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Smoking and Asthma Symptoms among University Students

Mohammad Hossein Rahimi Rad, Mohammad Khaled Rezaei, Naser Abdollahi, Kamran Hatami

Department of Respiratory Medicine, Urmia University of Medical Sciences and Health Services, URMIA- IRAN.

ABSTRACT

Background: The prevalence of asthma is known to be increasing especially in developed countries. Most studies assessing the prevalence of asthma in adults have used the "European Community Respiratory Health Survey" (ECRHS) protocol. The aims of this study were to determine the prevalence of asthma, asthma-like symptoms and smoking as well as the correlation of asthma symptoms and smoking among Urmia medical university students.

Materials and Methods: An ECRHS questionnaire with additional questions about absence from class because of wheezing and/or dyspnea and smoking was filled for them.

Results: One thousand five-hundred students with the mean age of 20.8 ± 3.5 years filled out the questionnaires. Among them, 17.1% of males and 2.3% of females were current smokers. The most prevalent symptoms during the last 12 months were wheezing (19.7%), resting breathlessness (10.2%), exercise-induced cough (16.5%), and asthma attacks (3.1%). Asthma symptoms were strongly related to smoking (for all variables $p < 0.001$) but were not related to sex ($p > 0.05$), 5.4% had a history of absence from class because of wheezing or dyspnea.

Conclusion: We found a relatively high prevalence of wheezing among young adult university students. Our findings suggest that cigarette smoking is common among young university students with asthma symptoms. Adequate public health measures are needed to prevent smoking among Iranian young adults, and medical students should be better educated with regard to asthma and the risks of smoking. (*Tanaffos* 2007; 6(1): 53-58)

Key Words: Asthma, Wheezing, Smoking, ECRHS, Students

INTRODUCTION

Smoking and asthma are global problems. Despite the widely available data in regard to childhood asthma in Iran in isolated (1-5) and worldwide

reports (6,7), there are limited data on the prevalence of asthma in Iranian adults (8,9).

On the other hand, the world health organization (WHO) has estimated the smokers at 1.25 billion worldwide, with approximately two-thirds living in developing countries (10).

Medical science students are a special group. Their high level of information and knowledge about asthma symptoms may help in almost exact

Correspondence to: Rahimi Rad MH

Address: Department of Respiratory Medicine, Urmia University of Medical Sciences, Urmia-Iran.

Email address: rahimirad@umsu.ac.ir

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estimation of the prevalence of asthma. In addition, they are dealing with people's health; so, smoking among them has special social importance. There are some studies on smoking among university students (11-14) in Iran as well as in other countries (15). Also, there are some reports available about the prevalence of asthma in this group of students in other countries (16-21), but to our knowledge there is no similar report from Iran.

In this context, the need for a standardized comprehensive study was felt for accurate determination of epidemiological aspects of asthma and smoking in this group.

The development of a standardized questionnaire by the International Union against Tuberculosis and Lung Diseases (IUATLD) has allowed comparison of the prevalence of asthma and asthma-like symptoms among adults in different countries. It was utilized in the European Community Respiratory Health Survey (ECRHS), involving 48 centers in 17 European and five non-European countries between 1990 and 1995 (22, 23). The other one is the International Study of Asthma and Allergies in Childhood (ISAAC) protocol which is widely used worldwide (6, 7) and in Iran as well (1-4). Some authors used ECRHS (16, 20, 21) and others used ISAAC protocol in their studies on university students (17, 18).

The aim of this study was to determine the prevalence of asthma, asthma-like symptoms, absence from class because of these symptoms and also the relation of asthma symptoms and smoking among Urmia University medical students. The rates were compared with those of other universities as well.

MATERIALS AND METHODS

This was a cross-sectional study performed in Urmia University of Medical Sciences, Iran during 2004-2005. A random sample of students from faculties of medicine, health, nursing, and midwifery filled out

the questionnaires.

Questionnaires

Our questionnaire was a self-administered questionnaire consisting of two sections. The first section of the questionnaire obtained information about asthma and asthma-like symptoms, using the ECRHS Stage I questionnaire with an additional question about absence from class because of wheezing and/or dyspnea. The second part contained questions about smoking such as being a current smoker or an ex-smoker, number of cigarettes smoked/day, age of onset, period of life when smoking was started (i.e. school, before university, university), and having parents that smoke. Current smoking was defined as smoking for at least seven times a week for a year or more. Students were categorized as ex-smokers if they mentioned that they had quitted smoking within a year before the time of the study. Students were considered passive smokers if there was a report regarding the smoking of their mother, father or roommate in the university dormitory. Current wheezing was defined as affirmative answer to the question: "Have you ever had wheezing or whistling in your chest, within the last 12 months?"

We used SPSS software version 11.0 and then the frequency of each variable was calculated. Chi-square test was used to determine the differences between smokers and nonsmokers as well as males and females.

RESULTS

A total number of 1585 questionnaires were distributed and 1512 questionnaires returned (response rate was 95%). Of the returned questionnaires, 12 were incomplete and excluded from the analysis. The results of 1500 individuals (592 men and 908 women) were analyzed. The mean

age of under study population was 20.8 ± 3.5 years.

Of the participants, 17.1% of males and 2.3% of females were current smokers. The data regarding comparison of prevalence of current smoking in medical students with those in other published studies (11,13-15,20) are shown in figure 1.

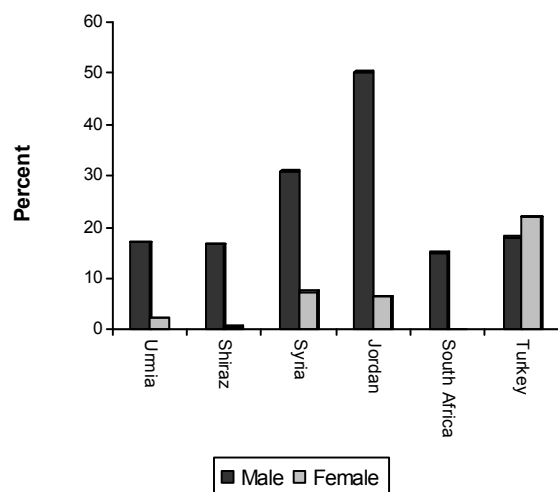


Figure 1. This bar diagram shows the prevalence of current smoking among university students in Urmia (present study), Shiraz (15), Syria (14), Jordan (13), South Africa (11), and Turkey.

Of the subjects, 0.8% were smoking less than 7 cigarettes per week; 4.3%, 1-9 cigarettes a day; 2.4%, 10-19 cigarettes a day; and 1.3% more than 20 cigarettes a day. Nine percent of male and 1.0% of female students were ex-smokers. Prevalence of smoking among medical students (12.8%) was higher than healthcare (8.2%), nursing, and midwifery students (3.9%). Smoking was more common among married students than singles, those staying in dormitories and students whose parents were smoker. Fifty percent of smoking students started smoking after entering the university, 27% during the period studying for university entrance exam and 23% in high school.

The prevalence of asthma symptoms in current smokers and non-smokers is shown in table 1.

Table 1. Prevalence (%) of asthma symptoms in current smokers ($p < 0.001$)

Question	Smokers % n = 122	Nonsmokers% n = 1378	Total% n = 1500
Q1. Wheezing in last 12 months	47.5	17.2	19.7
Q2. Resting Breathlessness	21.3	9.1	10.2
Q3. Exercise Breathlessness	46.7	27.5	29.1
Q4. Chest tightness	18.9	9.4	10.2
Q5. Nocturnal shortness of breath	20.5	6.1	7.3
Q6. Nocturnal cough	24.6	15.8	16.5
Q7. Asthma attack	9.8	2.5	3.1
Q8. Asthma medication	9.0	2.2	2.7

Asthma symptoms had a significant positive correlation with smoking ($p < 0.001$). To enable the easy comparison of our results with those of other studies, we brought the reported prevalence of current wheezing from other universities in figure 2 from the published data (16, 17, 18, 20). There were no significant differences in asthma symptoms between male and female students ($p > 0.05$ for all variables). Of the students, 5.4% had history of absence from class because of wheezing or dyspnea.

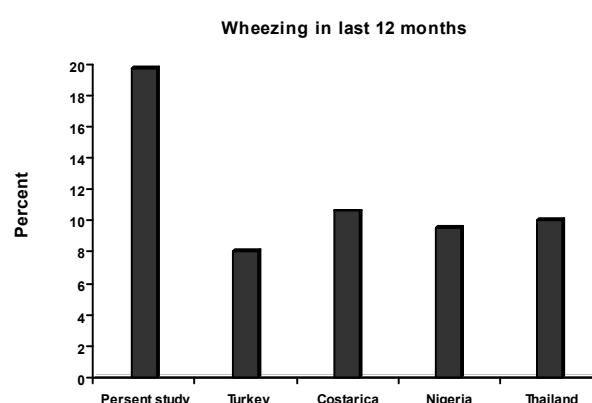


Figure 2. This bar diagram shows the prevalence of current wheezing among our under study students (Urmia, Iran), and among university students from Turkey (20), Costa Rica (17), Nigeria (16), and Thailand (18).

DISCUSSION

The results of the present study, which was performed on a relatively large population of university students, showed the prevalence of wheezing in the last 12 months to be 19.7% without significant differences between males and females. To our knowledge, this was the first study focusing on the prevalence of asthma among university students in Iran. In developing countries, asthma prevalence rate was characteristically low for a long time but recently it has increased following the urbanization and industrialization process (24).

In a Nigerian university, a 12-month prevalence of wheezing, nocturnal orthopnea with cough, and chest tightness in the morning was 9.0%, 9.4%, and 8.0%, respectively (16). Among Turkish students in Ankara (Turkey), the prevalence of wheezing in last 12 months was 9.7% in males and 6.2% in females (21). This rate was also reported to be 10.6%, and 10.1% in Costa Rica (17), and Bangkok (18) universities respectively. Our estimation of the prevalence of current wheezing (19.7%) was a little higher than what was recently reported among 3780 young adults (aged 20–29 years) who participated in the NHANES III in the United States (17.6%). But relevant to asthma (3.1%) it was a little lower than NHANES III study (4.7%) (25). This finding may be related to underdiagnosis of asthma in Iran.

Prevalence of wheezing in this study was higher than what was reported among children in Iran (1-4). This finding is opposite to other populations and it is against the idea that asthma undergoes remission in a significant proportion of affected individuals following adolescence and/or puberty. Our finding is compatible with that of Wieringa et al. (26) that by comparing the ECRHS and ISAAC studies showed higher occurrence of asthma symptoms in adults residing in urban areas compared to those residing in the suburbs, but not in children. They explained their finding by the progressive effect of long-term

exposure to the "urban environment". We think air pollution in Iran's cities is high due to the high tail-pipe emission of worn out cars, and absence of public transportation as well as the low price of gasoline. Air pollution acute effects are seen in Tehran (27).

Of participants, 5.4% had history of absence from university class because of wheezing and/ or dyspnea. Asthma is the most common cause of absence from school in children (28), but to our knowledge, similar information is not available for university students and it should be evaluated in following studies.

It is disappointing to note that as much as 17.3% of young male medical students smoke cigarette. But prevalence of smoking is very low in Iranian female students. Other studies from Iran reported lower prevalence of smoking among Iranian women. As shown in figure 1 the prevalence of smoking among Urmia medical students was lower than university students in Slovakia (12), Syria (14), and Jordan (13) but higher than South African University (11) and Shiraz University of Medical Sciences (15). Other studies of self-reported smoking in Iran also showed a lower prevalence of smoking in Iranian women (15, 29). In the present study, it was found that smoking habits are important independent determinants of the respiratory symptoms.

We had no information on pulmonary function or bronchial hyperresponsiveness (BHR) to bronchoconstrictors, and; thus, misclassification of asthma may have occurred. However, reports of current wheezing is an indicator of asthma which is independent of a physician's diagnosis of asthma and has been used in large epidemiologic studies (6, 7, 22). To compare differences in prevalence of asthma between populations, symptom questionnaires provide a better Youden's index (sensitivity+ specificity-1), which is the best single measure of validity of disease definition in prevalence studies,

compared to the BHR test (24). In addition, medical science students have information about asthma and wheezing, and their responses to the questionnaire are more reliable. Second, the validity of self-reported data on smoking might be questioned because of possibility of under-reporting. To decrease the chance of this, we assured that answers would be confidential. Furthermore, it is demonstrated that self reports on smoking matched nicotine in saliva in 99% of cases (30).

In summary, we found a relatively high prevalence of wheezing among young adult university students. Our findings suggest that cigarette smoking is common among young university students with asthma symptoms. Adequate public health measures are needed to prevent smoking among Iranian young adults and to promote cessation of smoking among young adults who smoke. In addition, young adults especially medical science students should be better educated in regard to asthma and the risks of smoking.

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