Prevalence and Factors Associated with Smoking among Medical Students in a Local University

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ABSTRACT

Introduction: Smoking is the most preventable cause of death. Between 80,000 to 100,000 children worldwide are estimated to start smoking every year. **Objectives:** To determine the prevalence of smoking among medical students and determine the relationship between smoking and age, sex, race, religion, household income, media influence, peer and parental smoking status. **Material and Methods**: A cross-sectional study design was used in this study. All the 438 UPM medical students from Year 1 to Year 5 were included in this study. A pre-tested, self-administered questionnaire was used to collect the data. The variables examined were age, sex, ethnicity, household income, religion, peer influence, family influence, smoking status, age started smoking, duration of smoking and quit attempts. Data was analysed using SPSS. **Results:** The overall prevalence of ever and current smokers was 19.3% and 2.4% respectively. The overall mean initiation age was 13.8 years (95% CI 12.7 – 14.9). All the 10 current smokers were males. Of the 10 current smokers, 2 were daily smokers while the remaining 8 were occasional smokers. Both the daily smokers were Malays. The eight occasional smokers consisted of four Malays, two Indians, one Chinese and one of other race. The percentage of respondents who had at least one of their immediate family members who smoked was significantly higher among the ever smokers than the never smokers (p <0.05). The percentage of respondents who thought advertisements sponsored by cigarette companies influenced others to smoke was significantly higher among the never smokers than the ever smokers (p< 0.05). There was a significant association between smoking and sex, peer influence, family influence and media influence. **Conclusion:** The prevalence of smoking among medical students in Universiti Putra Malaysia is relatively low compared to the national prevalence.

Keywords: Smoking, prevalence, associated factors, medical students

INTRODUCTION

Smoking is the most preventable cause of death. It causes three million deaths each year worldwide.[1] By 2030, perhaps a little sooner, the proportion will be one in six, or 10 million deaths per year, representing the single largest cause of death. Until recently, this epidemic

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of chronic disease and premature deaths mainly affected the rich countries. It is now rapidly shifting to the developing world. By 2020, seven of every 10 people killed by smoking will be in low-and middle-income nations. By 2025, the number of smokers worldwide is expected to rise to more than 1.6 billion.[2] In 2004 in Malaysia, the prevalence of ever and current smokers was 30.4 % and 22.7% respectively. The prevalence of ever and current smokers for males was 57% and 43.4% as compared to 4.8% and 2.8% respectively for females.[3] Smoking causes over 80% of all lung cancers,[4,5] with the risk of dying from lung cancer increasing with the number of cigarettes smoked per day. However, the duration of smoking is the strongest determinant of lung cancer in smokers. The risk of developing lung cancer is greatly increased if the smoker starts smoking at a young age.[6] Cigarette smoking is also a risk factor for developing cancers of the larynx, oral cavity, and oesophagus.[7] A recent review by the International Agency for Research on Cancer found that, in addition to these cancers, smoking was a cause of cancer of the nasal cavities and nasal sinuses, stomach, liver, cervix and myeloid leukaemia.[8] It also causes cardiovascular diseases such as coronary heart disease, cerebrovascular disease, arteriosclerosis and abdominal aortic aneurysm.[9] At least 80% of the deaths from chronic obstructive pulmonary disease (COPD) could be attributed to cigarette smoking.[10] It is estimated that between 80,000 and 100,000 children worldwide start smoking every day – roughly half of whom live in Asia.[11] In a comparative study done among Malaysian university students studying in Malaysia and Australia, it was found that smoking behaviour was significantly higher among males, among those who study beyond the first year, staying with peers outside the hostel, have financial sources other than a scholarship, have peers who smoke and mental health score of more than seven.[12] The objectives of this study were to determine the prevalence of smoking among medical students, age they started smoking, why they started smoking, duration of smoking, quit attempts and to determine the relationship between smoking and age, sex, ethnicity, religion, household income, media influence, peer and family smoking status.

MATERIALS AND METHODS

This study was conducted in the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM) in 2004. A cross-sectional study design was used in this study. The variables examined were age, sex, ethnicity, household income, religion, peer influence, family influence, smoking status, age started smoking, duration of smoking and quit attempts. All the 438 UPM medical students from Year 1 to Year 5 were included in this study. Data was collected using pre-tested, self-administered questionnaires. An ever smoker was defined as one who has smoked in his/her lifetime. A current smoker was one who had reported smoking at least once in the last 30 days. Data Analysis was done using Statistical Package for Social Sciences Programme (SPSS) for Windows, version 11.0. Chi Square Test and Fisher's Exact Test were used to determine the associated factors of smoking whereas *t*-test was used to compare the mean age of the respondents. The two sided *p*-value of < 0.05 was considered as significant.

RESULTS

Of a total of 438 medical students, 424 agreed to participate in the study giving a response rate of 96.8%. Table I shows the characteristics of respondents by age, sex race, religion, year of study. The majority were females (61.8%). The overall mean age was 22.3 years (95% CI 22.1–22.5). The median was 22 years ranging from 19 to 30 years. Although the majority (81%) were aged between 20–24 years of age, there was only one respondent who was 30 years old. There was no significant difference in the mean age of males and females (t= 1.588, df= 422 and p>0.05). The majority (56.6%) of the respondents were Malays followed by Chinese (34.9%), Indians (5.4%) and others (3.1%). In terms of religion, the majority were Muslims followed by Buddhists.

Table 1. Characteristic of respondents

Characteristics	Frequency	Percent
Sex		
Male	162	38.2
Female	262	61.8
TOTAL	424	100.0
Age		
< 20	31	7.3
20 – 24	345	81.4
≥25	48	11.3
Ethnicity		
Malay	240	56.6
Chinese	148	34.9
Indian	23	5.4
Others	13	3.1
Religion		
Islam	249	58.7
Christian	38	9.0
Buddhism	107	25.2
Hinduism	16	3.8
Others	5	1.2
No Religion	9	2.1
Year		
Year 1	96	22.6
Year 2	105	24.9
Year 3	70	16.5
Year 4	82	19.3
Year 5	71	16.7
TOTAL	424	100.0

Prevalence of Smoking

Table 2 shows prevalence of ever and current smokers in the study by age, sex, race and year of study. Out of the 424 respondents, the prevalence of ever and current smokers was 19.3 % and 2.4% respectively. The prevalence of ever smokers was significantly higher in the male (35.2%) as compared to the female (9.5%). The prevalence of ever smokers was highest among other races (38.5%) followed by Indians (30.4%), Chinese (19.6%) and Malays (17.1%). However, the difference observed between the prevalence of ever smokers among the Malays and Indians, between Indians and Chinese, Malays and Chinese, Others and Malays, Others and Chinese, Others and Indians was not statistically significant and could be due to chance. Out of the 424 respondents, there were only 10 (2.4%) current smokers.

Table 2. Prevalence of ever smokers and current smokers
by age, sex, race and year of study

Age /Sex/Race/ Year of study	n	Ever smokers (%)	Current smokers (%)
Age (Years)			
< 20	31	6.5	0
20 – 24	345	18.8	2.9
≥25	48	31.3	0
Total	**424**	**19.3**	**2.4**
Sex			
Male	162	35.2	6.2
Female	262	9.5	0
Race			
Malay	240	17.1	2.5
Chinese	148	19.6	0.7
Indian	23	30.4	8.7
Others	13	38.5	7.7
All Races	**424**	**19.3**	**2.4**
Year of study			
Year 1	96	15.6	3.1
Year 2	105	21.0	1.9
Year 3	70	14.3	2.9
Year 4	82	26.8	3.7
Year 5	71	18.3	0

All the current smokers were males giving a prevalence of current smokers of 6.2% for the males. Of the 10 current smokers, 2 of them were daily smokers whereas the other 8 were occasional smokers. Both the daily smokers were Malays. The eight occasional smokers consisted of four Malays, two Indians, one Chinese and one of other race. Of the 10 current

smokers, 3 current smokers were in year 1. There were 2 current smokers in year 2 and year 3. The remaining 3 current smokers were in year 4. There were no current smokers in year 5.

Household Income

Table 3 shows the relationship between current smokers and household income. The results show that there was no significant relationship between the prevalence of current smokers and household income (Chi Square= 2.6, df= 1, p= 0.1).

Table 3. Household income of ever and current smokers

Family income	n (%)	Ever smokers (%)	Current smokers
< RM2000	153	22(26.9)	2(20.0)
≥ RM2000	271	60 (73.1)	8(80.0)
TOTAL	424	82(100.0)	10(100.0)

Age Started Smoking (Initiation Age) among Ever Smokers

Table 4 shows the initiation age of smoking by sex. The overall mean initiation age for smoking was 13.8 years and the median initiation age was 14 years. For males, the mean initiation age was 13.6 years (95% CI 12.3 – 14.9), compared to 14.2 years (95% CI 11.8 – 16.7) for females.

Table 4. Age started smoking by sex amongst ever and current smokers

Age started smoking (Years)	Male	Female	Total
Ever smokers			
< 10	17 (29.8)	6 (24.0)	23 (28.0)
10 – 14	12 (21.1)	7 (28.0)	19 (23.2)
15 – 19	21 (36.8)	8 (32.0)	29 (35.4)
≥ 20 – 24	7 (12.3)	4 (16.0)	11 (13.4)
TOTAL	57 (100.0)	25 (100.0)	82 (100.0)
Current smokers			
< 10	1(10.0)	0	1(10.0)
10 – 14	2(20.0)	0	2(20.0)
15 – 19	6(60.0)	0	6(60.0)
≥20 – 24	1(10.0)	0	1(10.0)
TOTAL	10(100.0)	0	10(100.0)

Duration of Smoking among Current Smokers

Table 5 shows that majority (80%) of the current smokers had smoked less than ten years. The mean duration of smoking among current smokers was 7 years (95% CI 4.5 – 9.4). The median was 6.5 years, ranging from 1 to 14 years.

Table 5. Duration of smoking in years among ever and current smoker smokers

Duration smoked	Ever smokers		Current smokers	
(Years)	Number	%	Number	%
< 1 year	7	8.5	1	10.0
1 - 4	16	19.5	0	0
5 -9 .	23	28.1	7	70.0
10 -14	21	25.6	2	20.0
15 -19	12	14.6	0	0
> 20	3	3.7	0	0
TOTAL	82	100.0	10	100.0

Smoking Intensity among Current Smokers and Quit Attempts

The analysis of the results show that the number of days smoked by the 10 current smokers in a month ranged from one to thirty days, with a mean of 12.1 days (95% CI 3.71 – 20.49) and a median of 8.5 days. The number of cigarettes consumed in a month ranged from one to 300 cigarettes, with a median of 15.0 cigarettes. The expenditure per month on cigarettes ranged from RM 0 to RM 90.00, with a mean of RM 28.40 and a median of RM 12.50. Six (60%) out of the 10 current smokers made an effort to quit before, but started smoking again while the other 4 (40%) had never attempted to quit.

Other Associated Factors

Religion

The respondents were also asked whether religious education was emphasised at their homes. Table 6 shows that out of the 82 respondents who ever smoked, 65 (79.2%) strongly agreed or agreed that religious education was emphasised at home. Of the 342 respondents who had never smoked, 282 (82.5%) of them strongly agreed or agreed that religious education was strongly emphasised at home. This difference in religious education emphasis at home between the ever smokers and never smokers was statistically significant (p<0.05).

Table 6. Degree of agreement of the emphasis of religious education at home
by ever smokers and never smokers

Emphasis of	Ever Smokers		Never Smokers		Total	
Religious education	No.	%	No.	%	No.	%
Strongly agree/Agree	65	79.2	282	82.5	347	81.9
Uncertain	8	9.8	40	11.7	48	11.3
Disagree/strongly Disagree	9	11.0	20	5.8	29	6.8
Total	**82**	**100.0**	**342**	**100.0**	**424**	**100.0**

Why They Started Smoking

The respondents who were ever smokers were asked 'why they started smoking'. Table 7 shows that the majority (87.8%) of the ever smokers started either because they were trying for fun or their friends had asked them to try.

Table 7. Percent distribution of ever smokers on "why they started smoking"

Reason why respondents started smoking	Current Smokers		Cumulative
	Number	%	
1. Curious, just to try out	62	75.6	75.6
2. Friends asked to try	10	12.2	87.8
3. To release tension	3	3.7	91.5
4. I think it is stylish to smoke	2	2.4	93.9
5. Parents smoke, so smoke too	1	1.2	95.1
6. Other reasons	4	4.9	100
	82	100	

Peer Influence

Table 8 shows peer influence in cigarette smoking. The results show that of the 82 ever smokers, 76 (92.7%) had friends who were smokers and of the 342 non-smokers only 274 (80.1%) had friends who smoked. There was a significant difference between the two groups (chi-square test = 7.2; df =1 and p <0.01). The respondents were also asked whether they would accept a cigarette offered by their best friend. Of the 10 current smokers, 90% stated that they would probably or definitely accept a cigarette offered by their best friend compared with 7.5% of the 414 non-smokers. This likelihood of accepting a cigarette offered by their best friend was significantly higher among the current smokers compared to the non-smokers (Fisher's Exact Test= 42.92, p< 0.01).

Table 8. Peer and family influence in cigarette smoking

Peer/Parents	Smoking Status	Ever Smokers		Total
		Yes (%)	No (%)	
Friends	Smokers	76(92.7)	274(80.1)	350(82.5)
	Non-smokers	6(7.3)	68(19.9)	74(17.5)
	Total	82(100.0)	342(100.0)	424(100.0)
Parents	Smokers	40(48.8)	118(34.5)	158(37.3)
	Non-smokers	42(51.2)	224(65.5)	266(62.7)
	Total	82(100.0)	342(100.0)	424(100.0)

Family Influence

Table 8 also shows that there is a significant relationship between family influence and ever smoking (Chi Square= 5.767, df= 1, p= 0.016).

Relationship between Prevalence of Ever Smoking and Discussion on the Harmful Effect of Smoking by Families

Among the 82 ever smoker families, 41 (50%) had discussed the harmful effects of smoking with them compared to 228 (66.7%) of the 342 never smoker families (Chi Square= 7.922, df= 1, p=0.005).

Media Influence

Associating Advertisements Sponsored by Cigarette Companies with Smoking. Forty-three percent of the ever smokers associated such advertisements with smoking whereas 50.0% of the never smokers associated such advertisements with smoking.

Advertisements Sponsored by Cigarette Companies Influenced Others to Smoke. The percentage of respondents who thought such advertisements influence others to smoke was significantly higher among the never smokers (67.2%) as compared to 58.6% of the ever smokers (Chi Square= 4.80, p= 0.028).

Perception and Opinion of Smoking

"It is safe to smoke for a year or two as long as they stopped after that." Seventy percent of the current smokers thought that it was definitely not or probably not safe to smoke under the above circumstances while 83.1% of the non-smokers thought the same. The difference was not statistically significant and could be due to chance (Fisher's Exact Test= 3.481, p=0.304).

"It would be difficult to quit smoking once someone started smoking." Of the 10 current smokers, 80% of them thought it was probably or definitely difficult to quit once someone started smoking. Of the 414 non-smokers, 86.5% thought it was probably or definitely difficult to quit once someone started smoking (Fisher's Exact Test=1.683, p= 0.619).

DISCUSSION

This study shows that the overall prevalence of ever and current smokers among medical students in Universiti Putra Malaysia was 19.3% and 2.4% respectively which is much lower than the national prevalence of 30.4% and 22.7% respectively for those aged 15 years and above.[3] However, the prevalence of ever smokers among female medical students (9.5%) in UPM was much higher than the national prevalence of female ever smokers (3.9%) for those aged 19 years to 30 years. However, it is good to note that there is zero prevalence of female current smokers in UPM. Tong Zhu et al [13] reported that the prevalence of ever smokers among medical students in China was 40.7%. The mean initiation age of smoking in this study was 13.8 years, which is much lower than 18 years and above among the medical students in King Saud University in Saudi Arabia .[14] In this study, the mean initiation age for males was lower than the females. Cavelaars et al [15] also reported that females lag behind males in adopting smoking.

In this study, the results show that 92.7% of the ever smokers had friends who were smokers compared to 80% among the non-smokers. Paavola et al [16] reported that it was not easy for many adolescents to stay non smoking if there are many smokers among their friends. This study found that there were medical students who may accept a cigarette offered by their best friend.

CONCLUSION

Medical students are doctors of tomorrow and smoking is the most preventable cause of death. Ferry et al. [17] reported that in major cities of the US, physicians and medical students are not adequately trained to treat nicotine dependence, the most costly and deadly preventable health care problem in the United States. There was a significant disparity between the magnitude of tobacco's impact on health in the United States and the efforts spent in teaching medical students about treatment. In conclusion, the overall prevalence of ever and current smokers among UPM medical students in 2004 was 19.3% and 2.4% respectively. Ever smoking was associated with peer and family smoking habits. Through the prevalence of smoking (current smokers) among medical students is relatively low compared to the national pervalence, there appears to be a need for counselling to reduce this figure further.

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