

## Cigarette Smoking among University Students: Family- related & Personal risk factors

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**Abstract:** Smoking is considered as an increasing epidemic among youth. This threatens with increasing epidemics of chronic non-communicable diseases. This study was performed to reveal a recent estimation of smoking problem among university students in Egypt and to identify possible risk factors related to family life & personal aspects. This cross-sectional study included a representative sample of 1072 Egyptian University students who were interviewed and asked to complete a modified questionnaire derived from the standard questionnaire of National Center for Social and Criminal Research. Obtained result indicated that prevalence of current smoking was 20.2% while ever smoking was 22.1%. In addition, friends were the first ranked motive for smoking followed by family related derives then sense of hopeless future representing 37.2%, 13.8 % and 12.2 % respectively. Personal risk factors for smoking were young age, males gender, studying in theoretical faculties and suffering a chronic health problem. The important family-related risk factors included large number of the family, late order among siblings and living away from the family. In conclusion, this study determined some personal and family- related factors contribute to smoking problem. Dealing with them by coordinated efforts of the family, school, university and government will alleviate smoking problem among youth.

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### 1. Introduction:

Tobacco is the most important cause of preventable death worldwide. It is responsible for death of one in ten adults constituting about 5 million deaths each year. If smoking pattern with which the 21<sup>st</sup> century started continues, it will cause 10 million deaths each year by 2020. Half the people who smoke - about 650 million people- will eventually be killed by tobacco (**Tobacco Free Initiative, 2005**).

Health hazards of smoking involve cardiovascular, respiratory, malignant, mental and more problems. Early smoking initiation increases life time duration of smoking and burden of smoking related diseases (**Beaglehole, 2007; Egyptian Smoking Prevention Research Institute, 2007 & Frost-Pineda et al., 2011**).

In spite of the great concentration on conducting researches that entail evaluation of smoking cessation interventions (**Mallin, 2002; Wu et al., 2009 & Colby et al., 2010**), it is much more important to prevent youth from ever smoke via continuous monitoring of risk factors for smoking among them to modify the modifiable factors and target who have non-modifiable risk factors with health education and smoking prevention programs (**Mukhtar et al., 2006 & Baska et al., 2010**).

University students are at high risk of smoking as they become exposed to greater availability of cigarettes and intimate association with smoking peers. At the same time, they face additional social,

emotional and educational challenges when they enter the university (**Abdel Hamid, 2000; Nassar, 2003; Mandil, 2007; Almutairi, 2010 & Halperinet al., 2010**).

Most studies investigated family life effect don't focus on university students but younger categories (**Shamsuddin & Abdul Haris, 2000; O'Callaghan, 2006 & Baska et al., 2010**). So, this study was done to explore the magnitude of smoking problem among university students and identify personal and family related risk factors to bridge this research gap.

### 2. Subjects and Methods:

#### Study design and population:

A cross sectional study was carried out on a sample of university students in Egypt in late 2009.

A representative sample was taken by multistage random technique, starting with selection of a university. Then, faculties were classified into two strata; practical and theoretical and two faculties were taken randomly from each stratum with considering the proportional allocation according to the total number of students in each stratum. Lastly, a cluster sampling technique was used to get from 1 to 3 clusters of students from each faculty according to the cluster size and required sample size. Respondents were (1072) out of them (340) students were from practical faculties and (732) students were from theoretical faculties. Non response rate was (2.3%).

**Ethical Issues:**

The study proposal and instrument were approved by the institution's review board and voluntary informed oral consents were got from students enrolled in the study.

**Data Collection:**

It was done by 5 trained personnel using an anonymous self-administered questionnaire modified from the standard questionnaire of the National Center for Social and Criminal Researches (**National centre for social and criminal researches, 2002**) after testing its validity and reliability through a pilot study.

The questionnaire included important aspects regarding:

1. Smoking status and full pattern of smoking and its motives among smokers.
2. Socio-demographic characteristics.
3. Familial and personal life profile.

**Statistical Analysis:**

Collected data were handled using a data base software programs (SPSS version 10 and EPI-INFO 6). Analysis included univariate, bivariate as well as multivariate analytical techniques. Independent variables were analyzed descriptively and in a regression analysis to determine predictors and associated risks. Chi square test and Chi square for trend with corresponding *P*-values were used to test the significance for categorical and ordinal variables respectively. Odds ratio (OR) with 95% confidence intervals (CI) was used whenever possible (i.e. in 2×2 tables and with chi square for trend) to quantify risk, while multiple logistic regression was carried out to identify variables most predictive of taking up the habit of smoking among the surveyed students. *P* < 0.05 was used as the level of significance.

**3. Results:**

As shown in Table (1&2); the prevalence of current smokers was (20.2%) while ever smoking students were (22.1%); 30.3% among males and 2.2% among females with quitting rate of 8.44%. All smokers were daily smokers and about their two-thirds were mild to moderate smokers as they expire 20 cigarettes or less per day. A serious finding was that 67% of smokers may add bang to cigarettes. More than (93%) of smokers started smoking before age of twenty including about (60%) at age between 15 and 20 years. Prevalence of smoking among under twenty group is 25.7% versus 16.6% in those over twenty. The first 2 motives for smoking were associated with participation and encouragement by friends followed by family related derives as

negligence, problems or smoking member(s) then gloominess and sense of hopeless future.

On analyzing the socio-demographic characteristics as risk factors for smoking, it was obvious that male students, who are less than 20 years, who study in theoretical faculty and with non-working mothers or mothers working professional occupations are significantly at higher risk for this problem (*p*<0.05). Insignificant difference was found with residence, marital status, father or mother education and father occupation. (Table 2).

The effect of family life characteristics on smoking is clarified in Table (3); smoking increased significantly with increased number of family members, late order of the student among his siblings, living away from the family and deprivation of mother by her travel (*p*<0.05).

Personal life factors which were significantly associated with smoking (*p*<0.05) were increased pocket money, getting money from work alone or from dual sources (family and work), participation in clubs, absence of participation in activities and suffering from a chronic disease (Table 4).

Logistic regression analysis for significant risk factors for smoking revealed that smoking remained significantly (*p*<0.05) higher among male students, with increased family number, late order in the family, living away from family, young in age, having chronic diseases and studying in theoretical faculties (Table 5).

**4. Discussion:**

Although smoking is not a new problem, it has become a source of increasing concern due to the increase in realization of its volume, horrible morbidity and mortality. Since the adoption of the Framework Convention for Tobacco Control (FCTC) in 2005, all countries allover the world try to activate and initiate efforts to face smoking, especially among youth (**Centers for Disease Control, 2009& Tobacco free initiative, 2010**).

Smoking is a great national disaster in Egypt as it impacts health, economy and social aspects of the community. It has become worse and worse in since 1990s as it has become more and more prevalent among youth and teenagers (**Ahmed, 1999; MOHP, 2000; Nassar, 2003& Egyptian Smoking Prevention Research Institute, 2007**).

This study revealed a prevalence of ever smoking of 22.1% with among male prevalence of 30.3% while current smokers were 20.2%. These percentages are higher than the previously reported figure among a younger age Egyptian adolescents in Global Youth Tobacco Survey, 2005 (13.6% for ever smoking with among males prevalence of 19.6%

**Table (1): Smoking prevalence & Some features of smoking pattern**

Item	(No)	(%)
Smoking: (among studied sample =1072).		
• Ever smoke	237	22.1
• Current smoker	217	20.2
Cigarettes / day:(among smokers= 237)		
• Less than 10	59	24.9
• 10-20	104	43.9
• more than 20	74	31.2
Age of start : (among smokers= 237)		
• Less than 15	81	34.2
• 15-20	140	59.1
• more than 20	16	6.8
Addition of Bang :(among smokers= 237)		
• Yes	159	67.1
• No	78	32.9
Motives: (among smokers= 237)		
• Participation with friends	88	37.2
• Family negligence or problems	77	32.5
• Feeling of gloominess and emptiness	55	23.2
• Curiosity or to revitalize	15	6.3
• Too much money	2	0.8

**Table (2): Smoking & Socio-demographic characteristics**

Item	Smoking prevalence (%)	Smokers (N=237) (%)	Non smokers (N=835) (%)	P* value	OR 95% CI
Age:					
• Less than 20	25.7	70.0	57.4	0.000*	1.74 (1.28- 2.4)
• More than 20	16.6	30.0	42.6		
Gender:					
• Male	30.3	97.0	63.2	0.000*	19.1 (8.89- 41.1)
• Female	2.2	3.0	36.8		
Residence:					
• Urban	23.0	76.8	73.2	0.26	1.21 (0.85-1.73)
• Rural	19.7	23.2	26.8		
Faculty:					
• Theoretical	26.4	81.4	64.6	0.000*	2.41 (1.66- 3.5)
• Practical	12.9	18.6	35.4		
Marital status:					
• Not married	22.9	93.2	89.2	0.19	
• Engaged	14.9	5.5	8.9		
• Married	15.8	1.3	1.9		
Father education:					
• Illiterate	25.8	20.3	16.5	0.15	
• Primary education.	25.8	22.8	18.6		
• Secondary education	20.9	26.6	28.5		
• University education	19.1	30.4	36.4		
Father occupation:					
• Unskilled workers	25.6	26.2	21.6	0.49	
• Skilled workers	21.4	19.4	20.2		
• Intermediate	21.5	38.0	39.4		
• Professional	19.9	16.5	18.8		
Mother education:					
• Illiterate	27.1	28.3	21.6	0.12	
• Primary education.	22.6	16.9	16.4		
• Secondary education	18.9	28.7	35.0		
• University education	21.5	26.2	27.1		
Mother occupation:					
• Housewives.	23.6	59.5	55.2	0.045*	
• Intermediate Professional	18.5	29.5	37.0		
	28.6	11.0	7.8		
Total	22.1	100.0	100.0		

\* Statistically significant.

**Table (3): Comparison of smokers versus non smokers as regard family characters& family life**

Item	Smoking prevalence (%)	Smokers (N=237) (%)	Non smokers (N=835) (%)	P* value	OR (95% CI)
Family number:					
• (2-3)	5.1	5.9	31.4	0.000*	1 5.97 10.98
• (4-5)	24.2	57.0	50.7		
• (6 or more)	37.0	37.1	18.0		
Students family order:					
• First.	12.9	27.0	51.6	0.000*	1 2.67 3.63
• Middle.	28.4	52.3	37.5		
• Last.	35.0	20.7	10.9		
Living:					
• With family	19.5	83.1	97.2	0.000*	7.17 (4.07-12.69)
• Away from family.	63.5	16.9	2.8		
Father alive:					
• Yes	21.7	89.5	91.7	0.272	1.31 (0.79- 2.17)
• No	26.6	10.5	8.3		
Mother alive:					
• Yes	21.5	91.6	94.7	0.069	1.51 (0.84- 2.69)
• No	31.3	8.4	5.3		
Parents traveling:					
• No	21.3	88.2	92.3	0.001*	
• Father	24.0	7.6	6.8		
• Mother	100.0	1.3	0.0		
• Both	50.0	3.0	0.8		
Return: (travelers)		(N=28)	(N=64)		
• Many times/ year	22.7	17.9	26.6	0.1	1 1.26 2.83
• One time/ year	27.1	46.4	54.7		
• Every more than year	45.5	35.7	18.8		
Total	22.1	100.0	100.0		

\* Statistically significant.

**Table (4): Comparison of smokers versus non-smokers as regard some personal factors**

Item	Smoking prevalence (%)	Smokers (N=172) (%)	Non smokers (N=1028) (%)	P* value	OR 95% CI
Pocket money/month:					
• Less than 100 Pounds	13.6	13.5	24.4	0.000*	
• 100-150 pounds	20.5	37.6	41.4		
• More than 150 pounds	28.9	48.9	34.1		
Source of pocket money:					
• Family	17.8	61.6	80.7	0.000*	
• Work	34.8	19.4	10.3		
• Both	37.5	19.0	9.0		
Participation in Club:					
• Yes	29.4	19.8	13.5	0.016*	1.58 (1.1-2.3)
• No	20.8	80.2	86.5		
Participation in activity:					
• Sport	9.7	11.8	31.1	0.000*	
• Cultural	20.9	5.9	6.3		
• Social	35.7	6.3	3.2		
• No	26.7	75.9	59.3		
Suffering from disease:					
• Yes	54.1	8.4	2.0	0.000*	4.44 (2.3-8.6)
• No	21.0	91.6	98.0		
Total	22.1	100.0	100.0		

\* Statistically significant.

**Table (5): Logistic regression analysis for important risk factors for smoking**

Variable	$\beta$ coefficient	SE	Wald	p-value
Intercept	0.503	0.937	0.288	0.591
Gender	3.045	0.439	48.206	0.000*
Family number	2.069	0.35	34.9	0.000*
	0.603	0.209	8.308	0.004*
Family order	1.552	0.286	29.417	0.000*
	0.542	0.265	4.193	0.041*
Away from Family	1.98	0.344	33.226	0.000*
Age	0.648	0.195	10.995	0.001*
Disease	1.397	0.465	9.037	0.003*
Faculty	0.795	0.293	7.333	0.007*
Travel parent	1.161	0.622	3.481	0.062
	0.53	0.695	0.582	0.446
Source of money	0.493	0.294	2.812	0.094
	6.179	0.343	0.032	0.0857
Activities	0.464	0.274	2.874	0.09
Club	0.497	0.298	2.786	0.095
Mother occupation	4.801	0.389	0.015	0.902
	0.344	0.362	0.903	0.342
Income	0.568	0.315	3.263	0.071
	0.187	0.229	0.666	0.414

- \* Statistically significant.
- Reference category for each variable was the last one in previous analysis tables [ e.g. “Female” for Gender , “6 or more” for Family number ...etc].It is not included in the table as it was taken as zero while the other categories were presented in comparison with this reference one.

while current smokers were 4.1%) (Allam& Abd ElAziz, 2007& Centers for Disease Control, 2009) denoting that the problem increases on entering the university with decreased control over youth.. Also, The revealed prevalence in the present study is higher than ever smoking prevalence among American adults (19.8%) (Centers for Disease Control and Prevention, 2007) and among United Arab Emirates university students (15.1%) (Mandil, 2007) denoting the considerable size of smoking problem in Egypt.

However, the prevalence of ever smoking of 22.1 % is less than that found some years ago among Egyptian university students (29.4%) (Abdel Hamid, 2000), among 2dry school students in south-east Asia

(33.2%) (Shamsuddin& Abdul Haris, 2000) and recently among university students in USA (25%) (Halperin et al., 2010).The explanation of the lower percentage in the present study is most probably the increasing awareness of the horrible consequences of smoking and the increasing religion adherence (Radwan et al., 2000).

In USA, the number of cigarettes smoked per day was less than 1 in 40% less than 10 cigarettes/day in 80% of smoking university students (Halperin et al., 2010), while in our study, only 25% of smokers expire less than 10 cigarettes/day. This agrees with Ahmed and Others (1999) regarding the fall of cigarette consumption in the United States and

focusing of tobacco companies on overseas markets including Egypt to maintain their profits leading to growing cigarette consumption rate in Egypt.

Agreeing with the difficulty of quitting when starting smoking early (Robinson, 2003), quitting rate in the present study was very low (8.4%) compared with 32% found among control group of adults in the study of Wu and colleagues (2009). In an Egyptian study, 44% of smoking university students believed that quitting smoking is not possible at all (Allam& Abd ElAziz, 2007).

In addition, during the present study we found that the age of starting smoking was between 15 and 20 years for about 60% of smokers and less than 15 years in another one third of smokers. This agrees with the gradual decline of the mean age of smoking initiation in Egypt (El-Salakawy, 1995& Egyptian Smoking Prevention Research Institute, 2007) and other developing countries (Shamsuddin& Abdul Haris, 2000& Almutairi, 2010). In contrast, among USA university students, 21% started between 15-20 years and 41% started after 20 years old reflecting the decreasing trend of smoking among the teenagers in the developed countries (SAMHSA, 2005).

The serious finding that 67% of smokers in the present study may add bang to cigarettes agrees with the reported strong association between smoking and drug abuse (Abdel Hamid, 2000; Best et al., 2000& Nassar, 2003). That's because cigarettes -which are considered legal for adults -are almost always the gateway to drug abuse. So, smoking prevention will - at the same time- prevent other serious problems.

Participation with friends represented the main motive for smoking in more than 37% agreeing with other researches (Egyptian Smoking Prevention Research Institute, 2007; Mandil, 2007; Almutairi, 2010& Halperinet al., 2010) pointing to the strong influence of peers and friends. So, discussing and supervising the selection of friends among youth is a very vital issue. A higher level of prevention can be provided by family, school and university through care about smoking friends and doing efforts to help them to quit. Family related motives came next and included negligence, presence of continuous problems between parents, presence of a negative role model inside the home in the form of a smoking father or brother agreeing with multiple researches among university and younger students (Mukhtar et al., 2006; Mandil, 2007; Almutairi, 2010& Baska et al., 2010). In 23.2% of smokers, we found that the main motive was feeling of gloominess and hopeless future which were related to the political, economic and social aspects of the community.

Predominantly higher prevalence among males versus females (30.3% versus 2.2% respectively) agrees with other different studies but with great

variation in the degree of this predominance according to the cultural difference. In a previous Egyptian study, it was 22% versus 1.7% respectively (Egyptian Smoking Prevention Research Institute, 2007) while among Americans, it was 23.9% versus 18.0% respectively (Centers for Disease Control and Prevention, 2007). Females constituted (3%) of smokers in our study which is some what less than among United Arab Emirate university students where female smokers constituted 8.9% (Mandil, 2007). Generally the Arab cultural norm makes it less acceptable for female to smoke and it may be considered as a social stigma. Some cultural norm promotes smoking among men as mentioned for Chinese American (Wu et al., 2009).

The significantly higher theoretical faculties' students among smokers than practical faculties' students with increased risk (2.4 times) agrees with previous studies revealed about two times risk (Abdel Hamid, 2000& Mandil, 2007). Students studying in theoretical faculties may be less aware of smoking hazards, have more leisure time which expose them more to friends' pressure and may be disappointed with community less appreciation for theoretical study. Regarding mother occupation, both housewives and mothers working professional occupations have more smoking sons than mothers with intermediate occupation. Housewives may be busy with the housework and not aware enough with the rapid progression of smoking problem among youth and decreasing age of initiation while mothers with professional occupation may be busy with her profession with no time to speak and share activities with her sons in addition to providing them with much money agreeing with a previous report (Nassar, 2003). Absence of statistical association between parents educational level or father occupation with student's smoking status disagrees with among United Arab Emirate university students (Mandil, 2007) but agrees with results of 2007Slovakia Global Youth Tobacco Survey (Baska et al., 2010).

Regarding family- related factors which is the main concern of this study, It was proved that being a son of a family with large number of kids is a risk factor for smoking with high statistical significance for increasing trend. Also, such significance for increasing trend was found with late order among siblings denoting the importance of family planning to give the sufficient care for all kids in different stages of their life. Our results in this respect are the first report of extension of such influence of having large number of kids on smoking state of sons up to the university age.

Emphasis on the importance of enjoying the family life is also revealed in this study as the

percentage of students living away from their family among smokers is (16.9 %) compared to (2.8%) among non-smokers with high statistical significance and increased risk to 7 times coinciding with other research results regarding the importance of family supervision (**Shamsuddin& Abdul Haris, 2000& Nassar, 2003**). The same explanation of insufficient supervision can be proposed for the effect of absence of mother by travel indicating the particular importance of maternal presence and interest in her sons' and daughters' concerns.

Significance of association between smoking and increasing pocket money and working state of students found with bivariate analysis disappeared with multivariate analysis. This inconsistency agrees with variation in results of previous studies (**Mukhtar et al., 2006; Mandil, 2007& Almutairi, 2010**) as extra-money encourages expending money on cigarettes but alone can't be the motive. Participation in clubs and non participation in activities were significantly higher among smokers and these risk factors were previously found for drug addiction (**Abdel Hamid, 2000**). This is attributed to the two different types of influence as participation in clubs allows long exposure to the effect of peers and friends and gives legal reason for spending a lot of time outside the home while participation in activities- if properly done- enables youth to make use of time in a useful manner. Although the effect of participation in clubs and non participation in activities disappeared in our study on multiple regression analysis, participants in sports and cultural activities had obviously very low smoking prevalence.

The association between adoption of smoking behavior and being diseased with chronic disease whether it was a pain associated disease, skin, endocrinal or psychiatric illness agrees with others (**Smolensk et al., 2009**) and is probably due to the disappointment in some life aspects with the need for stress alleviation which is falsely thought to be got by smoking .

On logistic regression analysis for important risk factors, many factors remain significant with smoking. Male gender, increased number and late order in the family, living away from family, young age, having a chronic disease and studying in theoretical faculty are the most important predictors that should be targeted in smoking prevention activities.

## 5. Conclusion:

In conclusion, this study directs the attention to the fact that problem of smoking among university students has important contributing family related factors and personal factors in addition to socio-

demographic factors. Governmental efforts alone can't face them all as they need coordinated efforts from the family, school and university besides the government.

## Recommendations

- 1- Intensive antismoking program starting from primary schools especially for males.
- 2- Theoretical faculties students should not only recommended by anti-smoking program but also asked to be antismoking educators. This positive role is always very effective in prevention.
- 3- Supervision of the behavior of student's peers and friends and use positive peer models for advantageous use of peer pressure.
- 4- Family planning efforts to got families of a proper number with advising parents to give equal care to late ordered kids are corner stones in smoking prevention.
- 5- Institutional care for students living away from family with paternal attitude of university staffs.
- 6- Students with chronic illness should get special care and be supported medically, socially and psychologically besides antismoking efforts.
- 7- Mother care, not excess pocket money, care about working student and club-participants and encouragement of participation in sport and cultural activities are also important.

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