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THE PREVALENCE OF ALLERGIC RHINITIS AND RISK FACTOR AMONG SAUDI ADULTS IN MAKKAH CITY, SAUDI ARABIA

ALWAFI M[*1], ALKHANANI M[2], ALTHOBAITI S[3], ALSHAHRANI N[4], BONAIS N[5], ALZUBEDI A[5], ALSUBAIEE M[5], ALBARAKATI M[5], ALMUFADHI E[5], ALSALEM S[5] AND ALJASER M[5]

1: General practitioner, Umm Al-Qura University, Makkah City, Saudi Arabia

2: Otolaryngology resident, King Said Medical City, Riyadh, Saudi Arabia

3: Otolaryngology Resident, King Abdulaziz Specialist Hospital, Taif, Saudi Arabia

4: General Surgery Resident, Military Hospital in Jazan, Saudi Arabia

5: Medical Intern, Saudi Arabia

***Corresponding Author: E Mail: Dr.mayada1991@gmail.com**

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ABSTRACT

Rhinitis is a common disease, and its prevalence is increasing worldwide. Several studies have provided evidence of an association between obesity and rhinitis. Although smoking and obesity have been extensively analyzed as risk factors of allergic rhinitis. The aims of our study were (i) to evaluate the prevalence of rhinitis using the A Quantitative Score for Allergic Rhinitis (SFAR) questionnaire in Saudi adults and (ii) to evaluate the associations of and body mass index (BMI) with rhinitis. The overall age-adjusted prevalence of rhinitis was 54.6% in men and 45.2% in women. A higher prevalence was observed in the younger population than in the older population. Active smoking and obesity were positively associated with rhinitis. In contrast, particularly in the 20- to 54 -year age-group and obesity were positively associated with rhinitis. The results of the present study suggest that obesity may havedifferent effects on the development of rhinitis.

Keywords: allergic diseases, Obesity: Overweight, prevalence, Gulf region

INTRODUCTION

Allergic Rhinitis is defined as inflammation of the nasal membrane and is characterized by a symptom complex that consists of any combination of the following: sneezing, nasal congestion, nasal itching, and rhinorrhea. Allergic rhinitis is the most common cause of rhinitis. It is an extremely common condition. Although allergic rhinitis is not a life-threatening condition [1]. Allergic rhinitis is an IgE-mediated inflammation of the nasal mucosa that is frequently triggered by inhaled allergens [2]. The symptoms are often ignored by patients and physicians, and most affected individuals do not report their complaints or seek treatments [3]. Clinical findings include recurrent sneezing, rhinorrhea, nasal congestion (stuffy nose), nasal/palatal itching, and itchy/watery eyes. These manifestations are associated with daytime somnolence, disturbed sleep, reduced activity and absenteeism from school or work [4]. Patients may also have other atopies (e.g., sinusitis, conjunctivitis, asthma, and atopic dermatitis) [5] or demonstrate poor response to atopy treatment [2].

Allergic Rhinitis associated with bothersome symptoms, which may impair usual daily activities, quality of sleep and productivity [2]. Frequently, allergic rhinitis is associated with comorbidities including asthma [3], [4]. Overall, the quality of life is significantly impaired in subjects with allergic rhinitis [5].

The prevalence of allergic rhinitis was estimated in the Asian area around 38.2%. especially in low and middle-income countries showed that the prevalence rate of AR has been dramatically raised from 5% to 45% [6]. While research is done in France, 19% of the population have classical symptoms of allergic rhinitis and never seek a doctor. On another hand, research showed 18% in the United Kingdom of total patient visit general practitioner with symptoms of allergic rhinitis [7, 8].

The objective of the present study was to find out the prevalence of allergic rhinitis by the score for allergic rhinitis (SFAR) questionnaire in western of Saudi Arabia and to identify the most affected risk factor and the relationship between allergic rhinitis and obesity especially with a high rate of obesity in the Kingdome.

METHODOLOGY

A cross-sectional study was carried out on 646 Saudi adults in Makkah city by using a questionnaire form depended on the score for allergic rhinitis (SFAR) which contained items on nasal problems and related features, A Quantitative Score For Allergic Rhinitis (SFAR) ranging between 0 and 16 has been developed by experts.

SFAR cut-off value to diagnostic of allergic rhinitis more than 7 [9], the questionnaire form was filled by the investigator himself. A pilot study was conducted to establish whether patients or the investigators understand the questionnaires.

The sample size was calculated by the following formula Sample Size , $n=[DEFF*Np (1-p)]/[(d^2/z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$, and the level of significance was set at 95% and alpha was 5% ,the prevalence was estimated from 20%-30% [10, 11, 12, 13, 1], design effect was 2 and the sample size estimated 646 from male or female on different age group choosing randomly.

The sampling method was a multistage cluster sampling method. Makkah city map divided into four parts (East, West, North, and South) and randomly selected one area of each part and the results were as the following:

West area represents HEJAZ Mall and SOUK ALDIYAFA, east area represents MAKKAH Mall, ALRAJHI Center, and Center Point. North area represents SOUK ALBUHAYRAT, SOUK ALSHWAM, and ALBAIK restaurant. the south area represents Al JROOSHI Mall, City Max, and Center Point.

The Inclusion criteria: adults more than 18 years old, a person who lives in Makkah city for more than five years.

The exclusion criteria; recent nasal surgery and use of prophylactic antihistamines.

RESULT

Three hundred and fifty-five males and two hundred and eighty-four females participated in the validation study (**Table 1**). There was no difference in age among them. Main occupations were student 34.8% and teacher 15.5% (**Figure 1**). Out of the initial 646 individuals, 528 (86%) were diagnosed as suffering from allergic rhinitis at the time of the survey during the consultation. One hundred and forty-six outpatients (26.6%) had SPT to common aeroallergens following the physician's request for allergic tests. 20% of the subjects having performed SPT

were found to be positive to at least one aeroallergen. Thirty-seven percent were associated with another allergy-like bronchial asthma, allergic conjunctivitis or allergic dermatitis.

The most common season that affectedreported that have worsening symptomswas winter 35% followed by spring 18.9 % summer and autumn were less frequent seasons (**Figure 2**). One hundred and ninety one (29.4%) patients were air pollutants was a common trigger. 113 (17.4%) patients reported worsening of symptoms in dusty areas of their homes.

54.3 % who was diagnosed with allergic rhinitis showed at least one of these allergy was running in the family (allergic rhinitis, allergic conjunctivitis, allergic dermatitis, bronchial asthma).

Among adults a more frequent presence of symptomatic allergic rhinitis was significantly associated with being overweight and obese, 31% represents BMI more than 25, 20.9% while representing BMI more than 30.

Table 1: Association between AR and socio-demographic variables

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	355	54.6	54.6	54.7
	Female	294	45.2	45.3	100.0
	Total	649	99.8	100.0	
	Total		100.0		

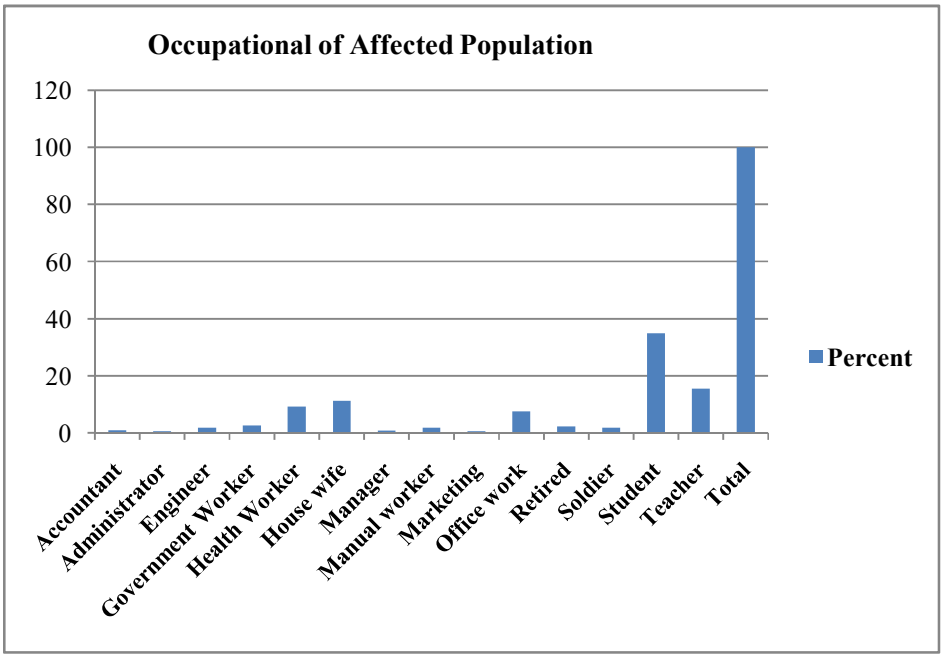

Figure 1: Occupational of Affected Population

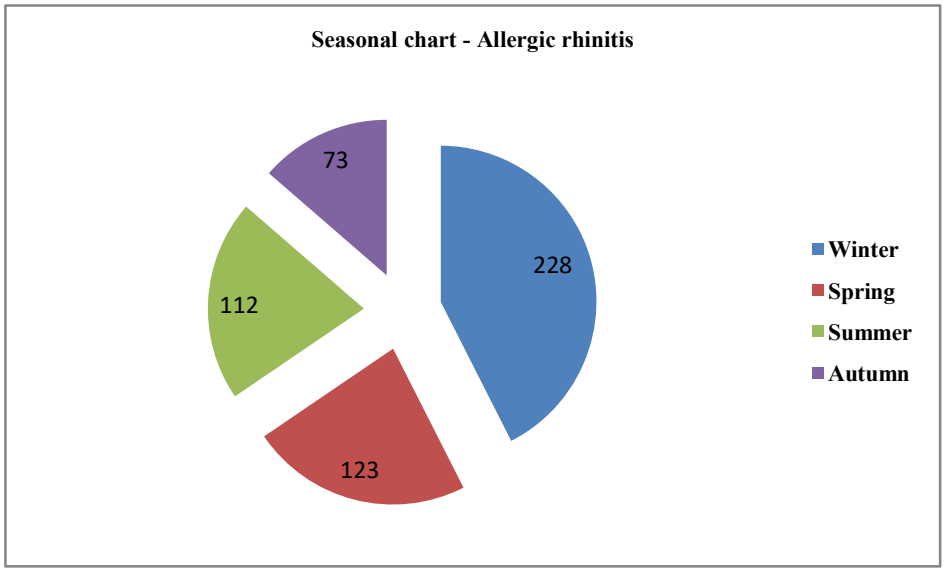

Figure 2: Seasonal chart - Allergic rhinitis

DISCUSSION

There was multiple evidence research that the prevalence of allergic disorders, such as allergic rhinitis and another allergic disease that has been having increased worldwide especially in developed countries [15]. There were several factors involved in the hypothesis in the development of allergic diseases, some of them still have no explanation regarding the increase in the prevalence of allergic rhinitis. However, lifestyle maybe including such as physical inactivity and obesity. However, there was proof that obesity is associated with allergic diseases that may be due to immunological affects the adipose tissue that has a role in the development of allergies, the link between obesity and allergic rhinitis still unclear [16,17].

Allergic rhinitis is a common respiratory disorder however it is not a life-threatening condition but it can affecting the quality of life and result in many socioeconomic impacts [18, 19]. In Saudi Arabia, few studies were conducted to access the prevalence of rhinitis and its risk factors among the adult population. There is a lack of studies concerning the association between obesity and allergic rhinitis risk factors.

In the literature, there are clashing reports regarding the influence of body mass index on allergic rhinitis. It found that no confirmatory research has evidence of the relationship between BMI and AR in the current information situation, and

findings could be due to increased disclosure of symptoms in obese individuals or clinical bias. Specific conflicting findings for BMI and atopy have also been found. Our analysis basically confirmed the results of cross-sectional epidemiological studies associated with an increased risk of allergic rhinitis in adults being overweight and obese. However, with increased BMI, the adverse effect elevated: getting obese relative to being overweight increased the risk of allergic rhinitis significantly.

Many studies have also shown that the as sociation between obesity and allergic rhi nitis b-

etween females is more likely to be identi fied, which is not consistent with our curr ent findings.

On the other hand, it was inconclusive for overweight/obesity and rhinitis. Such a relationship is biologically plausible and can be mediated by inflammatory pathways involving cytokines including tumor necrosis factors similar to asthma [20]. Eighteen case-control reports from China found a 3-fold increase in the risk of allergic rhinitis associated with obesity [21]. A large cross-sectional study of Japanese adults found that a decreased risk of rhinitis without asthma was associated with obesity and heavy smoking [14]. An earlier study of Japanese adolescents showed that a decreased risk of allergic conjunctivitis with or without allergic rhinitis was associated with obesity [22].

In conclusion, the current study supports the evidence of a significant relationship between body mass index and allergic rhinitis.

CONFLICT OF INTEREST

The author denialany conflicts of interest with all respect to the authorship and the publication of this article.

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