) and the majority of them were from the senior year (n=152, 53.0%).

When the behavioral risk factors of the participants were assessed (Table2), it was found that the majority of the undergraduate students (n=158, 54.6%) consumed alcohol in their lifetime, with beer (n=68, 43.0%) and wine (n=32, 20.2%) being the most consumed. Likewise, more than one-fourth (n=86, 29.7%) had consumed alcohol within the past 30 days, with most of them not consuming alcohol with meals (n=24, 28%) About one-fifth (n=59, 20.4%) undergraduate students reported that they had ever smoked or chewed any form of tobacco product in their lifetime with a mean age of initiation of tobacco use of 19.02 years (S.D=3.26). One-tenth (n=30, 10.3%) of participants reported that they currently chewed or smoked tobacco with cigarettes being the most used tobacco product (n=34, 57.6%) followed by Hukkah (n=30, 50.8%). Only eight participants (2.76%) consumed it daily. Further, one-tenth of the participants (n=29, 10.03%) had attempted to quit smoking or chewing tobacco in the past 12 months. (Table2)

As seen in table 2, the most prevalent risk factor among undergraduate students included insufficient intake of FnV (n=217, 75.0%) followed by ultra-processed food consumption (n=181, 62.6%). The majority of the participants (n=194, 67.1%) didn't engage in sufficient levels of moderate-intensity activity, while 65.0% (n=188) didn't carry out sufficient levels of vigorous-intensity activities.

Table 3 showed that males (p=0.02), and senior year (p<0.001) were found to be statistically associated with lifetime alcohol use. Similarly, males (p <0.001), and insufficient intake of FnV (p=0.05) were associated with current alcohol use.

On the other hand, table 4 depicts being male (p=0.001) was associated with lifetime tobacco use. Further, males (p=0.003), non-medical campus (0.008), and junior year (p=0.01) were associated with current tobacco users.

Table 1: Sociodemographic profile of the participants (N= 289)

Variables		N (%)
Age (Mean± SD)		(22.39 ±2.58)
Age group	18-34 Years	287 (99.3)
	35-50 Years	2 (0.7)
Gender	Male	147 (51.0)
	Female	142 (49.0)
Campus	MMC	162 (56.0)
	MNC	51 (17.6)
	CDPH	43 (15.0)
	BAMS	33 (11.4)
Year of Study	Junior year (1st and 2nd year)	137(47.4)
	Senior year(3rd to 5th year and interns)	152(53)
Ethnicity	Brahmin/Chhetri	156 (54.0)
	Madhesi	63 (22.0)
	Janajati	51 (17.6)
	Dalit	9 (3.0)
	Others	10 (3.4)
Religion	Hindu	268 (92.7)
	Buddhist	12 (4.0)
	Muslim	5 (2.0)
	Christian	3 (1.0)
	Others	1 (0.3)
Province	Eastern	24 (8.3)
	Central	146(50.51)
	Western	119(41.17)

Table 2: Behavioural risk factors of the participants

Variables	N (%)
Alcohol use	
Ever drank alcohol	158 (54.6)
Commonly used alcohol products: (N=158)	
1. Beer	68 (43.0)
2. Wine	32 (20.2)
3. Whiskey	20 (13.0)
4. Rakshi	14 (8.8)
5. Tungba	9 (5.6)
6. Jaad	8 (5)
7. Vodka	7 (4.4)
Current drinker	86 (29.7)
Practice of consumption of alcohol with meals: (N=86)	
1. Never with meals	24 (28.0)
2. Sometimes with meals	22 (25.5)
3. Usually with meals	21 (24.4)
4. Rarely with meals	19 (22.1)
Tobacco use	
Ever chewed or smoked tobacco	59 (20.4)
*Commonly used tobacco products (N=59)	
1. Cigarette	34 (57.6)
2. Hukkah	30 (50.8)
3. Gutka	5 (8.4)
4. Surti	4 (6.7)
5. Khaini	3 (5.0)
6. Bidi	3 (5.0)
7. Tamakhu	2 (3.3)
8. Pipe	2 (3.3)
Current tobacco user	30 (10.3)
Daily tobacco smokers or chewers	8 (2.7)
Age of initiation of tobacco use (Mean± SD)	19.02years (±3.26)
Tried to stop tobacco use in the past 12 months	29 (10)
Insufficient intake of fruits and vegetables	217 (75.0)
Consumption of ultra-processed foods	181 (62.6)
Practice regarding physical activities	
Insufficient physical activity	143 (49.4)
Insufficient Moderate intensity activity	194 (67.1)
Insufficient Vigorous intensity activity	188 (65.0)
Sedentary Behaviour	64 (22.1)

*Multiple responses

Table 3: Association of the sociodemographic and behavioural risk factors with alcohol use

Variables		Lifetime Alcohol use n (%)		Chi-square test/ fischer's (df)	p-value	Current alcohol use (%)		Chi-square test/ fischer's (df)	p-value
		Yes	No			Yes	No		
Age	18-34	157 (54.32)	130 (45.1)	-	1.00 u	85 (29.4)	202 (70.0)	-	0.50u
	35-50	1 (0.34)	1 (0.34)			1 (0.3)	1 (0.3)		
Male	Yes	91 (31.4)	56 (19.3)	6.31 (1)	0.02*	58 (20.0)	89 (30.7)	13.46 (1)	<0.001*
	No	67 (23.3)	75 (26.0)			28 (10.0)	114 (39.3)		
Medical campus	Yes	93 (32.2)	69 (24.0)	1.11 (1)	0.29	46 (16.0)	116 (40.1)	0.32 (1)	0.56
	No	65 (22.4)	62 (21.4)			40 (13.8)	87 (30.1)		
Senior year	No	63 (21.7)	74 (25.6)	7.93 (1)	<0.001*	36 (12.5)	101 (35)	1.51 (1)	0.21
	Yes	95 (33.0)	57 (19.7)			50 (17.3)	102 (35.2)		
Province	Eastern	13 (4.3)	11 (4.0)	0.051 (2)	0.98	6 (2.0)	18 (6.2)	0.368 (2)	0.83
	Central	79 (27.3)	67 (23.1)			43 (14.7)	103 (36.0)		
	Western	66 (23.0)	53 (18.3)			37 (12.8)	82 (28.3)		
Insufficient Intake of fruits and vegetables	No	37 (12.8)	35 (12.1)	0.41 (1)	0.51	15 (5.1)	57 (20.0)	3.654 (1)	0.05*
	Yes	121 (41.9)	96 (33.2)			71 (24.4)	146 (50.51)		
Consumption of ultra-processed food	Yes	91 (31.4)	90 (31.1)	3.52 (1)	0.06	54 (18.6)	127 (44.0)	0.00 (1)	0.99
	No	66 (23.0)	42 (14.5)			33 (11.4)	75 (26.0)		
Sufficient Physical activity	Yes	80 (27.68)	66 (23.0)	0.01 (1)	0.91	49 (16.9)	97 (33.5)	2.15 (1)	0.14
	No	78 (27.0)	65 (22.4)			37 (13.0)	106 (36.6)		
Sedentary Behaviour	Yes	37 (12.8)	27 (9.3)	0.32 (1)	0.56	17 (6.0)	47 (16.2)	0.40 (1)	0.52
	No	121 (42.0)	104 (35.9)			69 (23.8)	156 (54.0)		

*means statistically significant, p≤0.05
u Fischer's Exact Test

Table 4: Association of the sociodemographic and behavioural risk factors with tobacco use

Variables		Lifetime tobacco use n (%)		Chi-square test/ fischer's (df)	p-value	Current tobaccol use (%)		Chi-square test/ fischer's (df)	p-value
		Yes	No			Yes	No		
Age	18-34	59 (20.4)	130 (45.1)	-	1.00 u	30 (10.4)	257 (89.0)	-	1.00 u
	35-50	1 (0.34)	2 (0.06)			1 (0.34)	2 (0.06)		
Male	Yes	41 (14.0)	106 (36.6)	10.29 (1)	0.001*	23 (8.0)	124 (42.9)	8.91	0.003*
	No	18 (6.6)	124 (42.8)			7 (2.4)	135 (46.7)		
Non-medical campus	No	31 (10.9)	131 (45.3)	0.37 (1)	0.54	10 (3.1)	152 (53.0)	7.01 (1)	0.008*
	Yes	28 (9.6)	99 (34.2)			20 (6.9)	107 (37.0)		
Junior year	Yes	20 (7.0)	117 (40.48)	5.42 (1)	0.20	25 (8.65)	129 (44.3)	5.77 (1)	0.01*
	No	39 (13.5)	113 (39.1)			22 (8.0)	113 (39.1)		
Province	Eastern	4 (1.4)	20 (7.0)	0.38 (2)	0.82	2 (0.6)	22 (8.0)	1.08 (2)	0.58
	Central	29 (10.0)	117 (40.5)			13 (4.4)	133 (46.0)		
	Western	26 (9.0)	93 (32.1)			15 (5.1)	104 (35.9)		
Intake of fruits and vegetable	Sufficient	10 (3.5)	62 (21.4)	2.51 (1)	0.11	6 (2.0)	66 (23.0)	0.43 (1)	0.51
	Insufficient	49 (17.0)	168 (58.1)			24 (8.3)	193 (66.7)		
Consumption of ultra-processed food	Yes	40 (13.8)	141 (49.0)	0.77 (1)	0.37	23 (8.0)	158 (54.6)	2.73 (1)	0.09
	No	19 (6.5)	89 (30.7)			8 (2.8)	100 (34.6)		
Physical activity	Sufficient	34 (11.7)	112 (38.7)	1.57 (1)	0.21	20 (7.0)	126 (43.6)	3.56 (1)	0.059
	Insufficient	25 (8.6)	118 (41.0)			10 (3.4)	133 (46.0)		
Sedentary Behaviour	Yes	13 (4.4)	51 (17.6)	0.00 (1)	0.98	5 (1.7)	59 (20.4)	0.58 (1)	0.44
	No	46 (16.0)	179 (62.0)			25 (8.6)	200 (69.3)		

*means statistically significant, p<0.05
u Fischer's Exact Test

Discussion

Our study aimed to determine the extent and pattern of tobacco and alcohol use and identify their risk factors among undergraduate students at a university in Kathmandu. It was found that 54.6% of participants had consumed alcohol in their lifetime and 29.7% currently consumed alcohol. About 20.4% had used tobacco in their lifetime while 10.3% currently used it. Beer was the most commonly used alcoholic product while cigarettes followed by Hukkah were the most commonly used tobacco products. Lifetime alcohol use risk was associated with male gender and senior academic year. Current alcohol use was associated with male gender and insufficient intake of FnV. Similarly, male gender was seen to be significantly associated with both lifetime and current tobacco use. Further, current tobacco use was associated with participants being from non-medical campuses and junior academic year.

A study done by Adhikari et al., 2019 regarding the pattern of alcohol consumption among adult population in Western Nepal reported that 35.6% had ever used alcohol in their lifetime.[11] Likewise, a study conducted by Sapkota et al., 2021 reported that 21.1 % of adolescents in Lumbini, Nepal had ever consumed alcohol and 8.1% of them consumed it within past 30 days.[12] The prevalence of lifetime and current alcohol consumption was more in our study than among general population. Likewise, the current use of alcohol was more than the findings from the Nepal STEPS survey, in 2019.[3] Many factors such as peer pressure, staying away from home, academic stress, absence of parental supervision, and being economically advantaged university students could have led to such differences.[4] Further, a study done in Chitwan, Nepal reported that 63.64% of bachelor-level students had ever consumed alcohol13 while another study carried out in a government medical college of India reported that 47.5% of students had ever consumed alcohol and 29.6% of students had consumed alcohol within the past 30 days.[14] Prevalence of

alcohol use from both of these studies is in line with ours suggesting that undergraduate students are more vulnerable to alcohol use than the general population.

In our study, the mean age of initiation of smoking was approximately similar to the age of entry into medical college suggesting that smoking starts in their initial years of medical school. A similar finding was found among medical students in the Kathmandu valley.[15] About one-fifth (n=59, 20.4%) participants had ever used tobacco in their lifetime and about one-tenth (n=30, 10.3%) of participants currently chewed or smoked tobacco product. A study done by Panthee et al., 2017 among undergraduate health care students reported that around 21.6% of the respondent smoked tobacco in their lifetime which was in line to our study.[16] Likewise, a study carried among adolescents in Lumbini, Nepal and in India among medical students of eight different medical college study reported prevalence of tobacco use in the range of 8-11.7 % which is similar to our finding. However, studies done among medical students in a government medical college in India and among undergraduates in Chitwan, Nepal reported lifetime use of tobacco as 40.2% and 43.94% respectively, which are higher than that seen in our study.[13,14] Possible causes for such discrepancies could be due to higher proportion of male participants in those studies and gender is a known risk factor for different substance use. Likewise, Kushwaha et al., 2019 conducted a study among medical and dental student at Dharan, Nepal between September to December and found prevalence of alcohol use in the past 30 days was 59.6% and tobacco was 28.2%, which were higher than our results. These differences could be because the study was conducted festival season like Dashain and Tihar which could have increased the prevalence of alcohol and tobacco use in last 30 days.17 In our study, cigarette smoking was the most common form of tobacco use, consistent with other studies done among medical and health care students.[13,17]

Insufficient intake of FnV was reported among 75% of undergraduate students consuming FnV Possible reasons include staying away from home, hectic work schedule, eating in college canteens that lack healthy options. The prevalence of consumption of ultra-processed food consumption was 62.6% in this study. Consuming ultra-processed food multiplies the risk of occurring Non Communicable Diseases which has been suggested by various studies and meta-analysis.[18, 19] Insufficient physical activity was reported among 67.1% of participants for moderate-intensity activities and 65% for vigorous-intensity activities. This aligns with findings from different medical colleges in Nepal potentially due to sedentary activities such as studying, completing assignments, surgical procedures, and inadequate access to exercise opportunities to engage in physical exercise in the Kathmandu Valley.[4,20] Open parks, open spaces, side-walks, bike-lanes and affordable gyms are either lacking or inadequate.

We reported that being male was associated with both lifetime and current use of alcohol and tobacco, which is consistent with previous research.[14,21] Further, students from the junior year of our study used tobacco more in the past 30 days and those from the senior year drank alcohol more in their lifetime which has also been reported in other studies.[7] The gateway hypothesis suggests that using alcohol, tobacco or cannabis in earlier life may lead to the subsequent use of more addictive illicit drugs later in adulthood.[22] Therefore, it is crucial to educate and monitor university students' drug use to prevent current and future use of harder drugs. Insufficient intake of FnV was associated with current alcohol use as similar to other studies.[23, 24,25] This potentially could be because people who drink alcohol, tend to engage in unhealthy practices like poor dietary choices.[26] However there are no consistent results on such association. A study conducted in Tanzania among participants above 15 years of age reported inadequate intake of FnV associated with low alcohol use. Heterogeneous age group included in this study could have affected the result.[27] Another study done in South Africa did not report any such relationship. Hence it is essential to explore type, amount of alcohol use and use disorder especially in our population to understand the exact mechanism.[28] Further, current tobacco use was associated with participants being from non-medical campus which aligns with other similar studies.[29,30] Increase awareness and clinical exposure about tobacco harmful effects and busy schedule could be protective factors for medical students against smoking.

The results and interpretations should be interpreted considering the limitations. It was a cross-sectional survey, so we can't conclude alcohol and tobacco use pattern over time. The low response rate reflects lack of willingness to answer questions related to alcohol and tobacco use. This study being conducted in a tertiary hospital setting, the findings are limited to medical and health care students and the results cannot be generalized to other settings. Further, being self-administered and web based study, we couldn't probe the participants and recall biases may be one of the issues among participants.

Conclusion

The findings of the present study regarding alcohol and tobacco use, fruits and vegetable intake, and physical activity among undergraduate students in a university in Kathmandu are concerning and require attention from health professionals, faculty, stakeholders, and policymakers. Larger qualitative and longitudinal studies are necessary to fully understand the correlates of alcohol and tobacco use. It is imperative to design interventions targeting the youth to promote their mental and physical health so that we can prevent mental disorders such as addiction.

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