ORIGINAL ARTICLE

A Comparison of Smoking Habits Between Medical and Non-Medical University Students and Effect of University Related Factors on Their Habits

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ABSTRACT

Objective: This study has determined the prevalence of tobacco smoking among medical and non-medical students alongwith the influence of university related factors on smoking habits.
Methodology: We surveyed 1487 students from 18 universities across Pakistan from September to December, 2014. A self-administered questionnaire was filled out by the students. Chi square and binary logistic regression was used through SPSS 22.
Results: Mean age of study population was 20.17 years. Overall prevalence of smoking was 21.5% with 13%, 28.5%, and 30.6% among Medical, Engineering, and Social Sciences students respectively. Among smokers' group, 69.9% started smoking in the age bracket of 16-20 years. In all universities, cigarette smoking was popular over shisha. There was an exponential rise in frequency of smokers as we examined successive academic years in non-medical universities ($p<0.05$). Allocation of specific place for smoking within campus, presence of shisha bar nearby, anti-smoking literature on social media, and health awareness seminars conducted by teachers have a strong impact on smoking habits ($p<0.05$).
Conclusion: All kinds of smoking were found to be more prevalent in non-medical universities. There is a strong relationship between university-related factors and smoking prevalence. Smoking-related health education must be a part of the academic curriculum in all types of institutions.

Key words: Shisha, non-medical university, medical university

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طبی اور غیر طبی یونیورسٹی کے طالب علموں کے درمیان تمباکو نوشی کی عادتوں کے موازنے اور ان کی عادات پر یونیورسٹی کے متعلقہ عوامل کے اثرات کا جائزہ:

خلاصہ: مقاصد:: اس مطالعہ میں طبی اور غیر طبی طالب علموں میں تمباکو نوشی کی عادات اور طالبعلموں پر یونیورسٹی کے ماحول کے اثرات کا تمباکو نوشی کی عادت سے تعلق کا جائزہ لیا گیا

طریقہ کار: ہم نے ستمبر 2014 سے دسمبر 2014 کے دوران پورے پاکستان سے اٹھارہ جامعات کے 1487 طلبا پر سروے کیا۔ ایک خود سے تیار کردہ سوالنامہ طلبا سے پُر کروایا گیا۔

نتائج: تحقیق میں شامل طلبا کی عمر کا اوسط 20.17 سال تھا، تمباکو نوشی کا مجموعی پھیلاؤ 21.5 فیصد تھا جس میں میڈیکل کے طالبعلموں میں 13 فیصد، انجینئرنگ میں 28.5 فیصد اور سماجی سائنس کے طالب علموں میں 30.6 فیصد تھا۔ تمباکو نوش گروپس میں سولہ سے بیس سال کی عمر کے لوگوں میں تمباکو نوشی کا رجحان 69.9 فیصد تھا۔ تمام جامعات میں سگریٹ نوشی شیشے کے مقابلے میں زیادہ مقبول تھی تمباکو نوشی کرنے کے لئے مخصوص جگہ کا کیمپس کے اندر ہونا، قریب میں شیشا بار کا ہونا، سوشل میڈیا پر انسداد سگریٹ نوشی مہم، اور اساتذہ کی طرف سے کئے جانے والے صحت کے بارے میں بیداری کے سیمینار کے تمباکو نوش افراد پر زبردست اثرات نظر آئے۔

نتائج: تمام اقسام کی تمباکو نوشی غیر طبی جامعات میں زیادہ مقبول نظر آئی۔ یونیورسٹی مین موجود عوامل اور سگریٹ نوشی کی کھپت کے درمیان خاصا مضبوط تعلق پایا گیا۔ تمباکو نوشی سے متعلق صحت کی تعلیم کو ہر قسم کے اداروں میں تعلیمی نصاب کا حصہ بننا چاہئے۔

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INTRODUCTION

With one billion tobacco smokers[1], the world faces an epidemic that would take decades to control. World Health Organization (WHO) predicts that tobacco smoking rate will rise to 1.5 times of its current value by 2025[2]. Tobacco smoking does not refer to cigarette smoking per se; other types like pipe, *bidi*, water pipe (*shisha*), and cigar are also included.

Smoking behaviour formed in the second decade of life has long lasting impact on individual as well as for public health in general. It is a complex behaviour and several factors influence this habit. In the past, investigators have pointed out many social factors: smoking by peers and family, spending leisure time outside home[3], poor educational performance, availability of pocket money[4], and relieving boredom[5]. The author postulated that students from non-medical faculties would indulge more in smoking when compared to medical students. Several studies on smoking habits among students around the world have been reported, but none, to the authors' knowledge, has established the connection between smoking attitude and university-related factors. Therefore, this study was conducted to find the correlation between these factors.

The aim was to describe the overall prevalence of smoking in students from 18 medical and non-medical universities across Pakistan and also elicit preference between cigarette and shisha among these students. We also evaluated the influence of university-related factors on their smoking habits and pattern of smoking over successive years of graduation.

METHODOLOGY

This cross-sectional survey was conducted in 18 universities across the country. Medical and non-medical universities located in four large cities: Karachi, Multan, Hyderabad, and Lahore were selected. Non-medical universities were further divided into Engineering and Social Sciences. Students from all graduation years, from the first year to the final year, were requested to take part in survey. Non-medical universities offer four-years while medical universities offer five-years graduation programmes in Pakistan. Convenient sampling technique was used to collect the data. Ethical approval was taken from the Chest Health and Education Society, an individual body from Pakistan including leading pulmonologists and statisticians.

Self-made questionnaire was use as the tool for data collection. Questionnaire contained three sections. First section covered the demographic data including age in years, gender, university name, and year of graduation. Second section contained questions regarding personal smoking habits, and third section was related to university factors influencing the smoking habits. In second and third sections, five and seven questions were asked respectively and were measured in dichotomous scale, except age of initiation that was measured in ratio scale.

Investigators visited selected universities from September 2014 to December 2014 and permission was taken from university management. Students were approached in their classes during lectures. The aim of the study was explained to students and they were assured regarding the confidentiality of responses and consent was taken. The college faculty members were not involved in handling the questionnaire to ensure confidentiality. The questionnaires were filled in average time period of 10 to 20 minutes in the presence of the investigator to ensure complete comprehension by respondents and avoid misunderstandings.

SPSS 22 was used for data analysis. P value of less than 0.05 was considered as statistically significant. In the descriptive analysis, mean ± standard deviation and proportions were used for continuous variables and categorical variables respectively. Chi-square test of association was applied for association between two nominal variables. Binary logistic regression was used to predict the possibility of a student to smoke in the final year, as compared to the first year. To identify the factors associated with smoking prevalence, Odds Ratio (OR) was calculated through logistic regression analysis with Confidence Interval (CI) of 95%.

RESULTS

Questionnaires were distributed to 1800 students and 1487 responses were received. Response rate was 82.6%. Number of questionnaires analyzed was 1487 of which 689 were filled by female students and 798 were filled by male students. Among the respondents, 746 (50.2%), 221 (14.9%) and 520 (35%) belonged to Medical, Engineering, and Social Sciences groups respectively. The mean age of study population was 20.17 (±4.2) years with the male to female ratio of 1:1.15 (male 53.7% and females 46.3%).

The overall prevalence of smoking among Pakistani students was found to be 21.5% with 13%, 28.5%, and 30.6% among Medical, Engineering, and Social Sciences students respectively. The reported mean age of initiation of smoking was 18 years. However, 69.9% of students reported acquiring the habit of smoking between the ages of 16 and 29. The reported youngest age for initiation of smoking was seven years.

The effect of graduation year on smoking status was investigated through Chi square. Increasing smoking prevalence with each graduation year was observed in all three disciplines. It is important to note that there was a steep rise in prevalence among Engineering ($p < 0.001$) students followed by those of Social Sciences ($p < 0.001$). The rise in medical students was not significant statistically ($p=0.391$).

Table 1: Socio Demographic Characteristics of Study Population

Characteristics of Study Population	Group	Total No	%
Age (Years) (Mean ± Sd)	20.17 ± 4.22		
Gender	Female	689	46.3
	Male	798	53.7
Discipline	Medical	746	50.2
	Engineering	221	14.9
	Social Sciences	520	35
Years	1	220	14.8
	2	411	27.6
	3	437	29.4
	4	292	19.6
	5	127	8.5
City	Karachi	799	53.7
	Lahore	356	23.9
	Hyderabad	95	6.4
	Multan	237	15.9
Total		1487	100

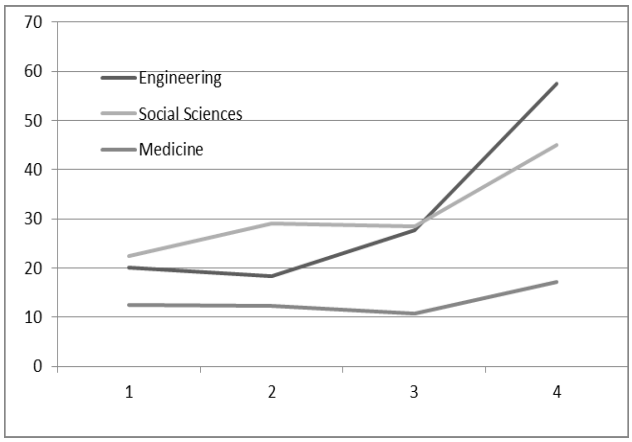

Figure 1: Relationship between graduation year and percentage of smoking (%). Graduation years are on horizontal axis.

The trend of smoking was assessed by comparing two major kinds—cigarette and shisha. Cigarette smoking was higher than shisha smoking in all three disciplines: Medical, Engineering, and Social Sciences. Both kinds of smoking were more common in males. There was an increase in both kinds of smoking with every year of graduation.

A binary logistic regression analysis was applied to assess the odds of students in the final year when compared to the first year students. Compared to Medicine disciplines [1.45 times (C.I 0.621-3.41; p=0.388)], it was significantly higher in Engineering [5.4 times (C.I1.99-14.66; p<0.01)], and Social Sciences [2.84 times (C.I 1.58- 5.10; p <0.01)].

The logistic regression model indicates that various university factors are associated with smoking status of students. Students whose teachers talk to them regarding smoking issues are 1.5 times less likely to smoke as compared to students with whom teachers never talk about it (OR 1.56, p<0.001).

Allocated place for smoking within campus (OR 0.00, p<0.001) and presence of shisha bars near campus (OR 0.00, p<0.001) were found to be significantly associated with the smoking status of students.

In Pakistan, social media is increasingly becoming the media of communication in universities between the students and the management. Regarding social media, watching promotional material or material against tobacco was significantly associated with smoking status (p<0.001). Students who had never come across material against smoking on social media were 1.72 times (p<0.001) more prone to smoking as compared to students who had come across it in the past. Moreover, 76.1% Medicine, 62.7% Social Sciences and 55.2% Engineering students reported searching for data against smoking on social media.

DISCUSSION

The overall smoking prevalence of 21.5% shown in the present study is comparable with WHO figures of 19.15% for adult smokers. Our results of smoking prevalence among medical students was 13%, which is low when compared to 35-56% in Turkey[6], 26.8% in China[7], and 22.4% in Italy[8], but higher than 12.2% in Puerto Rico[9], 10.3% in Japan[10], and comparable to previous data 14.4%[11] from Pakistan.

Cigarette smoking, when compared to shisha, showed a higher trend among students from all disciplines. In the last two decades, enormous work has been done to find the prevalence of shisha smoking among young adults worldwide but recent data on exact prevalence of cigarette smoking among university students are scarce and small effort is made to compare several kinds of smoking in young population.

In the present study, we tried to elicit factors linked with the universities' environment. Absence of anti-smoking literature from curriculum, lack of interaction between students and teachers regarding smoking habits, and knowledge of students regarding the presence of shisha bars near the university and in-campus dedicated area for smoking. Interestingly, non-smokers took more interest in searching and reading anti-smoking literature on social media than did the smokers.

Identifying university characteristics associated with tobacco smoking may help in focusing prevention efforts. Our results clearly demonstrate that all kinds of smoking were the most common among non-medical students, when compared with students from medical universities. This finding is consistent with previous studies in Asia and Europe[12,13]. Moreover, there was an exponential rise in the frequency of smokers as we examined successive academic years in non-medical universities, the most notable were Engineering students.

	Shisha							Cigarette						
	Yes			No				Yes			No			
	n	Row%	Column %	n	Row %	Column %	P value	n	Row %	Column %	%	Row %	Column %	P value
Dicipline														
Medical	67	9	32.5	679	91	53	0.000	84	11.3	32.1	662	88.7	54	0.000
Engineering	101	19.4	49	419	80.6	32.7		59	26.7	22.5	162	73.3	13.2	
Social Sciences	38	17.2	18.4	183	82.8	14.3		119	22.3	45.4	401	77.1	32.1	
City														
Hyderabad	10	10.5	4.9	85	89.5	6.6	0.583	9	9.5	3.4	86	90.5	7	0.025
Karachi	118	14.8	57.3	681	85.2	53.2		131	16.4	15	668	83.6	54.5	
Lahore	45	12.6	21.8	311	87.4	24.3		74	20.8	28.2	282	79.2	23.2	
Multan	33	13.9	16	204	86.1	15.9		48	20.3	18.3	189	79.7	15.4	
Gender														
Male	162	20.3	78.6	636	79.7	49.6	0.000	236	29.6	90.1	562	70.4	45.9	0.000
Female	44	6.4	21.4	645	93.6	50.4		26	3.8	9.9	663	96.2	54.1	
University Year														
1st Year	31	14.1	15	189	85.9	14.8	0.000	32	14.5	12.2	188	85.5	15.3	0.000
2nd Year	61	14.8	29.6	350	85.2	27.3		61	14.8	23.3	350	85.2	28.6	
3rd Year	45	10.3	21.8	392	89.7	30.6		72	16.5	27.5	365	83.2	29.8	
4th Year	60	20.5	29.6	232	79.5	18.2		82	28	31.3	211	72	17.2	
5th Year	9	7.1	4.4	117	92.9	9.1		15	11.9	5.7	111	88.1	9.2	

Chart 2: Factors associated with smoking among students in Pakistan

Characteristics	Smoking Status		Odds Ratio	Sig value	95% C.I. for Odds Ratio	
	Non smoker n = 1168	Smoker n = 319				
Are there any shisha bars near your university premises?						
I don't know	1140 (97.6)	4 (1.3)	0.000	0.000	0.000	0.001
No	14 (12)	179(56.1)	1.316	0.486	0.607	2.853
Yes	14 (12)	136(42.6)	1		-	-
Is there any specific allotted smoking area for students within your university premises?						
I don't know	1138 (97.4)	5 (1.6)	0.000	0.000	0.000	0.001
No	21 (1.8)	174(54.5)	0.533	0.533	0.236	1.200
Yes	3 (0.8)	140(43.9)	1		-	-
Does your university ever arrange any programme regarding smoking habits?						
No	909 (77.8)	247(77.4)	0.977	0.880	0.727	1.315
Yes	259 (22.2)	72 (22.8)	1		-	-
Do your teachers ever talk regarding smoking habits as part of your course?						
No	673 (57.6)	217 (68)	1.565	0.001	1.204	2.034
Yes	495 (42.4)	102 (32)	1		-	-
Do you ever attend any organized programme regarding shisha information outside your university?						
No	968 (82.9)	258(80.9)	0.874	0.406	0.636	1.201
Yes	200 (17.1)	61 (19.1)	1		-	-
Have you ever come across any programme on electronic media regarding hazards of smoking?						
No	466 (39.9)	133(41.7)	1.077	0.562	0.838	1.385
Yes	702 (60.1)	186(58.3)	1		-	
Have you come across any article on social media regarding hazards of smoking?						
No	339 (29)	132(41.4)	1.726	0.000	1.336	2.230
Yes	829 (71)	187(58.6)	1		-	-

A dire need exists to formulate policies nationwide that specifically target students. We are making the following suggestions based on our data:

· Shisha bars near educational institutes and dedicated on-campus smoking area should be dealt with full force of law.

· Major councils responsible for curriculum, like Pakistan Medical & Dental Council and the Pakistan Engineering Council, should be directed to introduce a curriculum specifically designed to address all kinds of tobacco consumption and their hazards in each year of graduation in all kinds of universities.

· Teachers should be encouraged to discuss the pros and cons of smoking at university level and act as role models for their students.

· The World No Tobacco Day as declared by WHO on 31st May, should be observed across all educational institutes.

· Adolescents these days spend considerable hours on social media. Awareness against smoking should be promoted on social media by assigning roles to people from educational institute.

Limitations of the Study:

The major limitation of our study was its cross-sectional nature. In addition, the convenient sampling technique might not reflect the true nature of targeted population. Also, the smoking status was based on self-reporting and was not validated by any objective measurements like carbon monoxide level measurements, thus we suspect under-reporting of facts, especially by females. Previously, under-reporting by females has been reported from this part of the World because of cultural reasons[14]. The strengths of this study were its generalizability and usage of standardized interview technique. Additionally, the use of personalized approach ensured data validity and achieved high response rate.

Despite these constraints, our study has raised concerns regarding universities' environment and our findings can be utilized in policy making and law enforcement in future.

CONCLUSION

In this study, the findings are more consistent with the authors' postulated idea. A significant association of smoking status of students was observed in non-medical universities and successive academic years. Also, being male and having limited exposure to anti-smoking material on social media was associated with increased frequency of smoking. Policies targeting universities' environment, curriculum, and policies regarding tobacco can help in decreasing the number of student smokers.

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