Pattern and prevalence of smoking among students at King Faisal University, Al Hassa, Saudi Arabia

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نمط وانتشار التدخين بين طلبة جامعة الملك فيصل، الأحساء، السعودية

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الخلاصة: وصفت الدراسة انتشار الأنماط المختلفة للتدخين، وعلاقات التدخين الحالي، بين الطلبة الذكور في جامعة الملك فيصل، السعودية. وقد اختيرت عينة عشوائية مكونة من 1382 طالباً، في تسع كليات، ليجيبوا على استبيان يدار ذاتياً حول المسح العالمي للتدخين بين الشباب إضافة إلى اختبار فاغرستورم المعدّل للاعتماد على النيكوتين. وكان معدل انتشار التدخين الحالي 28.1٪ (21.6٪ للسجائر؛ 14.6٪ للشيشة). ومن بين المدخنين الحاليين كان 41.4٪ يعيشون في منازل حيث يعيش معهم مدخنون آخرون، وبدأ 17٪ منهم التدخين في عمر أقل من 12 سنة. وفي تحليل تحوف لوجستي تضمنت منبئات التدخين الحالي: الأكبر سناً، والذين يعيشون بعيداً عن منازلهم، ووجود مدخنين في الأسرة وبين الأصدقاء المقربين، والتعرُّض لإعلانات التبغ.

ABSTRACT The study describes the prevalence of different forms of smoking, and the correlates of current smoking, by male students of King Faisal University, Saudi Arabia. A random sample of 1382 students at 9 colleges answered a self-administered questionnaire based on the Global Youth Tobacco Survey plus the modified Fagerström Test for Nicotine Dependence. The prevalence of current smoking was 28.1% (21.6% for cigarettes, 14.6% for waterpipe). Of current smokers, 41.4% were living in homes where others smoke and 17.0% initiated smoking below age 12 years. In logistic regression analysis older age, living away from home, smoking by family and close friends and exposure to tobacco promotion were predictors of current smoking status.

Caractéristiques et prévalence du tabagisme chez les étudiants de l'université Roi Fayçal d'Al Ahsa (Arabie saoudite)

RÉSUMÉ Cette étude décrit la prévalence des différentes formes de tabagisme et les corrélats du tabagisme au moment de l'étude chez des étudiants de sexe masculin de l'université Roi Fayçal (Arabie saoudite). Un échantillon aléatoire de 1 382 étudiants inscrits dans 9 facultés a répondu à un autoquestionnaire fondé sur l'enquête mondiale sur le tabagisme chez les jeunes et sur le test de Fagerström modifié sur la dépendance à la nicotine. La prévalence du tabagisme au moment de l'étude était de 28,1 % (21,6 % pour les cigarettes ; 14,6 % pour la pipe à eau : parmi ces fumeurs, 41,4 % vivaient avec d'autres fumeurs et 17,0 % avaient commencé à fumer avant l'âge de 12 ans. Dans l'analyse de régression logistique, l'âge, le fait de vivre loin de chez soi, le tabagisme chez les membres de la famille et les amis proches, et l'exposition à la publicité en faveur du tabac étaient des facteurs prédictifs du tabagisme au moment de l'étude.

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Received: 29/05/07; accepted: 09/09/07

Introduction

Smoking has been identified as the single most important cause of preventable morbidity and premature death [*1*]. Although many of the adverse health effects of tobacco occur later in life, smoking has health implications for young people [*2*] and is associated with other high-risk behaviours among young people including abuse of other drugs, fighting and high-risk sexual behaviour [*3*]. Each day, nearly 4800 adolescents smoke their first cigarette; of these, nearly 2000 will become regular smokers [*4*]. Smoking-related health problems are a function of the duration (years of smoking) and intensity (number of cigarettes/day); most adult smokers began to smoke or were already addicted before the age of 18 years [*5*]. While many adolescents want to quit smoking, only a small number of them succeed [*6*].

There has been a dramatic increase over the past decade in the numbers of college-age smokers [*7*]. Several studies report that the prevalence of smoking increases from the first year to the final year among university students, which underlines the fact that the early years at university are important for targeting anti-smoking activities [*8,9*]. Students who enter college as non-smokers are 40% less likely to begin smoking if they live in a smoke-free campus [*10*].

The World Health Organization has reported widely differing prevalences of smoking among young people in the Arab countries: 7% in Oman, 18% in Kuwait, 23% in Iraq, 25% in Saudi Arabia and Jordan, 31% in Syrian Arab Republic, 43% in Yemen and 53% in Lebanon [*11*]. However, the trend and pattern of smoking as well as the quitting rate especially among college students are largely unknown in many of these countries. The objectives of the present study were to describe the pattern and prevalence of different forms of smoking among male students at King Faisal University, Al Hassa, Saudi Arabia and to explore the possible correlates and/or predictors of current smoking status.

Methods

This was a cross-sectional descriptive study.

Setting and sample

King Faisal University in Al-Hassa is located at the Eastern province of Saudi Arabia. The campus contains 9 colleges and the total population enrolled in the University according to registries for the academic year 2006–07 was 12 400; the male population was 8200.

A sampling frame of all students at the different colleges, of all grades and with male sex only was used for the purpose of sampling. Females were not included due to the traditions of Saudi Arabian society which restricts access to females by male researchers and the lack of female researchers at the time of the study. Using *Epi-Info* 2002 software, a total population of 8200, assuming the prevalence of smoking from a similar study of 18% [*12*] and the worst acceptable prevalence was 16%, applying a confidence level of 95%, the total number of subjects required for our study was 1209; taking into consideration a non-response rate of about 15%, the final sample size was estimated as 1390 students (16.9% of the enrolled students at the University).

A multistage proportionate sampling method was applied. The colleges were stratified according to the scope of specialty and number of enrolled students. A sampling fraction was calculated to select participants in relation the population in each college. For each college the students were chosen using a systematic random sampling technique from the available registries.

Data collection

Data were collected using an anonymous self-administered, modified Arabic version of the Global Youth Tobacco Survey questionnaire [*13*], with the addition of the modified Fagerström Test for Nicotine Dependence [*14*]. The final form of the questionnaire was field tested on 100 students from the medical college who were not part of the sample.

The questionnaire included the following items: sociodemographic data (age in years, college, year, current and permanent residence, living with parents or not); smoking within the household (who smoked, for how long, extent of smoking and quitting, if any); current smoking status; opinions about smoking behaviour; previous smoking experience; and pattern of smoking (type, age at initiation, duration in years, frequency of smoking and average cost per month). The modified Fagerström test is a widely used and validated 6-item questionnaire to assess severity of nicotine dependence [*14*], with scores ranging from 0 to 10. A score ≤ 4 suggests a low level of nicotine dependence, and a score ≥ 6 usually indicates high dependence. Those who had not smoked in the previous 12 months or longer were asked to consider themselves as ex-smokers.

For each college, a series of visits was carried out by the investigators for selection of participants and orientation regarding the objectives, contents and confidentiality of data collection. Lecture halls in each college were used to deliver the necessary orientation session on the objectives and contents of the questionnaire while assuring the participants of the anonymity of their responses. The confidentiality of data was preserved according to the Helsinki declaration of bioethics.

Data processing and analysis

The data were revised and validated according to certain pre-determined

criteria. Questionnaires with more than 2 items missing were discarded, a total of 69 forms. The response rate was 100% in the different colleges with the exception of the college of education (84.3%), agriculture (89.8%) and management science (96.5%). A pre-designed *SPSS*, version 12.0, file was used for data entry and data analysis. The following tests of significance were used as appropriate: chi-squared test of independence, Kruskall–Wallis and analysis of variance and Spearman rank order correlation coefficient. A logistic regression model was applied to determine the possible predictors and/or correlates of current smoking status of the respondents. $P \leq 0.05$ was considered statitically significant.

Results

A total of 1382 male students were included, with age range 18–29 years and mean age 20.9 [standard deviation (SD) 2.0] years (Table 1). Nearly one-quarter of the students (23.5%) were living away from home, the reasons for which were: education (95%), marriage (4%) or social reasons (1%).

Smoking prevalence and sociodemographics

The prevalence of smoking among the students is shown in Table 2. For any type of tobacco 28.1% of respondents were current smokers, 37.4% ever smokers and 62.6% never smokers. For cigarettes, 21.6% were current smokers and 28.4% ever smokers, while for *sheesha* (traditional Arabic waterpipe) the corresponding prevalences were 14.6% and 16.7%. Of the current smokers, 77.1% smoked cigarettes and 52.1% waterpipes.

Table 1 shows the sociodemographic characteristics of the respondents in relation to their current smoking status. Significantly more current smokers were in older age groups 20–< 24 years (67.5%) and 24+ years (15.7%) compared with the total sample and with the never smokers and ex-smokers ($P < 0.001$). Students at the colleges of education, community services and agriculture had the highest prevalence of smoking compared with those at other colleges; the lowest prevalences were at the colleges of medicine and clinical pharmacy ($P < 0.001$). A significantly higher proportion of ever smokers (current and ex-smokers) (30.0%) were living away from their parents compared with the never smokers (19.7%) ($P < 0.001$).

Environmental tobacco smoke

Of the total respondents, 41.4% lived in homes where others smoked (Table 1); this was higher for current smokers (57.5%) compared with ex-smokers (42.6%) and never smokers (34.0%) ($P < 0.001$). Over half of all respondents (58.2%) were exposed to tobacco in places other than home such as colleges, cafés and social gatherings (76.3% among current smokers, 33.6% of ex-smokers and 26.2% of never smokers) ($P < 0.001$). The prevalence of smoking among any parents or relatives was also different (57.5% of current smokers versus 41.1% and 33.6% for ex-smokers and never smokers respectively) ($P < 0.001$). Current smokers had more close family members (father or brothers or both) who smoked (205/388 (53.4%) than did ex-smokers (53/129, 41.1%) and never smokers (274/865, 31.7%) ($P < 0.001$).

Smoking among close friends was also different as 63.9% of current smokers reported that all or most of their friends were smokers compared with 24.8% and 15.8% of ex-smokers and never smokers respectively ($P < 0.001$).

Patterns of smoking

The duration of smoking among respondents ranged from 2 to 19 years, with a mean of 7.45 (SD 3.17) years. As regards the age of initiation of smoking among current smokers, 17.0% started below age 12 years (4.6% at 10–11 years, 6.7% at 8–9 years and 5.7% at 7 years), 13.9% at 12–13 years, 23.2% at 14–15 years and 45.9% at 16+ years. The age of initiation was significantly lower for those who smoked only cigarettes compared with those who smoked both cigarettes and waterpipe; 9.9% of them started at age 12–13 years, 24.0% at 14–15 years and 76.1% at 16+ years ($P = 0.012$).

For cigarette smokers the mean monthly cost was 165.7 (SD 75.1) Saudi Arabian riyals (SR) (median 150 SR) and for waterpipe smokers it was 104.3 (SD 69.9) SR (median 100.0 SR). Home and college were the usual places for cigarette smokers to smoke (46.0%), while waterpipe smokers smoked at special places such as cafés and restaurants.

Nicotine dependence

Of the current cigarette smokers, 47.0% had a nicotine dependence score of ≥ 6 (high), 33.8% scored 4–6 (moderate) and 19.2% scored < 4 (minimal). The overall mean score on the modified Fagerström Test for Nicotine Dependence out of a maximum of 10 was 4.13 (SD 2.55) [95% confidence interval (CI): 3.84–4.39] (Table 3, available in online version). Students at the colleges of computer science, community services and agriculture had the highest nicotine dependence scores, while the college of medicine students had the lowest score (Table 3). The mean number of cigarettes smoked per day was the highest among students of computer science and veterinary colleges ($P = 0.029$). There were significant differences between students in the different colleges in all the questions except about the item for the most difficult cigarette of the day to give up.

Quitting behaviour

Among the current smokers, about 60% had tried quitting, with a median of 3

Table 1 Sociodemographic characteristics of the students by current smoking status

Variable	Total (n = 1382)		Current smoking status						Statistics
			Smoker (*n* = 388)		Ex-smoker (*n* = 129)		Never smoker (*n* = 865)		
	No.	%	No.	%	No.	%	No.	%	
College									$\chi^2 = 38.24$; df = 14; $P < 0.001$
Education	429	31.0	151	39.0	48	37.2	230	26.6	
Agriculture	268	19.4	78	20.1	26	20.2	164	19.0	
Management	191	13.8	51	13.1	20	15.5	120	13.9	
Science	162	11.7	35	9.0	13	10.1	114	13.2	
Community services	100	7.2	31	8.0	7	5.4	62	7.2	
Medicine	94	6.8	11	2.8	8	6.2	75	8.7	
Veterinary	60	4.3	16	4.1	5	3.9	39	4.5	
Computer	54	3.9	14	3.6	1	0.8	39	4.5	
Pharmacy	24	1.7	1	0.3	1	0.8	22	2.5	
Age group (years)									$\chi^2 = 33.62$; df = 4; $P < 0.001$
< 20	371	26.8	65	16.8	42	32.6	264	30.5	
20–< 24	820	59.3	262	67.5	73	56.6	485	56.1	
24+	191	13.8	61	15.7	14	10.9	116	13.4	
Mean age (years) (SD)	20.89 (2.03)		21.50 (2.10)		20.60 (2.20)		20.74 (1.93)		$F = 22.05$; $P < 0.001$
Year of enrolment									$\chi^2 = 29.54$; df = 8; $P = 0.002$
1st year	371	26.8	114	29.4	48	37.2	209	24.1	
2nd year	374	27.1	93	24.0	27	21.0	254	29.4	
3rd year	385	27.9	106	27.3	39	30.2	261	30.2	
4th year	195	14.1	63	16.2	12	9.3	136	15.7	
5th year	20	1.4	12	3.1	3	2.3	5	0.6	
Current residence									$\chi^2 = 36.01$; df = 4; $P < 0.001$
Urban	873	63.2	265	68.3	71	55.0	537	62.1	
Rural	317	22.9	63	16.2	24	18.6	230	26.6	
Hostel/other	192	13.9	60	15.5	34	26.4	98	11.3	
Permanent residence									$\chi^2 = 6.63$; df = 2; $P = 0.041$
Urban	979	70.8	293	75.5	93	72.1	593	68.6	
Rural	403	29.2	95	24.5	36	27.9	272	31.4	

Table 1 Sociodemographic characteristics of the students by current smoking status (*concluded*)

Variable	Total (n = 1382)		Current smoking status						Statistics
			Smoker (*n* = 388)		Ex-smoker (*n* = 129)		Never smoker (*n* = 865)		
	No.	%	No.	%	No.	%	No.	%	
Living with parents									$\chi^2 = 24.18$; df = 2; $P < 0.001$
Yes	1057	76.5	281	72.4	81	62.8	695	80.3	
No	325	23.5	107	27.6	48	37.2	170	19.7	
Smokers at home									$\chi^2 = 60.99$; df = 2; $P < 0.001$
Yes	572	41.4	223	57.5	55	42.6	294	34.0	
No	810	58.6	165	42.5	74	57.4	571	66.0	
Smokers among relatives									$\chi^2 = 112.87$; df = 10; $P < 0.001$
Father only	239	17.3	68	17.5	14	10.9	157	18.2	
Brothers only	163	11.8	73	18.8	22	17.1	68	7.9	
Father + brothers	132	9.6	66	17.0	17	13.2	49	5.7	
Father + brothers + others	23	1.7	14	3.6	0	0.0	9	1.0	
Others only	10	0.7	2	0.5	0	0.0	8	0.9	
None	815	59.0	165	42.5	76	58.9	574	66.4	
Smokers among close friends									$\chi^2 = 347.28$; df = 6; $P < 0.001$
All	74	5.4	48	12.4	6	4.7	20	2.3	
Most	342	24.7	200	51.5	25	19.4	117	13.5	
Some	616	44.6	133	34.3	69	53.5	414	47.9	
None	350	25.3	7	1.8	29	22.5	314	36.3	

df = degrees of freedom.

Table 2 Prevalence of current smoking, ever smoking and never smoking among the students (*n* = 1382)

Type of tobacco	Current smoker			Ever smoker			Never smoker		
	No.	%	(95% CI)	No.	%	(95% CI)	No.	%	(95% CI)
Any	388	28.1	(25.8–30.5)	517	37.4	(34.6–39.7)	865	62.6	(60.0–65.1)
Cigarettes	299	21.6	(19.5–23.9)	392	28.4	(26.1–30.8)	–	–	–
Waterpipe	202	14.6	(12.9–16.6)	234	16.7	(15.0–19.0)	–	–	–

CI = confidence interval.

attempts, and 78% planned to quit in the near future. The primary motives for quitting were health, family pressure and restrictions, and other social reasons. Out of 388 current smokers 138 (35.6%) had stopped smoking in the past, 76.1% for a period from 1–3 months, 16.0% for 4–11 months and 7.9% for 1 year or more.

Knowledge and beliefs

There were significant differences between smokers and non-smokers as regards their knowledge about the harms of both smoking and passive smoking and the effect of smoking on body weight ($P < 0.001$) (Table 4, available in online version). In addition, there was a significant difference between smokers and non-smokers as regards receiving advice from family members on the harms of smoking. Concerning the participants' beliefs, there were significant differences between smokers and non-smokers that smokers have more friends and that smoking should be banned in public places ($P < 0.001$), but no difference in the belief that it was easy to quit smoking ($P = 0.061$); only about 25% of participants in both groups thought it was not easy to quit.

There were statistically significant differences between smokers and non-smoker as regards having received free cigarettes or gifts during tobacco company promotions ($P < 0.001$). As regards students exposure to anti-smoking messages or smoking advertisements, 27.5% had seen anti-smoking messages in the media in the previous 30 days, while 54.2% had seen posters against smoking on several occasions at cultural and sports activities. However, 24.6% had seen cigarette promotion advertisements in newspapers and magazines during the previous month.

Smoking predictors

Table 5 illustrates the logistic regression model of current smoking status against the possible correlates. The model explained 79.9% of cases. Older age was a risk factor for current smoking (OR = 2.57 for age 20–< 24 years). Urban residence was also a risk factor. While residing in hostels/other residence was significant on univariate analysis it became insignificant in the multivariate model. Living with parents was protective against the adoption of smoking (OR = 0.53); so too was having received parental and family advice against the hazards of smoking (OR = 0.07). Having parents and other family members who smoked was a risk factor for smoking (OR = 2.52), while having all or most close friends as smokers was an even greater risk (OR = 6.86). Receiving free cigarettes through promotional campaigns of cigarettes companies was associated with smoking (OR = 2.82); so too was receiving gifts with tobacco company logos (OR = 2.28). Finally, exposure to high intensity media messages against smoking was protective of current smoking (OR = 0.59).

Discussion

Although Saudi Arabia does not grow tobacco or manufacture cigarettes, an average of 600 million SR (approximately US$ 150 millions) are spent annually on tobacco [*15*]. No nationwide studies on the prevalence of tobacco have been performed and this, coupled with a lack of data regarding the pattern of smoking, may conceal serious tobacco-related problems [*16*]. The prevalence of current tobacco smoking in our students (28.1%) was higher than rates reported in a previous study of students in Saudi Arabia (13.6% among medical and 17.5% among students of education) [*12*], while a study conducted on male secondary school students in the central region of Saudi Arabia reported a similar prevalence (29.8%) [*17*]. The reported prevalence among university/college students was 34.4% in Kuwait [*18*], 24.8% (males) in Syrian Arab Republic [*19*] and 22.1% (males) in Turkey [*8*]. These figures can be compared with prevalences ranging from 5.5% to 20% among adolescents in some countries of the European Union and Canada [*20*].

Many people consider that waterpipe smoking is less harmful than cigarettes because they believe that the water filters out harmful substances. Waterpipes do not contain less nicotine than cigarette smoke and have more carbon monoxide [*21*]. Our study revealed a higher percentage of current smokers used waterpipes (52.1%) than male students in other countries in the region (43.6% in Saudi Arabia [*12*], 24.6% in Kuwait [*22*] and 25.5% in Syrian Arab Republic [*23*]). This could be explained by the increasing popularity of waterpipe smoking. The widespread attention focused on the dangers of cigarette smoking, coupled with the stigma associated, might unintentionally encourage waterpipe smoking [*22*].

Data show that the proportion of adolescents who smoke increases with age [*24,25*]. Also, adolescents who start to smoke early are more likely to continue smoking as adults [*26*]. We found a negative association between smoking status and age which contradicts the first statement, probably because the age range of the study sample was too narrow to demonstrate such an association. Age at initiation in our study (66.5% initiated below age 16 years) was lower than in another similar study in Saudi Arabia where about 59% started smoking at or above the age of 18 years [*12*], whereas in another study in secondary schools 83.7% of the current smokers started at age 15 years or below [*17*]. A study in the USA reported the mean age of initiation to be 18.3 years among medical and nursing students [*27*].

Our results show that the prevalence of smoking varied across students at different colleges within the same university, which is consistent with other studies in Saudi Arabia [*12*] and

Table 5 Logistic regression model between the current smoking status and possible predictors of current smoking among the students

Covariates	Smoking status		Multivariate logistic regression model			
	Current smoker (n = 388)	Non-smoker[a] (n = 994)	β	SE	OR (95% CI)	P-value
Age group (years)						
< 20	65	306			1[b]	< 0.001
20–< 24	262	558	0.945	0.260	2.57 (1.56–4.28)	< 0.001
24+	61	130	0.406	0.224	1.50 (0.97–3.38)	0.070
Current residence						
Urban	265	608			1[b]	0.004
Rural	63	254	–0.735	0.293	0.48 (0.27–0.86)	0.013
Hostel/other	60	132	–0.236	0.315	0.61 (0.31–0.80)	0.454
Living with parents						
Yes	281	776	–0.632	0.237	0.53 (0.33–0.85)	0.008
No	107	218				
Smokers at home						
Yes	223	344	–0.923	0.147	2.52 (1.89–3.36)	< 0.001
No	165	650				
Smokers among close friends						
All/most	248	150	1.926	0.147	6.86 (5.14–9.16)	< 0.001
Few/none	140	826				
Received parental advice against smoking						
Yes	285	634	–0.358	0.158	0.70 (0.51–0.95)	0.024
No	103	360				
Received free cigarettes from tobacco company promotion						
Yes	156	40	1.038	0.157	2.82 (2.12–3.76)	< 0.001
No	232	954				
Received gift with tobacco company logo (wallet, pens, shirts)						
Yes	252	315	0.824	0.266	2.28 (1.35–3.84)	0.002
No	136	679				
Exposed to media messages against smoking						
Many	120	261	–0.534	0.158	0.59 (0.43–0.80)	< 0.001
Few or did not follow	268	733				

[a]Ex-smokers + never smokers; [b]Reference group.
SE = standard error; OR = odds ratio; CI = confidence interval.

the USA [*27*]. Gliksman et al. found that students in arts and social sciences programmes were 2–3 times more likely to be current daily smokers than were students enrolled in a science programme [*28*]. We found higher rates of smoking by students at the colleges of education, community services and agriculture. The intensity of physical addiction to nicotine as measured by the Fagerström test [*28*] also showed higher dependency among students at these colleges. The mean Fagerström score among all medical students in our study [2.90 (SD 1.97)] was higher than among medical students in a study in the USA [2.3 (SD 0.8)] [*27*].

Smoking by parents and sibling seems to be important in the initiation as well as the continuation of smoking. Bauman et al. found that 12–14-year-olds whose parents currently smoked were almost twice as likely to smoke as those whose parents had never smoked [*29*]. Kandel and Wu found that both maternal smoking and the quality of parent–child interaction influenced the current smoking status among adolescents [*30*]. These finding are consistent with our study as current smokers had twice the risk when relatives, especially parents and siblings, were smokers.

Friends' behaviour and attitudes have also been shown in a large number of studies to be a particularly powerful force in shaping behaviour [*31*]. Peer

smoking seemed to be the most important factor influencing smoking behaviour of our respondents. Bawazeer et al. [32] and Botvin et al. [33] reported similar findings in younger populations. A study in the Syrian Arab Republic demonstrated that about half of male current smokers were introduced to smoking by a friend and they smoked because their friends did so [23]. Hahn et al. found that 60% of adolescent aged 11–17 years had first smoked, and 72% had most recently smoked, with a close friend [34]. Mohammed et al. in Kuwait found that about half of male waterpipe smokers and 70% of female waterpipe smokers reported that waterpipe smoking was either accepted or very much accepted by their friends, and both males and females tended to have friends whose behaviour and attitudes reflected their own behaviour [22].

Parental guidance and living with parents was protective against taking up smoking in our study. Gfroerer et al. also showed that among a sample of USA college students, those who lived with their parents were less likely to have smoked in the last month compared to students who did not [35]. These findings are further supported by Adlaf et al. who found that post-secondary students who resided off campus without their family had a higher rate of daily smoking than those living in university housing and those living with their parents [36].

It has been hypothesized that the tobacco industry's targeted marketing strategies have contributed to the observed increase in cigarette use among post-secondary students [37]. In Saudi Arabia, tobacco advertising and promotion are prohibited in the local media and smoking is not allowed in government buildings or on domestic flights. However, there is no close monitoring of compliance [38] and in our study 24.6% of respondents had seen cigarette promotion advertisements in newspapers and magazines during the previous month. Another study among secondary-school students in Saudi Arabia revealed that about 66% had seen pro-cigarette advertisements on billboards, 73% had seen advertisements in magazines or newspaper, 12% had an object with cigarette logo and 28% had been offered free cigarettes by company representatives [17]. Promotional events reinforce brand visibility, allow the industry to reach specific target groups and generate names for future marketing efforts [39]. In addition, Rigotti et al. found that the distribution of free cigarettes and attendance of tobacco company sponsored events was strongly associated with current smoking after adjusting for demographic factors (OR = 1.75) [40].

There were some limitations to the study. Only male students were included in the study as the access to females was difficult. Although anonymity was guaranteed for data collection, smoking is socially unacceptable in the Saudi Arabian community, and therefore the prevalence of smoking by self-reporting may have been underestimated.

Conclusion

Smoking among students in Saudi Arabia seems to be higher in terms of prevalence and intensity as compared to those in developed countries. Most of the current smokers in our study were highly nicotine dependent with significant variation across colleges. Parents, siblings and peers were the most important predictors of smoking behaviour among the students. Concerns are raised about role of promotional strategies and the media in the initiation and progression of smoking behaviour among this group.

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Note from the Editor

We wish to draw the kind attention of our potential authors to the importance of applying the editorial requirements of EMHJ when preparing their manuscripts for submission for publication. These provisions can be seen in the Guidelines for Authors, which are available online at http://www.emro.who.int/emhj.htm, and are published at the end of the first issue of each volume. We regret that we are unable to consider papers that do not conform to the Guidelines.