SMOKING BEHAVIOR AND SMOKING DETERMINANTS AMONG UNIVERSITY STUDENTS IN BASRAH

Salma Abbas Ali[1], Jasim Naeem Al-Asadi[2]

ABSTRACT

***Background*: The smoking epidemic is a matter of worldwide concern. It is notable that, the younger the age at which smoking is initiated, the greater is the chance of becoming a heavy smoker, and suffering from cigarette-related diseases. This study was conducted to assess the prevalence and determinants of smoking among university students in Basrah.**

***Subjects and methods:* For the period from the 1st of November 2008 to 30th of April 2009, 1650 students (mean age 21.6± 3.1 years) from four colleges in Basrah University participated in the study. The students filled in an anonymous questionnaire detailing their sociodemographic characteristics and smoking behavior.**

***Results:* Of the total participants; 51.2% were females. The prevalence of current smoking was 23.2%; (42.1% among males versus 5.1% among females). The smoking behavior of friends was the most powerful factor of smoking initiation. Smoking was associated with male gender, urban residence, family history of smoking, low educational level of father, and high economic level.**

***Conclusion:* Cigarette smoking is prevalent among university students in Basrah. There is a need to implement public health interventions, with special attention to the determinants of smoking in this age group.**

INTRODUCTION

The smoking epidemic has become a matter of worldwide concern. In general, the prevalence of smoking is declining in many developed countries but increasing in developing countries. There are 1.3 billion smokers in the world, and approximately 84% of them live in developing countries.[1] Smoking is strongly associated with an increased morbidity and mortality. It was reported that about 25% of all adolescents who experiment with cigarette smoking become regular smokers, and among the smokers, about one-third will die from a smoking-related disease.[2] The transition from high school to college begins at a time of personal growth accompanied by normal developmental stressors. Some young students use smoking as a coping mechanism. Many18-24 years old persons try smoking for the first time while in college. Students who in high school are more likely to increase their smoking frequency and amount while in college. [3] Smoking initiation and cessation are influenced by many factors, social, cultural, or personal. Social influences include; the characteristics, beliefs, attitudes, and behaviors of other persons such as family and friends. Social pressure from peers or older siblings has been considered as a prime factor for initial experimentation of smoking. Whereas, religious beliefs are important in the decision of some persons not to smoke. [4,5] Cultural influences include; the practices and norms of the broader social environment of persons, such as the community, neighborhood, schools, and media. Personal influences include; individual biological characteristics, heritable factors, personality traits, affective states, and behavioral skills. [4] A study that examined smoking habits among university students in twenty three countries showed that the age-adjusted prevalence of smoking ranged from 2% in Thailand to 46% in Spain among women and from 14% in Thailand to 47% in Portugal among men. [6] Epidemiological studies among different university student populations in Arab and Eastern Mediterranean countries demonstrated a marked variation in the prevalence of smoking. [7-12] Although smoking confers a social problem in addition to it's adverse health effects, particularly among young adults, few studies studied the prevalence of smoking but not smoking determinants among university students in Basrah. [13,14]

SUBJECTS AND METHODS

This is a cross-sectional study which was conducted for the period from 1st of November 2008 to 30th of April 2009 with the aim of determining the prevalence and determinants of smoking among university students in Basrah.

The study population: The participants were university students from four colleges in Basrah University. The colleges were (Economic and

[1]FICMS Family Medicine, Basrah Health Directorate
[2]Ph D Community Medicine, College of Medicine, University of Basrah

Administration College, College of Arts, College of Engineering and College of Sciences**).** The students of these colleges had similar years of education but different majors. Therefore this restriction seeks to determine if the scientific level of the college can affect the prevalence of smoking, although the specific mechanism of this effect is not the aim of this study.

Sampling and sample size: The sample size was calculated according to the following equation: [15,16]

$$n = \frac{Z^2 p(1-p)}{d^2}$$

Where *n* = sample size

***Z* = Z statistic for a level of confidence. For the level of confidence of 95%, which is conventional, *Z* value is 1.96.**

***P* = expected prevalence or prevalence from previous studies. It was 22.1 % according to Al-Taha study. [13]**

***d* = precision, Margin of error allowed. In this study it was assumed to be 0.02.**

$$n = \frac{(1.96)^2 \times 0.22\ (1-0.22)}{(0.02)^2} = 1648$$

Based on the above calculation, the estimated sample size required was 1648 individuals. Taking into consideration non-response and incomplete questionnaire, the final sample size was extended to1720 students. 47 students didn't respond to questionnaire, so the non-response rate was 2.7%. There were 23 incomplete questionnaires which were excluded, therefore the total number of included subjects was 1650 which represents 19.8% of the total number of the students (8347) in the aforementioned four colleges. A multistage sampling method was applied. In the first stage, the colleges were stratified according to the scope of specialty and four colleges out of 15 colleges in Basrah University were chosen systematically. In the second stage, within the selected college, 8-15 classrooms were chosen randomly to reach the target number of students that was determined previously. All the students present in the classroom at the day of the visit were enrolled in the study.

Data collection: After obtaining an official endorsements, one of the authors visited the classrooms between 9.00 and 11.00 a.m. and explained the purpose of the study to all students who were present at the classroom before the questionnaires were distributed. After an informed consent, the questionnaires, prepared specifically for the study, were distributed to the students who were asked to respond freely and truthfully to each question.

An assurance of anonymity was provided, therefore no name was requested. The students were told that the information are for scientific research only. Students took 10-15 minutes to complete the questionnaire while the class instructor was outside the teaching room to ensure that students completed the questionnaire unaided and to ensure confidentiality. The questionnaire comprised a mix of open-ended and multiple choice questions. It is a two-part questionnaire. The first part – for all students - contained questions referring to sociodemographic data, and smoking habits of their parents. The second part - only for smokers - included questions about their current smoking habit.

Students were defined as non smoker (those who had never tried a cigarette in their lifetime), former/ex-smoker (those who ever smoked, but had stopped now) and current smokers (those who reported smoking during the study both occasionally and daily). Regarding intensity of smoking, it was classified as light smoker (those who smoked < 10 cigarettes/day, moderate smokers (those who smoked 10-20 cigarettes/day), and heavy smokers (those who smoked >20 cigarettes/day. [12, 17]

Economic level was classified as low (total family income < 250,000 ID/month), intermediate (250,000-500,000 ID/month, and high (>500,000 ID /month).

Data analysis: Statistical analysis was made by using the Statistical Package for Social Sciences (SPSS) program version 15. The data were tabulated and frequencies were calculated. Chi-squared test was conducted where appropriate for data analysis. A logistic regression analysis was performed to assess the contribution of several variables in the prediction of the binary dependent variable (smoking/not smoking). A

P-value < 0.05 was considered as statistically significant.

RESULTS

Table-1, shows the sociodemographic characteristics of the study population. The mean age of the participants was 21.6±3.1 years. The majority of the students 919(55.7%) were in age group (18- 21years), 805(48.8 %) were males and 845(51.2 %) were females. Of the total studied students, 1265(76.7%) were from urban areas and 385(23.3%) were from rural areas.

Table 1. Socio-demographic characteristics of the study population.

Character		No.	%
Age (years)	18 – 21	919	55.7
	22 – 25	629	38.1
	26 – 29	63	3.8
	≥ 30	39	2.4
Sex			
	Male	805	48.8 %
	Female	845	51.2 %
Residence			
	Urban	1265	76.7 %
	Rural	385	23.3 %
Family size			
	< 4	139	8.4 %
	5 – 8	1002	60.7 %
	9 – 12	437	26.5 %
	> 13	72	4.4 %
Birth order			
	1– 4	1332	80.7 %
	5 – 8	286	17.4 %
	≥ 9	32	2.9 %
Father education			
	Illiterate / read & write	127	7.7 %
	Primary school	129	7.8 %
	Intermediate school	230	13.9 %
	Secondary school	330	20.0%
	Basic university & above	438	50.5 %
Mother education			
	Illiterate / read & write	326	19.8 %
	Primary school	176	10.7 %
	Intermediate school	314	19.0 %
	Secondary school	292	17.7 %
	Basic university & above	542	32.8 %
Economic level			
	Low	42	2.5 %
	Intermediate	1101	66.7 %
	High	507	30.8 %
Daily pocket Money			
	< 5000 Iraqi Dinars	1108	67.2%
	≥ 5000 Iraqi Dinars	542	32.8%
Total		**1650**	**100.0**

Many students 834 (50.5%) reported that their fathers had an educational level of basic university and above. Most of the studied students (66.7%) were with an intermediate economic level.

As shown in Figure-1, the prevalence of smoking among the study population was 23.2%, (regular smokers 13.8%, and 9.4% were occasional smokers). Figure-2 shows that the highest prevalence rate of smoking (30.8%) was among the students of College of Economic and Administration, whereas the least prevalence rate of smoking (16.7%) was among students of College of Engineering.

The most important factor that affects initiation of smoking was peer pressure or friends which was reported by 61.8% of the smoking students (Figure-3).

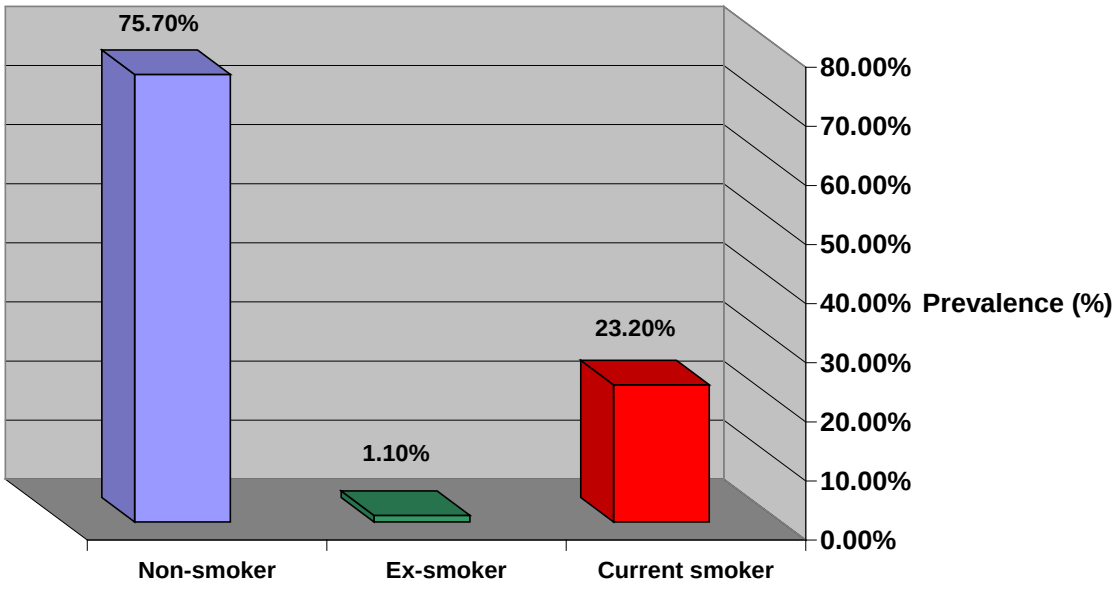

Fig 1. Prevalence of smoking among the study population

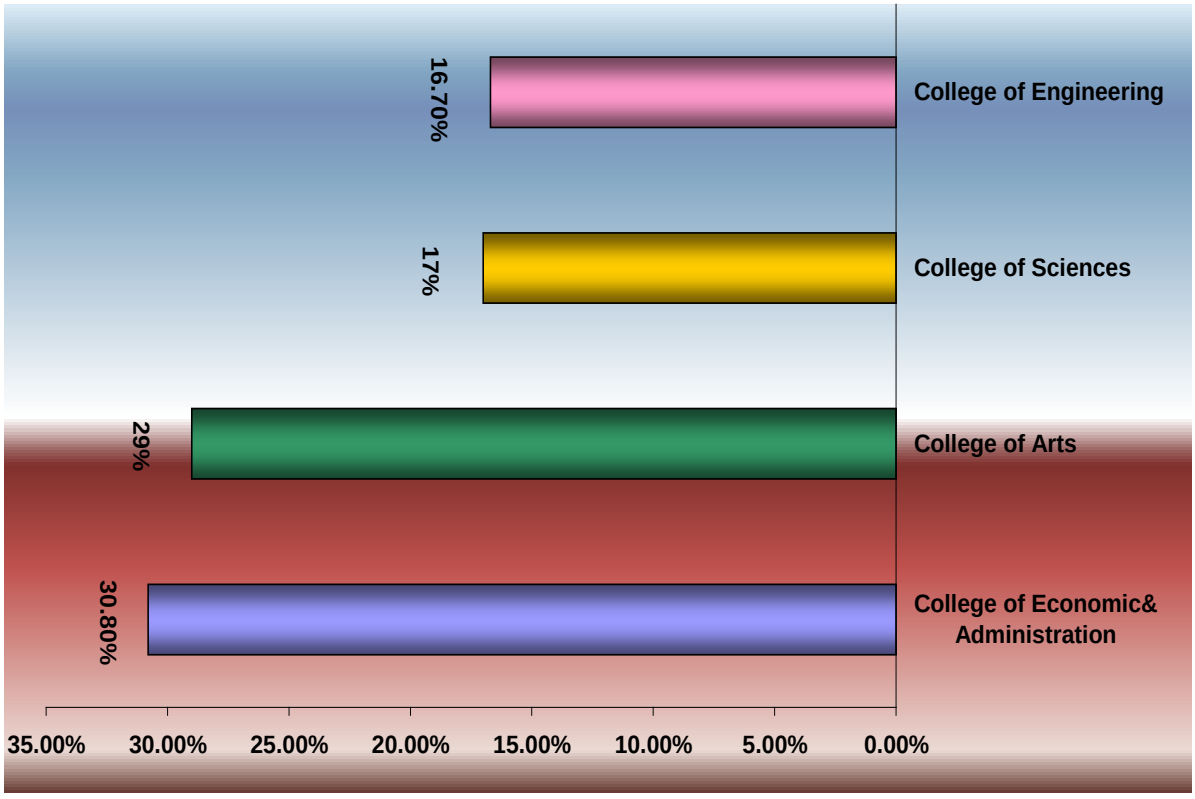

Fig 2. Prevalence of smoking according to type of College

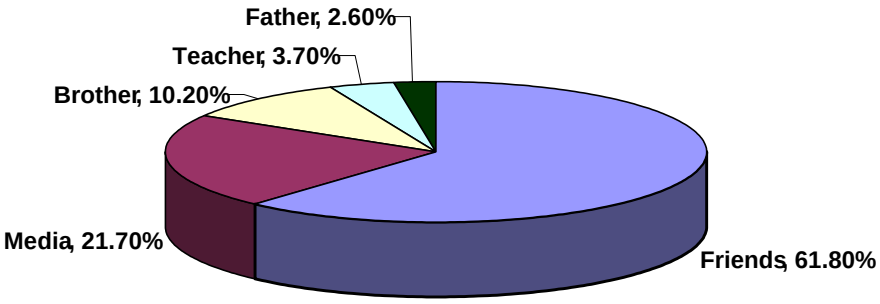

Fig 3. Factors affecting initiation of smoking

Table-2 presents the smoking behavior of the students. More than half of the smokers (50.8%) started smoking at age of≥ 18 years and 97.9% of them were cigarettes smokers, only 2.1% of them were mixed cigarettes and water pipes smokers. Most of the smokers were 41.6% moderate smokers, 36.9% of the smokers were heavy smokers, and 21.5% of students were light smokers. Regarding duration of smoking, 92.4% smoked for a period less than 10 years, the remaining 7.6% smoked for a period more than 10 years. Of the total smokers, 85.6% enjoyed smoking. About two third of the smokers 63.6% smoked at more than half hour after waking up at morning. Most smokers 74.6 % preferred smoking outside the home, 27.7% of smokers smoked in forbidden places, and 45% of smokers feel with guilt because of smoking. Regarding smoking quitting, 56.5% of smokers tried to quit smoking, (34.6% of them tried less than three times and 22.0% tried three times or more and 43.5% of smokers didn't try to quit smoking),74.6% of smokers were not able to quit smoking, 54.2% reported that they were not annoyed when asked to quit smoking.

Table 2. Smoking behavior of the study population.

Smoking behavior	No.	%
Age at starting smoking		
< 18 years	188	49.2 %
≥ 18 years	194	50.8 %
Type of smoking		
Cigarettes	374	97.9%
Cigarettes mixed with water pipes	8	2.1 %
Intensity of smoking		
Light (< 10 cig./ day)	82	21.5 %
Moderate (10 – 20 cig./ day)	159	41.6 %
Heavy (> 20 cig./ day **)**	141	36.9 %
Duration of smoking		
< 10 years	353	92.4 %
≥ 10 years	29	7.6 %
Smoke enjoyment		
Yes	327	85.6 %
No	55	14.4 %
Smoking after waking up		
During 5 minutes	78	20.4 %
< half hour	61	16.0 %
≥ half hour	243	63.6 %
Preferable place for smoking		
Home	32	8.4 %
University	65	17.0 %
Outside the home (other than university)	285	74.6 %
Smoking in forbidden places		
Yes	106	27.7 %
No	276	72.3 %
Feeling with guilt because of smoking		
Yes	172	45.0 %
No	210	55.0 %
No. of trials of smoking quitting		
Didn't try	166	43.4%
< 3	132	34.6%
≥ 3	84	22.0 %
Ability to quit		
Yes	97	25.4 %
No	285	74.6 %
Annoyance when asked to quit		
Yes	175	45.8 %
No	207	54.2 %
Total	**382**	**100.0 %**

Table-3 shows the risk factors which were associated with smoking. They were; older age group, male sex, urban residency, larger family size, low educational level of parents, high economic level, positive family history of smoking, and high daily pocket money. Smoking was most prevalent among students with earlier birth order but without a significant difference. To examine the independent effect of the risk factors, a logistic regression analysis was performed, the same results (as that in univariate analysis) were obtained (Table-4).

Table 3. Prevalence of smoking according to risk factors.

Risk Factor	No. of studied students	No. of smokers	Prevalence of smoking (%)	P-Value
Age (years)				
18 – 21	919	185	20.1	
22 – 25	629	151	24.0	
26 – 29	63	34	54.0	
≥ 30	39	12	**30.8**	<0.001
Sex				
Male	805	339	**42.1**	
Female	845	43	5.1	<0.001
Residence				
Urban	1265	326	**25.8**	
Rural	385	56	14.5	<0.001
Family size				
< 4	139	24	17.3	
5 – 8	1002	233	23.3	
9 – 12	437	94	21.5	
≥13	72	31	**43.1**	<0.001
Birth order				
1– 4	1332	322	24.2	
5 – 8	286	53	18.5	> 0.05
≥ 9	32	7	21.9	
Father education				
Illiterate / read & write	196	119	**60.7**	
Primary school	129	45	34.9	
Intermediate school	230	67	29.1	
Secondary school	307	61	19.9	
Basic university & above	788	90	11.4	<0.001
Mother education				
Illiterate / read & write	326	118	**36.2**	
Primary school	176	52	29.5	
Intermediate school	314	72	22.9	
Secondary school	292	52	17.8	<0.001
Basic university & above	542	88	16.2	
Economic level				
Low	42	10	23.8	
Intermediate	1101	209	19.0	
High	507	163	**32.1**	<0.001
Family history of smoking				
Present	810	276	**34.1**	
Absent	840	106	12.6	<0.001
Daily pocket Money				
< 5000 Iraqi Dinars	1108	170	15.3	
≥ 5000 Iraqi Dinars	542	212	**39.1**	<0.001
Total	**1650**	**382**	**23.2**	

Table 4. Logistic regression analysis.

Variable	B Coefficient	P-value	Expected B (odds ratio)	95% confidence interval
Age	0.480	<0.001	4.76	3.45 – 7.14
Sex	- 0.898	<0.001	1.83	1.63 – 2.09
Residence	- 0.268	<0.001	5.03	3.73 – 8.10
Family size	0.244	<0.001	3.45	2.77 – 6.67
Father education	- 0.673	<0.001	6.25	5.32 – 7.63
Mother education	- 0.248	<0.001	1.51	1.07 – 3.33
Income	0.740	<0.001	3.27	2.70 – 4.11
Daily pocket money	0.531	<0.001	2.75	2.29 – 3.41
Family smoking	0.200	<0.001	3.62	2.91 – 4.81

Excluded variable: Birth order

DISCUSSION

Despite the harmful effects of smoking, about one quarter (23.2%) of students in four colleges in Basrah University were found to be current smokers. This number is alarming in that young people who experiment with cigarettes are more likely to become daily smokers in the future.[18] This concern is compounded by the fact that younger smokers (age 18 to 29 years) are less concerned about the negative health effects of smoking than older smokers (>50 yeas of age).[19] Other researchers have reported that smoking prevalence in college students is complicated by the fact that these young adults believe that they can easily quit smoking, ignoring its addictive properties, and ultimately believe they can be spared from the long-term effects of smoking. [20] The prevalence of smoking among Basrah University students was lower than that reported in other countries such as Jordan, (35.0%), [21] Turkey (42.5%), [8] and Kuwait (42.2%).[7] However, it is higher than that reported in Egypt (11.8%) among Cairo University students,[22] and in United Arab Emirates (15.1%) among Sharjah University students. [9] This variation may be due to different socio-cultural factors. The type of college seems to play a role in modifying the prevalence of smoking. This finding is consistent with that in other studies.[23] Although the mean age of starting smoking in this study was below 18 years (17.1± 2.7), more than 50% of the students started smoking at 18 years of age or more i.e. after joining the university, a result which agrees with that of Everett et al[24] who pointed out that although smoking initiation primarily occurs during adolescence, many young adults may also initiate their daily smoking patterns during college. Many students reported that they enjoyed smoking, and many others did not feel the guilt of smoking, in addition, more than half of the smokers had the intent to quit smoking, but many of them were unable to quit smoking. These findings may indicate what had been reported before that the decision to smoke and to continue smoking is a free choice made by an adult, but nicotine addiction is really a condition that takes hold in young people. Young people are aware of the dangers associated with smoking and nicotine addiction, but they do not believe that these

dangers apply to them until they are in the grip of nicotine addiction, they greatly underestimate its power over them. [25] In this study, the factor which was mostly affecting initiation of smoking was friends, a result which has been reported by many studies. [26,27] The fact that current smoking is associated with best friend being a smoker could either suggest peer influence in initiating smoking or that smokers are likely to be friend of other smokers. [28] In this study as in other studies, [26,29-32] there was an a association between age, male sex, family history of smoking, low educational level of parents, high economic level, and the amount of pocket money and smoking. Having a parent who is a smoker was associated with being a current smoker. This suggests either the influence that parents have on their children lifestyles, or when adolescents are exposed to the tobacco habits of family members, they have easy access to use it, which helps them to develop personal beliefs about tobacco use. [33] Our study has a number of important limitations. Data were collected from those students who were present on the day of the survey. Those students who were absent were never followed up. However we believe that any bias that may have been introduced as a result of non availability of study participants was likely to be minimal as the response rate was high (97.3%). Another limitation is that data were self-reported. Like in all surveys that rely on self-reported data, there is always a possibility of both inadvertent and deliberate misreporting. However, the chances of underreporting smoking status is probably lower in school-based surveys than in community-based surveys. [34] The third limitation is that we could not make any biochemical validation of the self reported current smoking status of each subject.

In conclusion, the prevalence of smoking among university students in Basrah is alarming. The main determinants of smoking among the university students were male sex, urban residence, family history of smoking, having friends who smoke, high level of family income, and low education of parents. The results of this study point out the need for an effective tobacco control program and policies in Basrah University.

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