

ORIGINAL ARTICLE

Prevalence of Asthma Symptoms Among University Students 15 to 35 Years of Age in Obafemi Awolowo University, Ile-Ife, Osun State

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Introduction. Asthma continues to cause increasing morbidity and mortality among young adults in the developing world. There is scarcity of data on the prevalence of asthma among young Nigerian adults. **Methods.** We studied the prevalence of asthma among students (15–35 years of age) of the Obafemi Awolowo University using a standardized questionnaire. One thousand self-administered questionnaires were distributed; 903 were retrieved and analyzed (469 males, 434 females). Symptoms indicative of asthma were cough, chest tightness at rest and on exposure to irritants, and the presence of nocturnal symptoms. Students with three or more symptoms or who had a diagnosis of asthma were considered probable asthmatics and those with one or two symptoms as suspected asthmatics. Students in any of these two categories were defined as symptomatic respondents. **Results.** The 12-month prevalence of wheeze, night waking with cough, and chest tightness in the morning was 9.0% ($n = 81$) 9.4% ($n = 85$) and 8.0% ($n = 72$), respectively. One hundred and twenty-seven respondents (14.1%) comprising 49 males (10.4%) and 78 females (17.9%) had probable asthma. The remaining symptomatic respondents consisting of 20 males (4.3%) and 16 females (3.9%) had suspected asthma. Of these, only 32.5% (53/163) had been previously diagnosed and 22.1% were on occasional inhaled bronchodilator treatment. **Conclusion.** These results indicate a relatively high prevalence of asthma among the students. A greater proportion of them had not been diagnosed and were not receiving proper treatment.

Keywords asthma, symptoms, Obafemi Awolowo University students, prevalence, Ile-Ife

INTRODUCTION

Asthma is a global disease (1–4). The prevalence of asthma varies in different ethnic groups, but this may be due to genetic, environmental, or cultural differences. Using a prevalence rate of 10% in children and 5% in adults, figures that are conservative for western countries (3), it could be assumed that the global burden of asthma is in the order of 130 million people (5).

In the USA, African-Americans were reported to have higher levels of immunoglobulinE (IgE), more positive skin tests, and a higher prevalence of wheeze and asthma (6). In the UK, Afro-Caribbean children report more respiratory morbidity but not more asthma (7). The bulk of indexed works on asthma prevalence come from developed countries. Studies from developing countries indicate that asthma is also common in these parts of the world, with some considerable variations in its prevalence within countries and from country to country (8–12). Studies from Ghana have shown that asthma is vastly underdiagnosed and poorly managed in the developing world (13).

There is paucity of indexed work on asthma in the African continent. Thus, the burden of asthma is not clearly appreciated at the moment. Population-based surveys of asthma are necessary to identify high-risk populations and to design and evaluate interventions aimed at preventing the development and exacerbation of the disease. Most estimates of asthma

prevalence are based on data obtained from questionnaires, which enquire about the presence of symptoms or diagnosis already made by a physician. In this study, the prevalence of asthma symptoms among university undergraduates was determined using the bronchial symptoms questionnaire developed by the International Union Against Tuberculosis and Lung Disease (IUATLD) (14) and with some items from the Medical Research Council questionnaire (15). This is a pilot study that would be followed by airway reactivity testing and spirometry to obtain more objective evidence of the disease.

METHODS

Study Area and Population

This study was conducted at the Obafemi Awolowo University (OAU), Ile-Ife, situated in the South Western part of Nigeria. The town is unindustrialized and has low vehicular traffic. The campus is located on the outskirts of the town and has a student population of about 23500. These students are drawn from numerous towns and cities, both industrialized and unindustrialized within and outside the country. Thus, our study population comprised apparently healthy young subjects between the ages of 15 and 35 years.

Sampling

This was a cross-sectional analytical study. A multistage random sampling technique was used in this study. First, the male and female halls of residence were chosen at random; four of the seven halls of residence were selected. The blocks and floors were also randomly selected. Each room was visited just once and those students met in the room completed the questionnaires.

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Protocol

A questionnaire was designed based on questionnaires previously used by experts for similar studies (International Union against Tuberculosis and Lung Disease (14) and Medical Research Council questionnaire (15)). It contained three sections that included asthma symptoms and family history, history of treatment, and presence of atopy. Symptoms recognized as asthma symptoms included wheeze, difficulty with breathing when exposed to dust or animals, cough, and chest tightness that is worse at night.

This questionnaire has been shown to have international comparability and validity (16, 17).

Respondents with one or two symptoms were considered as suspected asthmatics, while those with three or more symptoms and those previously diagnosed with asthma were regarded as probable asthmatics. Students in any of these two groups were defined as symptomatic subjects. One thousand self-administered questionnaires were distributed, and of these, 903 were returned and analyzed.

Data Analysis

Data were processed using SPSS (version 9) (Chicago, IL). Results were presented in descriptive terms and numerical data as frequencies and percentages. The Z test was also adopted to test the strength of the relationship between presence of asthma symptoms in subject and family history of asthma in a first-degree relative. A p value of less than 0.05 ($p < 0.05$) was considered significant.

RESULTS

Table 1 presents the sociodemographic characteristics of the respondents. Of the 903 students who participated in the study, 469 were males and 434 were females. Majority of the respondents were within the 21 to 25 years of age.

The prevalence of the various asthma symptoms among the male and female respondents is shown in Table 2. The 12-month prevalence of wheeze, nocturnal awakening with cough, and chest tightness in the morning is shown in Table 2 to be 9%, 9.4%, and 8.0%, respectively. The female respondents reported a higher prevalence of the symptoms. Fifty-three (5.9%) of the study population had previously been diagnosed with asthma by a physician. Table 3 shows the categories of symptomatic respondents, i.e., probable and suspected asthmatics. The prevalence of asthma

TABLE 1.—Sociodemographic characteristics of respondents.

	Frequency	Percent
Sex		
Male	469	51.9
Female	434	48.1
Age		
15–20	205	22.7
21–25	510	56.5
26–30	175	19.4
31–35	13	1.4
Marital status		
Single	893	98.9
Married	10	1.1
Religion		
Christianity	854	94.6
Islam	47	5.2
Others	2	0.2

TABLE 2.—Prevalence of symptoms among respondents.

Symptoms	Total <i>n</i> = 903	Males <i>n</i> = 467	Females <i>n</i> = 434
Have you had wheezing in the last 12 months?	81(9.0%)	31(6.6%)	50(11.6%)
Have you been woken with a feeling of chest tightness in the morning at anytime in last 12 months?	72(8.0%)	29(6.2%)	43(9.9%)
Have you had attacks of shortness of breath when you are not doing anything strenuous in the past 12 months?	57(6.3%)	23(4.9%)	34(7.9%)
Have you had attack of shortness of breath following exercise in the past 12 months?	67(7.4%)	32(6.8%)	35(8.1%)
Have you at any time in the past 12 months been woken at night by an attack of shortness of breath?	58(6.4%)	20(4.3%)	38(8.8%)
Have you at any time in the past 12 months been woken by an attack of coughing?	85(9.4%)	29(6.2%)	56(12.9%)
Do you cough first thing in the morning?	21(2.3%)	7(1.5%)	14(3.2%)
Do you bring up phlegm from your chest first thing in the morning?	29(3.2%)	6(1.3%)	23(5.3%)
Do you have a feeling of chest tightness or feel short of breath when in a dusty part of the house or near animals or feathers?	80(9.0%)	35(7.6%)	45(10.5%)
Have you brought out phlegm from your chest like this each morning for at least 3 months each year?	32(3.5%)	6(1.3%)	23(5.3%)
History of allergic rhinitis in the past 12 months	39(3.9%)	12(2.6%)	23(5.3%)
History of atopic dermatitis in the past 12 months	12(1.3%)	6(1.3%)	6(1.4%)
Have you ever been told by a doctor that you had asthma?	53(5.9%)	18(8.8%)	35(8.1%)
Does anybody in your family suffer from asthma?	76(8.5%)	27(5.8%)	49(11.9%)

symptoms among respondents was 18.1% (163 students comprising 69 males and 94 females). One hundred and twenty-seven students (14.1% of the entire population) had probable asthma (i.e., had three or more symptoms or had been previously diagnosed with asthma.) The remaining 36 students (3.9%) with one or two symptoms had suspected asthma.

Of the 163 symptomatic respondents (18.1% of the entire study population), only 53 persons (32.5% of the symptomatic respondents) had been previously diagnosed with asthma; 36 (22.1%) of the symptomatic respondents were on inhaled bronchodilator therapy. None of the symptomatic individuals was smoking at the time of this study and none was on oral steroid therapy.

Table 4 shows the frequency of a family history of asthma in first-degree relatives of the respondents; 15.0% of those with probable asthma had a positive family history of asthma whereas 6.9% of asymptomatic respondents had a positive family history ($p < 0.05$).

Selected trigger factors reported by the respondents are shown in Table 5. The commonest trigger factors

TABLE 3.—Categories of symptomatic respondents.

	Male <i>n</i> = 469	Female <i>n</i> = 434	Total <i>n</i> = 903
Respondents with three or more symptoms and/or are physician diagnosed (probable asthmatic)	49(10.4%)	78(17.9%)	127(14.1%)
Those with one or two symptoms (suspected asthmatics)	20(4.3%)	16(3.9%)	36(3.9%)
All symptomatic respondents	69(14.7%)	94(21.6%)	163(18.1%)

TABLE 4.—Family history of asthma in a first-degree relative among respondents.

Category	<i>n</i>	Frequency	Percentage
Probable asthmatics	127	19	15.0%
Asymptomatic respondents	740	51	6.9%
$Z = 2.92, p = 0.004$			

identified were strong smells/fumes and house dust while the least identified trigger factors were exercise, shellfish, and wine.

DISCUSSION

The result of the present study, which was performed on a relatively large population of young undergraduate students (15–35 years of age), showed the prevalence of probable asthma to be 14.1% (10.4% in males and 17.9% in females) and that of suspected asthma to be 3.9% (4.3% males and 3.9% females). The prevalence of asthma symptoms was 18%. Boskabady et al. (18), using a similar protocol in Iran, showed that the prevalence of probable asthma in patients 11–16 years of age to be 14.9%, whereas 17.5% had asthma. In China, Zhong et al. (19) found 12.9% students (11–16 years of age) had asthma symptoms. These results were fairly similar to the findings of our study. In an earlier study by Warrell et al. (20), childhood asthma in Nigeria was found to be rare, and asthma was reported to have started after 19 years of age in 69% of the patients studied. Twenty-two percent of the population in that study gave a family history of asthma. A more recent study by Falade et al. (21) reported an asthma prevalence rate of 10.2% in Nigerian primary school children.

The result of this study shows that a family history of asthma correlates with the development of the disease. As shown in Table 4, 15.0% of those with probable asthma had first-degree relatives with asthma as opposed to 6.9% of those who reported no symptoms. This was statistically significant ($p < 0.05$).

Also, in this study, a greater proportion of females reported asthma symptoms. Similar patterns have been reported from other studies where they found asthma among adults to be commoner and more severe in females (22).

The use of questionnaires in asthma epidemiology has been a subject of much controversy. Some authors report a weak association between bronchial hyperactivity and responses to standardized respiratory questionnaires. It is argued that there are wide variations in the way subjects report physiological changes (6). Many subjects with hay fever and objec-

tively proven airway hyperresponsiveness, for instance, may deny any lower respiratory symptoms. The IUATLD questionnaire used in this study has been validated and shown to have a strong correlation with bronchial hyperactivity testing (14, 16, 17).

Our study cannot conclusively say that all the symptomatic respondents are asthmatic, but it provides a framework for further studies. We hope to conduct further studies with spirometric measurements and bronchial challenge tests to get objective evidence of the disease.

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TABLE 5.—Selected trigger factors reported by respondents.

Triggers	<i>n</i> = 903 frequency	Percentage
Strong smells/fumes	145	16.1
House dust	140	15.5
Cold	88	8.7
Dusty dry weather (harmattan)	65	7.2
Grass pollens	59	6.5
Damp environment	54	6.0
Beddings	52	5.8
Animal dander	41	4.5
Exercise	6	0.6
Shellfish	5	0.6
Wine	4	0.4

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