

## Exploring trends and factors related to hookah use among college students: A Cross-Sectional Survey

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### Abstract

Hookah smoking is an emerging public health concern in India. Hookah smoking is becoming a source of tobacco use among the college students nationwide. Objectives: This study was conducted to determine the trend of hookah use and the factors associated with it among college students in Manipal.

It was a cross sectional survey conducted on the students of a dental school in Manipal. The data was collected using self-administered structured questionnaires consisting participants' personal characteristics, health-risk behaviors and factors related to smoking hookah, opinion about increasing trend and perceptions about the harmful effects of hookah smoking distributed among all the students of the college.

The study sample of 332 dental students consisted of 247 females (74%) and 85 males (26%) with the mean age of 20 years. A total of 121 students (36%) have reported to had smoked hookah at one or more occasions (ever smokers). Out of those students that reported ever smoked hookah 72 subjects (22 %) are current hookah smokers and 49 subjects (15 %) have smoked hookah only once for trying. Maximum number of students reported curiosity (70 subjects, 58%) and social trends (25 subjects, 21%) as the major reasons for initiating hookah smoking. Almost all the subjects (113 subjects, 93%) who smoked hookah reported it was easily available and accessible to them. Majority of the subjects either didn't know or believed (170 subjects, 51.2%) that hookah is less harmful than cigarette smoking.

Hookah usage was found high among the study population. Hence, it is imperative that the health risks posed by hookah smoking are addressed. Actions should be taken to limit hookah smoking and to halt this emerging public health threat.

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### Introduction

Hookah has become a global public health problem with quite alarming trends in other parts of the world<sup>1</sup>. Hookah smoking is an old traditional habit of smoking commonly seen among the rural people of India. It is now emerging as a rising smoking trend among youth in India and gaining popularity nationwide. A visit to restaurants in metro cities in India shows it is increasingly popular among youngsters. The rise

in hookah use is a result of marketing strategy for hookah promotion targeted towards this population. Numerous hookah bars or cafés have come up in urban areas and cities especially near schools, colleges or universities campuses. Several cities in India have banned consumption of hookah in hookah bars/cafes. However, hookah is still available in many places. Also, hookahs can be freely purchased and consumed at home without any regulations<sup>2</sup>.

The factors responsible for alarming rise in hookah users across the world could be the many misconceptions about the hookah smoking that it is a safer alternative to cigarettes, leading many to experiment with it<sup>3, 4</sup>. The popular perception is that the water in the bowl absorbs the toxins from the tobacco smoke, rendering it safe for the smoker. However, existing evidence

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on hookah smoking shows that it poses most of the same health risks as that of cigarette smoking<sup>3, 5</sup>. The hookah smokers usually inhale much more smoke than cigarettes during a single session which contains significant amounts of nicotine, tar and heavy metals<sup>5, 6</sup>. In addition, shared mouthpieces and the heated, moist smoke may put many users at risk for some infectious diseases, such as tuberculosis, hepatitis and herpes<sup>5, 7</sup>.

Moreover, youngsters consider the hookah as a means of entertainment, hospitality, and a symbol of fashion<sup>8, 9</sup>. The sweet flavored tobacco (maassel) makes it a more pleasant alternative to cigarettes which allures many individuals to consume these harmful products<sup>10</sup>. This is a concern from a public health perspective since the youngsters are getting attracted towards this practice without knowing the threat posed on their health. In addition, nicotine dependence from hookah tobacco may act as a risk factor for initiation of smoking behavior among the students<sup>11</sup>. Hence, it is important to understand the factors related to hookah smoking to prevent the spread of this emerging public health problem.

Current research is mainly focused on cigarettes, biddies or other smokeless forms of tobacco consumption in India while many people have started smoking tobacco using hookahs. In the through literature search it was found that although, a number of studies related to hookah smoking are conducted in other parts of the world; very few studies are done on prevalence and factors associated with hookah smoking in India<sup>12-15</sup>. Hookah smoking is becoming a source of tobacco use among college students in Manipal, a place with diversity of students with different cultures from various parts of the world. Little is known of the extent of hookah use among students in Manipal. So, the aim of the study is to determine the trend and factors related to hookah use among a sample of students from a dental school in Manipal.

### Materials and methods

The present study was a cross-sectional survey conducted on the dental students of Manipal College of Dental Sciences, Manipal. Ethical approval to conduct the study was obtained from the Ethical Committee of the Manipal University. The students were briefed

about the purpose and process of the study and informed consent was sought for the questionnaire. Students from all five batches who were willing were invited to participate and no sampling was employed. The self-administered anonymous questionnaires were distributed among the students who returned the completed questionnaire with 100% response rate. The questionnaires were checked for completeness and for any incomplete form, subjects were asked to complete it. The investigators of the study were responsible for administering and collecting questionnaires from the students.

A structured questionnaire was prepared based upon the previously conducted research with the modifications<sup>12, 15-17</sup>. The questionnaire consisted of personal characteristics of the participants, health-risk behaviors of the participants, questions related to the factors associated with hookah smoking, opinion about increasing trend of hookah smoking and perceptions about the harmful effects of hookah smoking. The language used in the questionnaire was English as the subjects were well versed with the same. Descriptive analysis of the data was done using Statistical Package for Social Sciences (SPSS) version 18.

### Results

The study sample of 332 dental students consisted of 247 females (74%) and 85 males (26%) with the age range of 17-25 years and mean age of 20 years. A total of 121 students (36%) have reported to had smoked hookah at one or more occasions (ever smokers). Out of these ever smokers, 72 subjects (22 %) are current hookah smokers and 49 subjects (15 %) have smoked hookah only once for trying. Most of the hookah smokers (118 subjects, 35.5%) reported that they are not addicted to hookah smoking except the three subjects. The majority of the current hookah smokers (72 subjects, 22%) reported to smoke once in 6 months (37 subjects, 11.1%) or once in a month (25 subjects, 7.5 %). The approximate duration for a single session of smoking hookah was reported 45 minutes by the subjects. The mean number of years of hookah smoking reported by current smokers was 2 years. Both cigarettes and hookah smoking was reported by 41 subjects (12.3%). 43 subjects (13%) out of 72 current hookah smokers reported that they have tried to

quit hookah smoking, the reason for quitting was mainly the cost as reported by 10 subjects. (Table 1)

Variables		n (%)
Gender	Male	85(25.6%)
	Female	247(74.4%)
Age	≤ 20 years	196(59%)
	>20 years	136(41%)
Have you ever smoked Hookah?	Yes	121(36.4%)
	No	211(63.6%)
<b>Total</b>		<b>332(100%)</b>
Number of Hookah Smoking sessions?	Only once for trying	49(14.8%)
	Weekly once	4(1.2%)
	Monthly once	25(7.5%)
	Once in 6 months	37(11.1%)
	If other, please specify: once in three months	6(1.8%)
What is the approximate duration of a single session?	5-15 minutes	32(9.6%)
	16-45 minutes	48(14.5%)
	>46 minutes	41(12.3%)
Number of years of Hookah smoking?	≤2 years	75(22.6%)
	>2 years	46(13.8%)
Do you think that you are addicted to Hookah?	Yes	3(9%)
	No	118(35.5%)
Do you smoke both Hookah and cigarettes?	Yes	41(12.3%)
	No	80(24.1%)
Have you tried to quit Hookah smoking?	Yes	43(13%)
	No	78(23.5%)
<b>Total</b>		<b>121(36.4%)</b>

**Table 1.** Personal characteristics and health risk behavior of the participants. n - Number of subjects.

Majority of the present study hookah smokers tested hookah first time when they were >18 years (78 subjects, 65%). Almost, all the subjects who smoked hookah (113 subjects, 93%) reported it was easily available and accessible to them. Majority of the smokers (104 subjects, 86%) reported to smoked at Hookah cafes. Half of the smokers (57 subjects, 47%) reported as friends who encouraged them for smoking hookah. Majority (107 subjects, 88%) reported to smoke hookah with their friends and very few reported to smoke with their family/relatives/alone. Majority (106 subjects, 88%) of the smokers reported that they smoked in groups and shared their hookahs with other smokers. Majority of the smokers (98 subjects, 81%) reported not to have any family members who smoke hookah. Many smokers (82 subjects, 68%) reported their parents would discipline them if they know. Very few smokers (17 subjects, 22%) reported their parent's reaction was indifferent to their hookah smoking status and they can smoke when they are around. Maximum number of students reported curiosity (70 subjects, 58%) and social trends (25 subjects, 21%) as the major reasons for initiating hookah smoking. Few subjects, also reported boredom (13 subjects, 11%), peer pressure (9 subjects,

8%) and stress (1 subject, 1 %) as other reasons for initiating hookah smoking. The main aspect of Hookah smoking that they found most pleasurable was the flavor (43 subjects, 36%), ambience (24 subjects, 20%), the feeling while smoking hookah (24 subjects, 20%) and the smoke (16 subjects, 13%). (Table 2)

Variable	n (%)	
Age at starting smoking Hookah	≤15 years	7(5.8%)
	16-18 years	36(29.7%)
	>18 years	78(64.5%)
Do you think hookah is easily available and accessible?	Yes	113(93.4%)
	No	8(6.6%)
Where do you smoke Hookah most of the times?	At home	17(14%)
	At Hookah Café	104(86%)
Who encouraged you to start smoking Hookah?	No one	63(52.1%)
	Friends	57(47.1%)
	Relatives/sibling	1(0.8%)
With whom do you smoke Hookah most of the times?	Alone	8(6.6%)
	Friends	107(88.4%)
	Relative/sibling	6(5%)
Do you share the Hookah with other people?	Yes	106(87.6%)
	No	15(12.4%)
Having family members who smoke Hookah	No one	98(80.9%)
	Father	7(5.8%)
	Mother	2(1.7%)
	Brother	10(8.3%)
	Sister	4(3.3%)
Parents' reactions regarding your Hookah smoking?	Indifferent, I smoke Hookah at home when they are around	27(22.3%)
	If they knew they would discipline me	82(67.7%)
	Other reactions: don't know	12(10%)
Reason for initiating Hookah smoking	Curiosity	70(57.8%)
	Stress	1(0.8%)
	Boredom	13(10.7%)
	Peer Pressure	9(7.5%)
	Social trends	25(20.7%)
	Others- fun	3(2.5%)
	Flavor	43(35.5%)
What is the main aspect of Hookah smoking that you find most pleasurable?	Ambience	24(19.8%)
	Appearance	5(4.2%)
	Style	9(7.5%)
	Smoke	16(13.2%)
	Other: feeling while smoking	24(19.8%)
	Total	121(100%)

**Table 2.** Hookah smokers' characteristics. n - Number of subjects.

Variable	n (%)	
Why do you think that it is getting popular among current generation?	Less Dangerous than Cigarettes	97(29.2%)
	Peer Pressure	38(11.5%)
	Social Trend	109(32.8%)
	Freely available	19(5.7%)
	Good Group Activity	38(11.5%)
	No other entertainment	2(0.6%)
	Boredom	29(8.7%)
<b>Total</b>	<b>332(100%)</b>	

**Table 3.** Students opinion about increasing trend of hookah smoking. n - Number of subjects.

The reason for increasing trend of hookah smoking as perceived by many of the study subjects was that it is fashionable and trendy (109 subjects, 33%), because of the belief that it is less dangerous than cigarette smoking (97 subjects, 29 %), due to peer pressure (38 subjects, 12%), it's a good group activity (38 subjects, 12%), due to boredom (29 subjects, 9%) and it's freely available (19 subjects, 6%). (Table 3) Nearly half of the subjects (170

subjects, 51%) had believed that hookah is less harmful than cigarette smoking. Nearly half of the subjects reported either didn't know (156 subjects, 47%) / they don't believe (60 subjects, 18%) that hookah releases more concentrated smoke than cigarette. Most of the subjects (162 subjects, 49%) didn't know if toxic products are filtered through the water in hookah, however, 95 subjects (29%) believed it is filtered and very less number of subjects (75 subjects, 23%) reported it is not filtered. More number of subjects (248 subjects, 75%) reported that they know that tobacco and other flavoring substances are used in hookah smoking, however, 82 subjects (25%) didn't know and only 2 subjects reported tobacco is not used. (Table 4)

Variables		n (%)
Water pipe vs. cigarette	Less harmful	170(51.2%)
	As harmful	99(29.8%)
	More harmful	63(19%)
Hookah smoking releases higher concentration of smoke than cigarette smoking	Yes	116(34.9%)
	No	60(18.1%)
	Don't know	156(47%)
Tobacco and other flavoring substances are used in hookah smoking	Yes	248(74.6%)
	No	2(0.6%)
	Don't know	82(24.8%)
Water filters the smoke by removing the toxic products	Yes	95(28.6%)
	No	75(22.6%)
	Don't know	162(48.8%)
<b>Total</b>		<b>332(100%)</b>

**Table 4.** Students perceptions about the harmful effects of hookah smoking. n - Number of subjects.

## Discussion

Hookah smoking is emerging as a public health problem in many parts of the world <sup>1</sup>. In a study conducted in India among the Hyderabad urban youth, the prevalence of tobacco smoking considering both cigarette and hookah smoking was reported to be 19% <sup>14</sup>. In a study conducted in Pakistan among medical students in Rawalpindi, 19.3% of the sample had reported to smoked hookah on one or other occasions and 7.5% of the sample reported current hookah smoking <sup>16</sup>. Whereas higher prevalence was noticed in the present study, 36% of the sample has reported to had smoked hookah at one or more occasions. Out of which, 22% were current hookah smokers and 15% have smoked hookah only once for trying. Similarly, current hookah smoking in US studies ranged from 9.5% to 20.4% and ever-use varied from 12.7% to 48.4% <sup>18</sup>.

Evaluation of the responsible factors for

the initiation of hookah smoking can help to reduce its prevalence and harmful effects among youth population. The most important factor reported by most researchers for increased consumption of hookah smoking is the perception that it is safer than cigarettes <sup>3, 4, 12</sup>. In the present study as well, greater number of subjects has believed hookah is less harmful and less addictive than cigarette smoking as water filters out all toxic products. However, it has been proved that in a single session of hookah smoking, hookah users inhale substantially more volume of smoke than from a single cigarette with higher health risks and dependence <sup>5, 6, 7, 11</sup>. Moreover, the duration of each smoking session mostly lasts 45–60 min <sup>1, 19</sup>. Similarly, in the present study as well 45 mints was the reported average duration of smoking hookah by the subjects. These findings suggest there is a serious need to correct public about this misperception about hookah smoking.

Sweet flavor of hookah tobacco is a known responsible factor for alluring people towards it <sup>10</sup>. In the present study as well, students found the flavors of hookah as the most pleasurable aspect of hookah smoking. This is an important risk factor of hookah smoking that has to be addressed by the public health policy makers to halt this type of rising smoking trend. Curiosity, social trend and finding it fashionable were other prime reasons for increasing trend of hookah smoking in this study similar to other studies <sup>8, 9, 11, 20</sup>. The social nature of hookah smoking has mainly contributed to the adoption of this habit among the students <sup>20</sup>. Majority of the subjects in the present study as well reported to smoked in groups and shared their hookah pipes <sup>12</sup>. This is an unhealthy practice as it increases the risk of spreading infectious diseases <sup>4</sup>. Hence, putting warning labels on the hookahs or displaying information in hookah bars about its harmful nature may prove to be an effective strategy for interrupting this social trend.

Hookahs were easily available and accessible to the present study subjects. Hookah cafés were the prime location of smoking reported similar to other studies <sup>12, 13</sup>. However, hookahs can be easily purchased from a shop or can be obtained at rent to consume at home/for the social events. Hence, it is suggested that hookah cafes and selling or renting of hookah should be strictly prohibited in and around the university campuses <sup>2</sup>. A strict regulatory policy is

required to limit its accessibility. Hookah smoking was mainly encouraged by the friends in the present study similar to the finding reported in other studies<sup>12, 13</sup>. However, most of the present study subjects believed that their parents may not allow for smoking hookah which was in contrast to those studies that had reported parental acceptance of this behavior<sup>12</sup>. There is a need to spread awareness among the people about the harmful nature of hookah smoking. It is suggested that the universities should be made responsible to conduct counselling sessions and awareness programs for the students for not to indulge in any kind of such abusive habits.

### Conclusion

Hookah usage was found high among the present study population. The two important factors that must be addressed to control hookah smoking is the social nature of hookah use and misperceptions regarding harmfulness of hookah smoking as reported by majority of our sample. Prevention of the risk factors for hookah smoking initiation and continuation at an early age may have significant public health benefits. Our findings suggest a need for similar studies to examine unintended effects of current regulations on alternative forms of tobacco use. There is a need of effective regulatory policy for prevention of hookah tobacco smoking considering the risk posed to health. The present study shed light for potential preventive actions in university settings. This situation should prompt universities to take necessary actions to monitor such alternative forms of tobacco use.

### Declaration of Interest

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