

Original Article

Frequency of Asthma among students of Army Medical College

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Objective: To determine the prevalence of asthma among students of a medical college.

Study Design: Cross sectional Survey

Duration of Study: 15 February 2010 - March 15, 2010

Materials and Methods: A questionnaire based, descriptive survey was conducted, survey using European Community Respiratory Health Survey (ECRHS) forms among students of Army Medical College from Feb 15- March 15, 2010. A subject was labeled as positive if he or she met one or more of the criteria mentioned in the form. Positive subjects from survey were called for Digital Spirometry by a trained technician. Those having FEV1/FVC ratio of less than 75% and PEFR of less than 80% were labeled as being Obstructive pulmonary disease positive.

Results: ECRHS forms were distributed to 996 students of Army Medical College. The age ranged between 18-24 years. Response rate was 824/996 (82.7%), among which 371(45%) were males and 453(55%) females. Male to female ratio was 0.8:1. 144 (17.4%) students qualified for second stage for having one of the signs/symptoms of asthma. Out of 144, only 127 (15.4%) took part in secondary stage mainly due to dropping out and having respiratory tract infections. The most common symptom noted was awakening nocturnal cough (31.5%), while wheezing and nasal allergies were almost equal (17.8% and 18.2% respectively). 13.2% and 10.74% subjects documented tightness of chest and shortness of breath respectively. Only 7 subjects were known asthmatics. 76 (9.2%) were labeled as positive and 51 (6.1%) negative based on Digital spirometry. From these figures, male prevalence came out to be 6.29% (23), female 12.02% (53) and overall 9.2 % (76).

Conclusion: The frequency of Asthma was 9.2% among the student surveyed. Lack of awareness, fear of life-long treatment as well as blemish associated with the disease in our community are the key factors responsible for extremely low rate of diagnosed asthma in our study. Only mass public awareness can help overcome these factors, thereby leading to early detection and better treatment of asthma in Pakistan.

Key words: Prevalence, asthma, adult asthma, wheezing, nocturnal cough, nasal allergies

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Introduction

Asthma is a common chronic inflammatory disease of the airways characterized by reversible airflow obstruction, and bronchospasm. Symptoms include wheezing, coughing, chest tightness, and shortness of breath. The diagnosis is clinical, made by physicians.¹ However, the absence of a clinical definition for asthma as well as lack of satisfactory standardized tools, have made conducting epidemiological studies difficult.^{2,3}

Asthma is caused by environmental and genetic factors⁴. Active smoking⁵ and air pollutants like particulate matter (e.g. from traffic),⁶ decrease lung function, trigger exacerbations and rates of

hospitalization for asthma.⁷ According to "hygiene hypothesis", the development of asthma is due in part to a lack of exposure to infections and microbial products early in life.^{1,8}

The prevalence and incidence of asthma are very high in the Western world. There is widespread concern that the prevalence of asthma is still rising in developed countries, but the economic and humanitarian effects of asthma are probably greater in the developing world, where the prevalence is also rising¹.

In response to increasing mortality rates associated with asthma in Europe and elsewhere, European commission funded the development of European community Respiratory health survey (ECRHS). Questionnaires have been the most widely

used tools in epidemiological investigations, due to their ease of use, low cost and good acceptability, as well as because they can be self-administered and are considered relatively independent of climatic factors.⁹ The purpose of this study was to determine the prevalence of asthma among students of Army medical college in Pakistan.

Materials and Methods

This survey was carried out using European Community Respiratory Health Survey (ECRHS) screening questionnaire protocols, guidelines and survey forms with modification, among students of Army Medical College which is located in Rawalpindi, Pakistan. The study was completed in one month from 15 February - March 15, 2010. ECRHS survey forms were distributed among all students of the college. A subject was labeled as positive if he or she met one or more of the following criteria.

- a) Diagnosed asthmatic by a physician.
- b) Having any one of the following symptoms.

- i. Wheezing, attacks of shortness of breath, tightness of chest, and night awakening cough in the past 12 months.
- ii. Normal breathing in between episodes of shortness of breath.

Those having acute respiratory tract infection were excluded from the study. Positive subjects from survey were called for Digital Spirometry by a trained technician. Those having FEV1/FVC ratio of less than 75% and PEFR of less than 80% were labeled as being Obstructive pulmonary disease positive.

Results

ECRHS Primary Survey forms were distributed to 996 students of Army Medical College. The age ranged between 18-24 years. Response rate was 824/996 (82.7%), among which 371(45%) were males and 453(55%) females. Male to female ratio was 0.8:1.

144 (17.4%) students qualified for second stage for having one of the signs/symptoms of asthma mentioned in the form. Out of 144, only 127 (15.4%) students took part in secondary stage mainly due to dropping out and having respiratory tract infections. The most common symptom noted was awakening nocturnal cough (31.5%), while wheezing and nasal allergies were almost equal (17.8% and 18.2% respectively). 13.2% and 10.74% subjects documented tightness of chest and shortness of breath respectively. Only 7 subjects were known asthmatics (Figure. I).

76 (9.2%) were labeled as positive and 51 (6.1%) negative based on Digital spirometry (Figure. II).

From these figures (Fig. III), male prevalence calculated as 6.29% (23), female 12.02% (53) and overall 9.2 % (76).

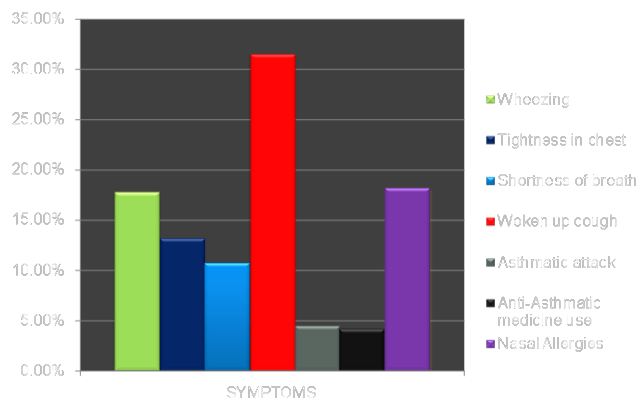


Figure I: Percentage of various symptoms among subjects (n=144)

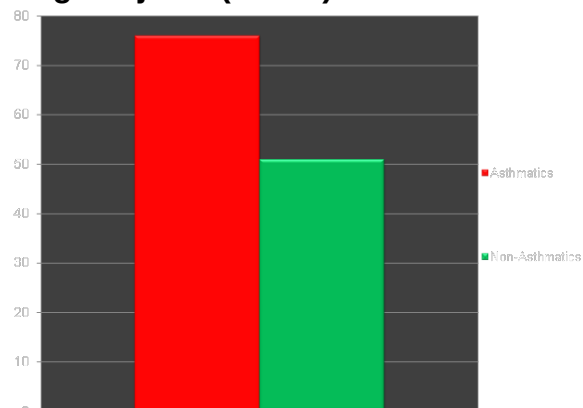


Figure II: Digital Spirometry among symptomatic subjects (n=127)

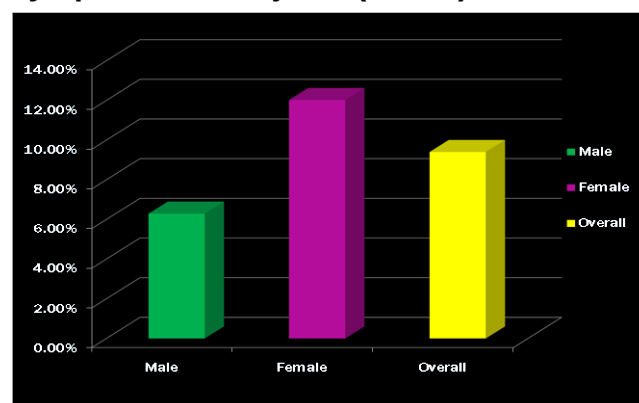


Figure III: Overall as well as male and female prevalence among subjects (n=844)

Discussion

There are no clear differences in trends in prevalence between children and adults, between severe and mild asthma, or between developed and developing countries; however, there are few studies from developing countries.¹ It is estimated that Adult asthma has a 7-10% prevalence worldwide.¹⁰ Rates of asthma have increased significantly between the 1960s and 2008.¹¹ Our estimated asthma prevalence of 9.2% is in line with international¹⁰ as well as local¹² figures. However, very low figures of 2.38% in India¹³ and 2.8% were reported in Iran.¹⁴

Wheezing is an important and diagnostic symptom of asthma. Ahsan Rathore et al¹⁵ and Noori et al¹² reported a prevalence of recent wheeze as 15.8% and 15.2% respectively which validates our finding (17.8%). Another local survey¹⁶ revealed similar Prevalence of wheezing as 17.79% and nocturnal shortness of breath/cough as 16.35% among employees and residents in the vicinity of a fertilizer factory in Pakistan. However, wheeze of 28.1% in Australia¹⁷, 44.1% in Brazil⁹ are much higher than noted in our study.

High asthma prevalence among female students in our survey (12.02% Females Vs 6.29% Males) is supported by figures in Australia¹⁷, USA¹⁸ (9.1% versus 5.1%) and Pakistan¹⁵ (58%).

Night time awakening is a common symptom in asthmatic children.¹⁹ The children with nocturnal awakenings also had demonstrated an increased number of days of school missed, increased symptom severity and an increased use of reliever medications. The parents of the children with nocturnal asthma had an increased frequency of missed work days.²⁰ Our study showed 31.5% awakening nocturnal cough which is similar to an Australian study (28.6%)²³ but is relatively high in comparison to a local study²¹ conducted in southern Punjab, Pakistan, which found nocturnal asthma in 6% of children without any gender predominance, i.e., 3% in each.

Nasal allergy makes an important part of allergic symptoms associated with asthma. Our survey showed 18.2% of nasal allergies which is however, less than other local studies 34.3%,¹² 28.50%²² and 42.11%²³ among children.

The prevalence rates of both symptoms and diagnoses of asthma are heavily dependent on an awareness of asthma in the population studied. In recent decades, widespread publicity and education of the public may have increased public awareness of asthma and the rates of reporting of the disease.²⁴ Diagnosed asthma (i.e. asthma ever diagnosed by a clinician) in adults is generally reported as 2.7 to 4.0% in most European countries,²⁵ 12.0% in England and 7.1% in US²⁶ and 11.6% in Brazil.⁹ However, in our study,

only 7 (0.85%) subjects were known asthmatic simply because of lack of awareness about asthma among the medical students. Even those who suspected asthma were afraid to go to the doctor because of blemish and the fear of life-long treatment. All these reasons point towards the need for mass public education about asthma in Pakistan.

Conclusion

The frequency of Asthma was 9.2% among the student surveyed. Lack of awareness, fear of life-long treatment as well as blemish associated with the disease in our community are the key factors responsible for extremely low rate of diagnosed asthma in our study. Only mass public awareness can help overcome these factors, thereby leading to early detection and better treatment of asthma in Pakistan.

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