

Allergic Rhinitis: Prevalence And Associated Factors Among Students of A Secondary School in South-west Nigeria.

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Abstract

Background: Allergic rhinitis is a symptomatic disorder following exposure to trigger particles. It is frequently associated with other systemic manifestations of allergy as well as asthma and is known to have significant effects on the quality of life of sufferers.

Methodology: A cross-sectional survey conducted amongst students in a secondary school in South-West Nigeria. A modified I.S.A.A.C questionnaire, was administered with questions assessing the presence and severity of allergic symptoms, as well as the possible risk factors. Data collected was analyzed using SPSS version 21.

Results: Six hundred and twenty-one [621] students were recruited for this study. The prevalence of allergic rhinitis was 56.7%, of which 28.8% had accompanying itchiness of the throat, as well as itchiness, watering and redness of the eyes. Dust (33.0%) and Cold (15.6%) were the commonly implicated allergens with symptoms peaking in the months of October and November. Symptoms of allergic rhinitis were found in 79.1%, 73.9% and 64.2% of respondents with symptoms of physician diagnosed asthma, allergic conjunctivitis and a family history of allergy respectively. Only 7.5% of respondents admitted to be significantly affected by their symptoms while 15% had missed a class in the preceding 12 months due to these symptoms.

Conclusion: Allergic rhinitis co-exists with other forms of allergy: dermatitis, conjunctivitis and asthma. The commonest identified allergens in this environment are dust and cold, with symptoms most severe towards the end of the rainy season and beginning of the harmattan.

Keywords: Allergy, Rhinitis, Associated factors, Quality of life.

I. Introduction

Allergic rhinitis refers to a symptomatic disorder of the nose induced by immunoglobulin E (IgE) mediated inflammation of the membranes of the nose following allergen exposure [1]. The allergens usually comprise of ordinary particles ever-present in the environment (to varying degrees depending on the prevailing weather and climate) such as dust, pollen, flower, animal fur/dander, smoke, mold, and insects. [2, 3, 4, 5]. The immunoglobulin-mediated reaction is also known as antibodies. Allergy has been identified as the most common cause of rhinitis and allergic rhinitis the most common allergic disorder as well as the most common chronic disease in the world [6]. It is common in childhood, adolescence and early adult years in persons of all races. The mean age of onset is 8-11 years, peaking by the age of 20 years but can occur at any age [7].

The pattern of development and severity of symptoms, which invariably co-relates with the seasonal prevalence of specific aero-biological trigger factors, forms the basis of classification of this disease into seasonal, perennial or mixed, or more recently into mild-intermittent, moderate-severe intermittent, mild persistent, and moderate-severe persistent. While allergic rhinitis itself is not life-threatening, (unless accompanied by severe asthma or anaphylaxis), morbidity from the condition can be quite significant. The disease often co-exists with other disorders such as asthma, atopic dermatitis, eczema and nasal polyps. Other complications that lead to increased morbidity include otitis media, acute sinusitis, chronic sinusitis and Eustachian tube dysfunction. [1, 3, 11]. This study aims to determine the prevalence of allergic rhinitis amongst students of Babcock high school as well as its associated factors and impact on their daily activities.

II. Methodology

This was a cross-sectional study carried out among the students of Babcock university High school. Babcock University High school is a co-educational institution owned and operated by the Seventh Day Adventist church. It is located within the campus of Babcock University. The university itself occupies 140 hectares of land mass situated in Ilishan-Remo, a sleepy town in the Ijebu-Remo division of the old western region and present day Ogun state in Nigeria. It is roughly midway between the cities of Lagos and Ibadan with a population of 118,735 according to the 2006 national population census. All the students who gave consent

were included in this study with no exclusion criteria. A brief educational session on clarification and definition of terms from the questionnaire was held in the school hall. Thereafter the questionnaires were completed by the student and collected data were analyzed using the statistical software for social sciences version 21. Statistical significance was said to have been achieved if the p-value is less than 0.05.

III. Results

Six hundred and twenty-one respondents with a mean age of 13.5±1.25 years [range: 9-18 years] participated in the study. Majority (88.7%) of the respondents were females and 97.7% of Fathers and 96.8% of mothers of the respondents had completed tertiary education (Table 1).

Three hundred and fifty-two (56.7%) respondents had symptoms suggestive of allergic rhinitis, such as persistent sneezing, itchiness and a runny nose over the past 12 months prior to the study. From this group, 28.8% had accompanying itchiness of the throat as well as itchiness, watering and redness of the eyes. About half of the respondents (50.4%) said their nasal symptoms did not affect their daily activities compared to 7.25% who admitted that their symptoms interfered a lot with their daily activities. The rest (42.35%) had responses varying from a little to moderate interference in daily activities (Table 2). Only 15% of respondents had ever missed a class as a result of these symptoms. A significant majority of respondents (92.6%) affirmed that they did not feel these symptoms affected their academic performance.

30.6% of respondents believed their symptoms to be most severe in the month of November. August, September and October also showed significant symptom severity [15.6%, 18.5%, and 29.0% respectively]. Allergy to allergens was documented amongst 78.3% of respondents, with dust and cold being the most commonly identified allergens (33.0% and 15.6% respectively). Animal fur and pollen were the least popular allergens (1.6% and

1.1% respectively).

35.7% of respondents had recurrent episodes of redness and itchiness of the eyes within the last 12 months, with symptoms showing peak severity in the month of October (28.4%) but also high in November (25.4%), July (19.3%), August (17.3%) and September (16.2%).

The prevalence of physician-diagnosed asthma amongst the study population was 6.9%. About a quarter (25.8%) of respondents had a positive family history of asthma, while 38.6% had a family history of other allergies.

Table 1: Socio-demographic distribution of the respondents

Variable	Frequency	Percentages
Age		
9-13years	398	64.1
14-18years	223	35.9
Sex		
Male	70	11.3
Female	551	88.7
Father's education Level		
No formal education	1	0.2
Primary	1	0.2
Secondary	12	1.9
Tertiary	607	97.7
Mother's educational level		
Primary	2	0.3
Secondary	18	2.9
Tertiary	601	96.8

Table 2: Showing the distribution of symptoms and risk-factors

Symptom	Frequency	Percentage (%)
Persistent sneezing, runny nose, blocked nose in the last 12 months	YES	352 56.7
	NO	269 43.3
Itchy rash coming and going for at least 6 months- Present anytime in the past 12 months	YES	186 30.0
	NO	435 70.0
Recurrent redness and itchiness of the eyes within the last 12 months	YES	222 35.7
	NO	399 64.3
Physician-diagnosed Asthma	YES	160 25.8
	NO	460 74.2

Have you had a problem with persistent sneezing, runny nose or blocked nose in the past 12 months	YES		NO		P-Value
	N	%	n	%	
Father's educational level					0.688
No formal education	0	0.0	1	100	
Primary	1	100	0	0.0	
Secondary	6	50	6	50.0	
Tertiary	345	56.8	26.2	43.2	
Mother's educational level					0.905
Primary	1	50.0	1	50.0	
Secondary	11	61.1	7	38.9	
Tertiary	340	56.6	261	43.4	
Redness and itchiness of the eyes in the past 12 months					<0.0001
Yes	164	73.9	58	26.1	
No	188	47.1	211	52.9	
Itchy rash coming and going for at least 6 months					<0.0001
Yes	103	71.5	41	28.5	
No	249	56.7	228	43.3	
Physician-diagnosed asthma					0.002
Yes	34	79.1	9	20.9	
No	318	55.0	260	45.0	
Family history of Allergy					0.003
Yes	154	64.2	86	35.8	
No	198	52.0	183	48.0	

Table 3: Symptoms of Allergic rhinitis and suspected associated factors

IV. Discussion

Over half (56.7%) of the students had symptoms suggestive of allergic rhinitis, similar to the 54.1% observed by Falade [12] et al., in Ibadan. However, the rate was higher than the prevalence rate of 40.5% and 29.6% observed by Sogebi [14] et al in Sagamu., and Desalu [13] at al at Ilorin respectively.

However, we also discovered that symptoms were more prevalent in respondents whose parents had not received university level education, a variable we could not objectively assess given that most [approx. 97%] parents in our study had completed university level education.

House dust was found to be the commonest allergen in this study, followed by allergy to cold. This finding was corroborated by Desalu et al.,who also found dust to be the commonest allergen in their research. Bauchau et al., [15], however, in a similar study carried out in Western Europe, found grass pollen as the commonest implicated allergen to the development of allergic rhinitis symptoms, followed by dust mites. This difference can probably be explained by the difference in aero-biological factors pertaining to the two, very different climates.

Concerning the prevalence of allergic dermatitis and physician diagnosed asthma amongst study population, Falade found 18.4% had physician-diagnosed asthma, and 26.1% had allergic dermatitis which is much lower than this study population with 30.0% and 25.8% respectively.

Allergic rhinitis was found to frequently co-exist with asthma, a finding shared by independent studies in Europe [16 – 21] as well as the I.S.A.A.C study [22]. A significant percentage of respondents with allergic rhinitis also experienced recurrent itchiness and redness of the eyes, and symptoms of persistent sneezing and runny nose over the previous 12 months with a positive family history of allergy. This is corroborated by similar findings in Europe [23-28] as well as by Falade et al in Ilorin, Nigeria [12], suggesting that allergic rhinitis is a manifestation of an underlying atopic pathology, and therefore invariably co-exists with other atopic manifestations such as asthma, allergic conjunctivitis and allergic dermatitis. Comparison of variables concerning family history of allergy, physician-diagnosed asthma, history suggestive of allergic dermatitis, allergic conjunctivitis with positive responses for history suggestive of allergic rhinitis showed a statistically significant relationship which suggest that patients with a family history of allergy, physician-diagnosed asthma, allergic dermatitis or allergic conjunctivitis were more likely to develop allergic rhinitis.

In studying the impact of such symptoms on the daily lives of our respondents, we found that daily activities were significantly affected by allergic symptoms in only 7.25% of subjects. While 15% of respondents had missed a class as a result of these symptoms, and 7.4% felt their symptoms affected their academic performance in some ways. This values are much lower than documented by AbdulRahman [7] in the middle East where 72% of individuals suffered significant hindrance in work/job performance and 56% had missed work/school as a result of symptoms of allergic rhinitis in the previous 12months.

V. Conclusion

Allergic rhinitis is a commonly seen disorder amongst teenagers and young adults in this environment. It frequently co-exists with other forms of allergy- dermatitis, conjunctivitis and asthma. The commonest identified allergens in this environment is dust and cold, with symptoms most severe at the beginning of the harmattan season.

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