

SMOKING AMONG ADMINISTRATIVE UNIVERSITY EMPLOYEES: PREVALENCE AND DEGREE OF NICOTINE DEPENDENCE

By

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Abstract

Introduction: The World Health Organization considers smoking as the top preventable reason of morbidity and early mortality. Tobacco smoking accounts for more than half of all deaths that can be easily avoided worldwide. **Aim of work:** To estimate the prevalence of smoking habit among Menoufia University administrative employees, and determine the degree of nicotine dependence among smokers. **Materials and methods:** A cross sectional survey has been conducted on an estimated simple cluster sample of 334 administrative employees in Menoufia University, Egypt, during the period from 1st of May to the end of August 2018. Level of addiction among smoking participants was assessed based on the validated Arabic version of Fagerstrom test for nicotine dependence (FTND) questionnaire. **Results:** The mean age of the participant was 39.03±9.05 years with a range of 21- 58 years. More than half of participants (62.9%) were males and 37.1% were females, cigarette and goza smoking have been reported in 68 participants (20.4%) and 17 (5.1%) of participants; respectively. All smokers were males, out of them 44.1% have low to moderate nicotine dependence, 16.2% have low dependence, 14.8% have moderate to high dependence, and 10.3% have no dependence. There is significant positive correlation between nicotine dependence and time for the first cigarette, the number of cigarettes, smoking index and the age ($r=0.88$, 0.77 and 0.27 respectively) (P value <0.001 , <0.001 , <0.001 and <0.026 respectively). **Conclusion:** Cigarette and goza smoking have been reported among 20.4% and 5.1% of participants; respectively. Out of them, 44.1% have low to moderate dependence.

This study showed that 63.2% of the smokers start to smoke their first cigarette within 30 minutes after waking up. There is significant positive correlation between nicotine dependence and time for the first cigarette, the number of cigarettes, smoking index and the age.

Key Words: Smoking, Nicotine dependence, Smoking index and Fagerstrom test.

Introduction

The World Health Organization considers smoking as a leading preventable reason behind morbidity and early mortality (WHO, 2010). Tobacco smoking is a public health problem worldwide leading to chronic obstructive pulmonary disease (COPD), cardiovascular disease, and various cancers (cancers of the lung, esophagus, larynx, stomach, uterine, cervix, kidney, bladder, and certain forms of leukemia) and premature death (Office of the Surgeon General, 2004).

Tobacco smoking causes more than half of all avoidable deaths worldwide (Lopez et al., 2006). It accounts for an estimated four to five million deaths per year and 4.1% of years of life lost (Chaiton et al., 2003; Ezzati, 2004). Low- and middle-income countries account for 82% of the world smoking population, consuming at least 74% of the total number of inhaled tobacco products consumed each year, and are suffering from an increased proportion of tobacco-related deaths (Gajalakshmi

et al., 2000). Tobacco use became widely prevalent in developing countries and the public health significance of its related morbidity and mortality will continue to grow (Wipfli and Samet, 2009).

As all drug addictions, tobacco addiction is a complex mixture of pharmacology, learned behavior, genetics, environmental and social factors (Carpenter et al., 2007).

Dependence on tobacco is attributed to the power of nicotine to trigger the reward circuit in the brain, which is like the biological mechanism of dependency for abuse of other substances (Grandy et al., 1989; Munafo et al., 2004). Nicotine is known to have the capacity to diminish stress and induces pleasure. Smokers utilize it to control mood and modulate levels of excitement (Benowitz, 2010).

Smoking is prevalent in Egypt, as 19.4% (9.7 million) of adults habitually use tobacco products, 37.7% in men and 0.5% in women. Ninety-five per

cent (95%) of them were daily smokers. The most widespread type of product smoked by men was manufactured cigarettes (31.7%), followed by shisha (6.2%); however, in women smokers, 0.2% smoked manufactured cigarettes and 0.3% smoked shisha (Global Youth Tobacco Survey, 2009). Although consumption of tobacco in adults is decreasing in a lot of countries, the number of adult cigarette smokers is growing in Egypt at a rate of four to five percent per year (Ahmed et al, 1999).

Within the last 30 years, the percent of smokers in Egypt has increased by 8–9% annually, more than two times as fast as the population growth rate (2%) (Hassan, 2003).

Based on the results obtained from the Global Youth Tobacco Survey (GYTS) (2009), 18.8% of Egyptian students that have been surveyed, aged 13–15 years, had never smoked cigarettes, 12% had used any tobacco product, 8.9% were cigarette smokers, and 13.2% who never smoked were expected to initiate smoking by next year.

Menoufia University is a public university in Egypt that has been established in 1976, it is in Shebin Elkom city, the capital of Menoufia

governorate that lies in Nile Delta (81.9 km north to Cairo). It possesses an administrative staff of nearly 1463 employees.

Aim of work

To estimate the prevalence of smoking habit among Menoufia University administrative employees and determine the degree of nicotine dependence among smokers.

Materials and methods

- **Study design:** The study is a cross sectional survey.

- **Place and duration of the study:** This study was conducted in Menoufia University, Egypt, during the duration from 1st of May till the end of August 2018.

- **Study sample:** This study has been conducted on an estimated simple cluster sample of 334 administrative employees. This sample size exceeded the calculated one using Epi Info 7; where the total number of enrolled employees was 1463, prevalence of smoking 19% and confidence limit 95%.

- **Study methods:**

Two questionnaires have been used,

- **The 1st questionnaire** was

disseminated to all participants including socio demographic profile and assessing smoking status, age started smoking, cigarettes smoked per day.

- **The 2nd was Fagerstrom test for nicotine dependence (FTND) questionnaire** (Arabic version): level of addiction among smoking participants was assessed (Kassim, 2012). FTND questionnaire is a widely-used tool for measuring nicotine addiction; the questionnaire determines the degree of dependence by measuring the extent of nicotine exposure, impaired control over use and insistence for use. An integral question about time from getting out of bed to first cigarette can be used as a powerful predictor of relapse following a quit attempt (Fagerstrom and Schneider, 1989).

Smokers were also categorized as heavy or non-heavy smokers on the basis of the number of cigarettes smoked per day. Those who smoked more than twenty cigarettes daily were classified as heavy smokers whereas those who smoked twenty or less cigarettes daily

as non-heavy smokers (Institute of Public Health, 2008).

Consent

A written consent was taken from all participants, after explaining the aim of this work to the workers included.

Ethical approval

The Medical Research Ethics Committee at the Faculty of Medicine, Menoufia University has reviewed and approved this work.

Data Management

We performed Statistical analyses by Statistical Package for Social Sciences Version 23 (SPSS 23). Continuous variables were measured for normality of distribution which revealed normal distribution. Contingency tables and chi-squared test was used to test the relationship between categorical variables, student t test was used to examine the relationship between quantitative variables. Pearson correlation was used to test correlation between two quantitative variables. Statistical significance was set at $p \leq 0.05$ (two-tailed).

Results

Total number of 334 employees has been participated in the study. Their mean age was 39.03 ± 9.05 years with a range of 21- 58 years. More than half of participants (62.9%) were males and 37.1% were females, the majority was married (88.9%), nearly two thirds (68.9%) were inhabitant in rural area, 88.4% were living with their families, and a similar percent perceived their socio-economic standard as moderate.

According to educational level, it was found that 13(3.9%) had basic education, 149 (44.6%) secondary education, 172 (51.5%) high education.

Cigarette and goza smoking have been reported among 68 (20.4%) and 17 (5.1%) of participants respectively. All smokers were males.

Smoking index was 14.26 ± 7.03 ranged from 3- 40 cigarettes per day. Fifty-five (80.9%) of the smokers said that they were being influenced by their peers in initiating the habit of smoking and 10 (14.7%) of them reported that it was due to media effect.

Table 1: Smoking and socio-demographic data of the studied group.

	Smokers No =68	Non-smokers No =266	p value
Age	43.9 ± 8.85	43.5± 3,57	0.82
Gender	No %	No %	
Male	68(100%)	142(53.4%)	<0.001**
Female	0 (0.00%)	124(46.6%)	
Education			
Basic	12(17.6%)	1(0.4%)	<0.001**
Secondary	41(60.3%)	108(40.6%)	
High	15(22.1%)	157(59.0%)	
Residence			
Urban	27(39.7%)	77(28.9%)	0.09
Rural	41(60.3%)	189(71.1%)	
Marital state			
Married	68(100%)	229(86.1%)	0.01*
Single	0(0.0%)	24(9.0%)	
Widow	0(0.0%)	12(4.5%)	
Divorced	0(0.0%)	1(0.4)	
Father smoking			
Yes	21(30.9%)	113(42.5%)	0.08
NO	47(69.1%)	153(57.5%)	

*: Statistically significant

**: Highly statistically significant

Table 1 showed the association between the social and demographic factors and smoking state, statistically significant associations have been reported between smoking , gender, educational level and marital state .Non-statistical significant associations have been reported between smoking , residence and father smoking state .

Table (2): Nicotine dependence among the studied smokers.

Nicotine dependence	Frequency	
	(No =68)	%
NO dependence	7	10.3
Very low dependence	10	14.7
Low dependence	11	16.2
Low to moderate	30	44.1
Moderate	5	7.4
High	5	7.4

Table 2 showed that 44.1% have low to moderate nicotine dependence, 16.2% have low dependence, 14.8% have moderate to high dependence, and 10.3% have no dependence

Table (3): Fagerstrom Test for Nicotine Dependence

Time of the first cigarette after waking up	Frequency	
	(No =68)	%
>60 minutes	7	10.3
31-60 minutes	18	26.5
5-30 minutes	37	54.4
<5 minutes	6	8.8

Table 3 showed that 63.2% of the smokers start to smoke their first cigarette within 30 minutes after waking up.

Table (4): Correlation between nicotine dependence and some parameters .

	R	p value
-Nicotine dependence and time for the first cigarette	0.88	<0.001**
-Nicotine dependence and the number of cigarette	0.77	<0.001**
-Nicotine dependence and smoking index [#]	0.86	<0.001**
-Nicotine dependence and the age	0.27	0.026*

*: Statistically significant

**: Highly statistically significant

[#]: Smoking index: the number of cigarettes smoked per day × years of tobacco use.

Table 4 showed that there is significant positive correlation between nicotine dependence and time for the first cigarette, the number of cigarette, smoking index and the age.

Discussion

Smoking is of great concern due to the long-term outcomes on health and wellbeing. Smoking has been shown to increase the risk of cardiovascular diseases and severe mental illnesses. The objectives of this paper were to explore tobacco use, nicotine dependence among Menoufia University employees.

In the present study cigarette and goza smoking have been reported among 68 participants (20.4%) and 17 (5.1%) respectively. All smokers were males, and this could be attributed to the ethical considerations and society's perception to the smoking females in this suburban governorate.

This study showed that 44.1% have low to moderate nicotine dependence, 16.2% have low dependence, 14.8% have moderate to high dependence, and 10.3% have no dependence (Table 2).

Our results were higher of what was detected by Akram et al., 2015, on their study on plywood industry workers in Mangalore City, they found that 9.7% of industrial workers have a high level of nicotine dependence and 2.23% have a moderate level of nicotine dependence.

According to Gupta, 2016, tobacco users in India have varying degree of nicotine dependence, and reported that 51% of smokers being moderate to severe dependence, which is considered higher

than our results. Smoking or chewing tobacco is viewed as a part of lifestyle and moreover a habit which continues despite its hazardous consequences.

The current study showed that there is significant association between smoking state and gender ($p < 0.001$), the prevalence of smoking among females is nil (Table 1)

Hitchman and Fong, 2011, in their study on the frequency of smoking, reported that, male smokes approximately five times as much as female but this proportion is different from each country. The ratio of male to female in high income countries like United States, Canada and etc. women smokes almost the same rate with men. On the other hand, the middle to low income countries records showed that there is a lower smoking prevalence rate among women.

Nicotine addiction is believed to be a major obstacle for many people in quitting smoking, but measures of nicotine dependence such as the Heaviness of Smoking Index (HSI) have had mixed success with nicotine dependence in predicting cessation (Chaiton et al., 2003).

This study showed that 63.2% of the smokers start to smoke their first

cigarette within 30 minutes after waking up, which is an important indicator for relapse after quitting smoking (Table 3).

A strong inverse association exists between time of first cigarette smoking in the morning and quit rate. In the U.S. sample, the quit rate was highest among those smoking 60 or more minutes after waking (36%) and lowest among those who smoked within 5 minutes of waking (8%, RR = 0.22, $p < 0.01$) (Timothy et al., 2007)

There is significant positive correlation between nicotine dependence and time for the first cigarette, the number of cigarette, smoking index and the age (Table 4).

Gad et al., 2003, did a study in rural communities in Egypt about the prevalence of smoking among male adults and found that about 9% of smokers (938) in the studied villages have heavy dependence to nicotine. Heavy dependence was related to younger age of smoking initiation ($p < 0.05$) and more smoking in the first hours of the day ($p < 0.001$). Heavy dependent smokers are less likely to quit smoking ($p < 0.001$), lack the confidence to stop independently ($p < 0.001$) and less likely to have tried to quit earlier ($p < 0.001$). Dependent smokers are more likely to smoke in the

presence of their children ($p < 0.001$).

Also Laad et al., 2013, on their study on construction workers, reported that high nicotine dependence was found to be significantly associated with the age of initiation.

Conclusion and recommendations:

Cigarette and goza smoking have been reported among 20.4% and 5.1% of participants; respectively. Out of them, 44.1% have low to moderate dependence. This study showed that 63.2% of the smokers start to smoke their first cigarette within 30 minutes after waking up. There is significant positive correlation between nicotine dependence and time for the first cigarette, the number of cigarettes, smoking index and the age.

Considering smoking rates among university employees, smoking cessation campaigns for awareness about smoking health effects on both the smokers and their surroundings should be increased, on collaboration with the University leaders we started to design a strategy for a smoking free university and we started with the Faculty of Medicine planning to be free of smoking by the end of the year 2018.

Enhanced behavioral and medical

intervention strategies are needed to encourage both low and heavy nicotine dependent smokers to increase the number and effectiveness of quit attempts

Conflict of interest

No conflict of interest has been declared.

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