

## Substance Use among Medical Students in Kathmandu Valley

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### ABSTRACT

**Introduction:** Substance use including tobacco and alcohol is the most important cause of preventable morbidity, disability, and premature mortality. The study aims to specify the prevalence and the pattern of use of different substance.

**Methods:** A cross sectional study was performed amongst first year and final year students in four medical colleges in Kathmandu using self administered anonymous questionnaire. Data collected from 446 students were analyzed.

**Results:** Prevalence of substance use was found to be 60.3% among the medical students. Alcohol (57.6%) was the substance most prevalently used followed by tobacco (27.58%) and cannabis (12.8%). Mean age of first exposure was 17.94 (Confidence interval: 17.91-17.97). There was significant difference in the use of tobacco and cannabis amongst final year students than first year students. Male and female differed significantly in use of every substance except for benzodiazepine. Medical college, college and school were place of first exposure in 17.26%, 15.92% and 13.23% of the cases respectively. Family history was associated with substance use in medical students and was statistically significant ( $P < 0.0001$ ). Experimentation was the major reason for the use of most of the substances.

**Conclusions:** Substance use is prevalent in male medical students of both first and final year. Hence steps should be initiated early in school, college and medical college to prevent substance use.

**Keywords:** alcohol, medical students, substance use, tobacco.

### INTRODUCTION

Binge drinking and drug abuse in doctors and medical students have always been an occupational hazard.<sup>1</sup> Medical students are exposed to the same illicit experiences as other students: exposure to amphetamines, cannabis, ecstasy, LSD, cocaine, and in some cases heroin - not to mention alcohol and tobacco.<sup>2</sup> Hence use of addictive substances does not spare the medical profession. Work-related stress

and easy access to drugs may serve to increase their vulnerability for substance use.

Since that medical students are better placed to understand and practice the latest development in healthcare than general population, it is important to quantify the substance use among them. The lack of cumulative information in Nepal regarding substance use prompted this cross sectional study.

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In this study, we tried to assess: prevalence of substance use, difference of substance use in different year and gender, and pattern of use of different substance.

## METHODS

A cross sectional survey was done in four medical colleges: Institute of Medicine, Kathmandu Medical College, Nepal Medical College and Kathmandu University School of Medical Sciences located within the Kathmandu valley from January 2010 to April 2010. Ethical approval was taken from Research Department, Institutional Review Board of Institute of Medicine.

Our target population was all the medical students in the first and the final year of their study. Convenience sampling was done. Participation in the study was voluntary. A self-administered anonymous questionnaire was used to obtain information from the research participants included. Questionnaire was a structured proforma with study variables of age, sex, first substance used, age of first exposure, place of first exposure, family history of substance use, type of substance used, frequency of use and reason for taking the substance. Consent form was signed by each participant before filling up the questionnaire.

At the time of survey we could contact 490 students out of the 615 target students. 12 of them didn't give their consent and so were not included in the study. 32 data sheets were not filled in properly and were discarded. A total of 446, 72.52% of target population, were available for interpretation and analysis. Data

obtained were entered in Microsoft Excel spreadsheet and analyzed using the SPSS (version 16.0; SPSS Inc., Chicago, Illinois, USA). Descriptive analyses were done and chi-square tests were performed to see significance and difference; the level of significance was defined at  $P < 0.05$  and 2-tailed  $P$  value was used; and the confidence interval was set at 95% level.

## RESULTS

### Overall substance use

Prevalence of substance use was 60.3% ( $n=269$ ) among the medical students. Mean age of first exposure to substance use was 17.94 ( $n=198$ , Confidence interval: 17.91-17.97). Mean age of first exposure was 16.75 ( $n=81$ , Confidence interval: 16.69-16.81) for first year students and it was 18.77 ( $n=117$ , Confidence interval: 18.72-18.82) for final year students (Table 1).

Overall substance use was significant in final year (65.86%,  $n=134$ ) than first year (55.78%,  $n=135$ ) [ $P=0.0412$ ]; and male (75.29%) than female (37.74%) [ $P<0.0001$ ].

Substance use was found in 77 of the 269 (28.6%) students who gave family history of substance use [ $P<0.0001$ ].

Use of tobacco and cannabis was significant in final year students than first year students while alcohol, hashish and benzodiazepine were not.

**Table 1.** Distribution of substance use according to sex and year of study ( $n=446$ )

		Sex ( $n=446$ )		P-value	Year of study ( $n=446$ )		P-value
		Male (%)	Female (%)		First (%)	Final (%)	
Any substance	Used	192 (75.3)	77 (37.7)	$P<0.0001$	135 (55.8)	134 (65.9)	$P=0.033$
	NotUsed	63 (24.7)	114 (62.3)		107 (44.2)	70 (34.1)	
Tobacco smoking	Used	100 (39.2)	23 (12)	$P<0.0001$	47 (19.4)	76 (37.2)	$P<0.0001$
	NotUsed	155 (60.8)	268 (88)		195 (80.6)	128 (62.8)	
Alcohol	Used	180 (70.6)	77 (40.3)	$P<0.0001$	130 (53.7)	127 (62.2)	$P=0.069$
	NotUsed	75 (29.4)	114 (59.7)		112 (46.3)	77 (37.8)	
Cannabis	Used	53 (20.8)	4 (2.1)	$P<0.0001$	18 (7.4)	39 (23.6)	$P<0.0001$
	NotUsed	202 (79.2)	187 (97.9)		224 (92.6)	165 (76.4)	
Hashish	Used	18 (7.1)	0 (0)	$P=0.0005$	6 (2.5)	12 (5.9)	$P=0.069$
	NotUsed	237 (92.9)	191 (100)		236 (97.5)	192 (94.1)	
Benzodiazepine	Used	4 (1.6)	2 (1.1)	$P=0.636$	2 (0.8)	4 (1.9)	$P=0.3$
	NotUsed	251 (98.4)	189 (98.9)		240 (99.2)	200 (98.1)	
Others*	Used	9 (3.5)	0 (0)	$P=0.009$	3 (1.2)	6 (2.9)	$P=0.203$
	NotUsed	246 (96.5)	191 (100)		239 (98.8)	198 (97.1)	

\* Others include: LSD, Glue sniffing, Ecstasy, Opioid, Amphetamine, Cocaine, Anabolic steroid



Males were significantly associated with use of every substance than females except for benzodiazepine.

**Table 2. Consumption rate and reason for use of Tobacco, Cannabis and Hashish (n = 446)**

	Type of substance		
	Tobacco smoking n (%)	Cannabis n (%)	Hashish n (%)
<b>Consumption Rate</b>			
Tried at least once	47 (10.5)	5 (1.1)	2(0.4)
Occasional	31 (7)	32 (7.2)	15(3.4)
1-2 sticks/week	-	5 (1.1)	-
1-2 sticks/day	14 (3.1)	6 (1.3)	1(0.2)
3-5 sticks/day	19 (4.3)	5 (1.1)	-
6-10 sticks/day	7 (1.6)	2 (0.4)	-
> 10 sticks/day	5 (1.1)	-	-
On Shivaratri*	-	2 (0.4)	-
<b>Reason for use</b>			
Experimentation	52 (42.3)	18 (31.6)	6(33.3)
Stress relief	24 (19.5)	5 (8.8)	-
Gives pleasure	19 (15.4)	24 (42.1)	7(38.9)
Feeling of compulsion	15 (12.2)	3 (5.3)	2(11.1)
Peer pressure	8 (6.5)	6 (10.5)	3(16.7)
Social obligation	3 (2.4)	-	-
Other	2 (1.6)	1 (1.8)	-

\*Shivaratri is a festival of Hindu religion

### Specific substance use

Alcohol use was seen in 57.6% (257) of the cases. Use of different types of alcohol is as: Beer 46.4% (207), Wine 38.8% (173), Whiskey 35.2% (157), Gin/Vodka 26.2% (117) and Local spirit 15.9% (71) (Table 2).

Use of cannabis and hashish was seen in 12.8% (57) and 4% (18) of the samples respectively.

Benzodiazepine use was seen in 1.3% (6) of the students.

Substance use other than alcohol, tobacco, cannabis, hashish and benzodiazepine was seen in 2% (9) of the students, pattern among them was: LSD 1.12% (5), Glue sniffing 0.9% (4), Ecstasy 0.45% (2), Opioid 0.22% (1), Amphetamine 0.22% (1), Cocaine 0.22% (1), Anabolic steroid 0.22% (1). Four of them reported using multiple substances rather than single substance (Table 3).

The study showed that 93.2% of tobacco smokers take alcohol which on statistical test shows significance [ $P < 0.0001$ ]. Similarly 93% of cannabis users consumed alcohol [ $P < 0.0001$ ]; and 89.5 % of cannabis users consumed tobacco [ $P < 0.0001$ ].

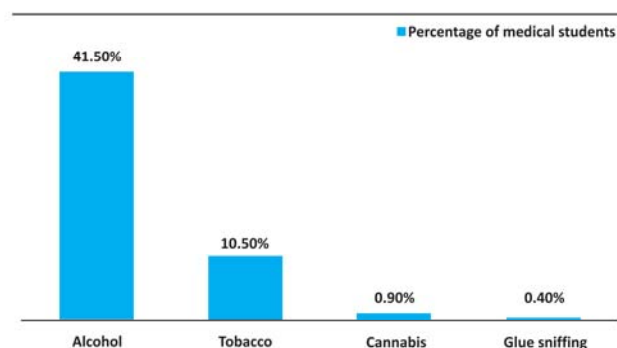
### Study sample

Of the total respondents, 54.26% (242) were the first year students and 45.74% (204) were the final year students. Male constituted 57.17% (255) and female 42.83% (191) of the total sample. The mean age of

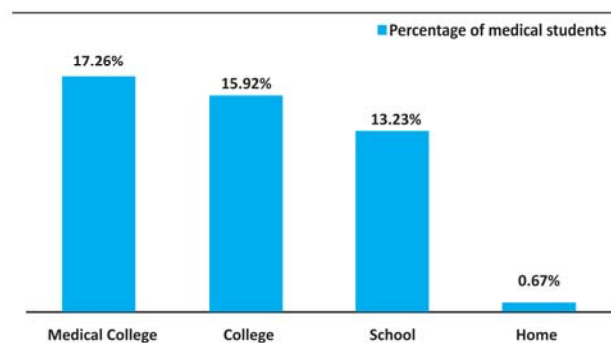
**Table 3. Consumption rate and reason for use of different types of alcohol (n = 446)**

	Type of Alcohol				
	Beer n (%)	Wine n (%)	Whiskey n (%)	Gin n (%)	Local Spirit n (%)
<b>Consumption Rate</b>					
Daily	4 (0.9)	2 (0.4)	3 (0.7)	3 (0.7)	2 (0.4)
2-3/week	2 (0.4)	4 (0.9)	9 (2)	-	-
Once a week	22 (4.9)	8 (1.8)	16 (3.6)	1 (0.2)	4 (0.9)
1-2/month	67 (15)	22 (4.9)	43 (9.6)	9 (2)	7 (1.6)
Tried at least once	104(23.3)	126(28.3)	81(18.2)	100(22.4)	55(12.3)
Occasional	8 (1.8)	11 (2.5)	5 (1.1)	4 (0.9)	3 (0.7)
<b>Reason for use</b>					
Experimentation	79 (38.2)	72 (41.6)	64 (40.8)	58 (49.2)	31 (43.7)
Gives pleasure	46 (22.2)	36 (20.8)	40 (25.5)	24 (20.3)	-
Peer pressure	26 (12.6)	21 (12.1)	15 (9.6)	14 (11.9)	6 (8.5)
Social obligation	25 (12.1)	27 (15.6)	17 (10.8)	16 (13.6)	15 (21.1)
Stress relief	21 (10.1)	14 (8.1)	20 (12.7)	4 (3.4)	4 (5.6)
Feeling of compulsion	9 (4.3)	3 (1.7)	1 (0.6)	2 (1.7)	15 (21.1)
Other	1 (0.5)	-	-	-	-

respondent was 21.2 years with the standard deviation of 2.28 (Figure 1,2).



**Figure 1.** First substance use amongst medical students (n = 446)



**Figure 2.** Place of first exposure for substance use (n = 446)

## DISCUSSION

The study shows prevalence of use of any substance is 60.3% among the medical students. A study conducted in general college in Kathmandu too found that 32.4% of students had tried different types of drug.<sup>3</sup> The most commonly used substance is alcohol (57.6%, n = 257) followed by tobacco (27.6%, n = 123) and cannabis (12.8%, n = 57) which is consistent with other studies amongst medical students.<sup>4-6</sup>

Drug use among medical students is a worldwide phenomenon. Moreover alcohol and drug addiction represents 80-90% of all physical impairment cases in the US, and is a source of a major concern for health authorities.<sup>7</sup> It is therefore of interest to examine the lifestyle of today's medical students, tomorrow's doctors, who will be involved in future health care.<sup>1</sup>

Alcohol use by adolescents is recognized to be mainly a social act.<sup>8</sup> A study from Newcastle, UK showed that college students as a whole have a higher prevalence of alcohol drinking and alcohol disorder than non-college youth.<sup>9</sup> Medical students therefore are a high-risk population. Alcohol use as seen in our study is 57.6% (n = 257) amongst medical students. About 60% of Nepalese population have experienced

alcohol.<sup>10</sup> Prevalence amongst the first year students is 53.7% (n = 130) and that amongst the final year students is 62.25% (n = 127). The lifetime prevalence of alcohol varies from 75 to 97.3% among the medical students in different studies.<sup>5,11-17</sup> In developing world, use of alcohol in general population is usually less than the physicians.<sup>18</sup> The prevalence of alcohol use in men (70.6%, n = 180) is shown more than that in women (40.31%, n = 77). Excessive drinking dominates in men.<sup>19</sup> Beer is the most preferred alcohol, used by 46.41% (n = 207) of medical students. Beer is the most frequent alcohol taken in a teaching institute in eastern Nepal.<sup>4</sup>

Age standardized prevalence estimates of smokers in Nepal is 31.6% and 17.2% for male and female respectively for 15 to 49 years of age.<sup>20</sup> The result of our studies is consistent for the proportion: it shows overall prevalence 39.2% (n = 100) and 12% (n = 23) in male and female respectively. A study done in the people of age group 14 to 32 in colleges in Western Nepal shows prevalence of smoking in male and female to be 20.5% and 2.9% respectively.<sup>21</sup> The prevalence of smoking in male and female ranges from 29.6 to 34% and 0.7 to 5% respectively amongst the medical students.<sup>22-25</sup> Smoking prevalence in first year and final year is 19.4% (n = 47) and 37.2% (n = 76) respectively which is consistent with the results in Turkey (26.4% and 44.1%).<sup>26</sup>

Regarding illicit drugs the lifetime prevalence amongst medical students varies from 4 to 44%.<sup>5,6,10,11,26</sup> Cannabis is the one used most widely amongst them. Our study shows the range for use of illicit substance use from 0.22 to 12.8% and shows lifetime prevalence of use of cannabis to be 12.8% (n = 57). A study in Nepal showed prevalence of cannabis use to be 15%.<sup>4</sup> Apart from cannabis, the prevalence of use of other substances is as: Hashish 4% (n = 18), Benzodiazepine 1.3% (n = 6) and others 2% (n = 9).

Benzodiazepine is the only substance seen not significant among male which can be attributed to use of this substance by both males and female as anxiolytic, especially during the time of examination.

The first substance most frequently used was alcohol (42.65%) which was shown to be significant with use of other substances like tobacco and cannabis thus acting as a 'gateway drug'.<sup>27</sup>

We found that medical school is not the typical place of first use of any substance. The studies have suggested that pattern of substance use and abuse is established prior to entry to medical school.<sup>17,28,29</sup>

Family history for substance use is significant in our study [P < 0.0001]. It is shown to be one of the



predisposing factors for abuse of addictive substance.<sup>30</sup> Studies have found strong specific genetic risk factors for alcoholism in general population and for substance abuse among physicians.<sup>31,32</sup>

Genetic make-up, psychological factors, family background, and socioeconomic circumstances are all influential in shaping the response to an offer of a drug and determining the cost-benefit equation that will result in cessation, persistence or abuse.<sup>33</sup> According to our study the major reason for substance use is: experimentation for tobacco and every type of alcohol, and pleasure followed by experimentation for use of illicit substances like cannabis and hashish.

In a prospective study of 100 American children followed from the age of 3 to 18 years, the subjects broadly fell into three categories with regard to illicit drug use at the end of the investigation: total abstainers, experimenters, or regular users. Those with the healthiest psychological profiles proved to be the experimenters, who had also been in receipt of a significantly higher quality of parenting than either of the other two groups.<sup>34</sup> Thus the largest cohort of those who use substance use for experimentation is justifiable.

Approximately 10% of experimenter with alcohol or drugs will go on to develop problems with them at sometime, and vulnerability factors include physiological attributes related to genetics and neurochemical balance, certain personality traits, attitudes, and mood states, parental attitudes and behavior, peer influences, quality of school life, socioeconomic importance, and availability and cost of drugs.<sup>33</sup> Thus the proportion of medical students that uses substance, even though for experimentation purpose, do keep significance.

As the whole study depends on the information provided by the participants, recall bias and the measurement bias

might have occurred in the study. Since men generally report higher rates of substance use than women there exists the possibility of some underreporting in studies when women report disproportionately.<sup>12</sup> Limitation of the study also includes inability to incorporate medical students from respective year. We also didn't distinguish about current use, use in past month/year, and last time of use of substance. Neither did we collect data regarding knowledge, attitude and practice of the subjects regarding substance use nor did we assess substance dependence. However, being able to collect data anonymously on a sensitive issue such as substance use in the medical profession is the strength of the study, especially given the social system of the country

## CONCLUSIONS

Substance use is prevalent in male than female students of both first and final year students. Primary preventive approaches should be targeted for user, non-users, occasional users and those who have tried at least once by involving techniques such as group-orientation and not aimed at individual level. Secondary preventive techniques such as early identification and treatment should be used for regular and heavy users. These preventive programs should focus on drug taking behavior and address factors associated with the use of substance for achieving desired result.

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