

The Prevalence of Rhinitis and Its Association with Smoking in A Nationwide Survey of Saudi Adults, 2017

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ABSTRACT

Background: Rhinitis is a common worldwide disease affecting more than 20% of people in many western and developing countries as well.

Objectives: Assessing the prevalence of rhinitis and its association with smoking in a nationwide survey of Saudi adults. **Methods:** A national wide survey based on a cross-sectional study conducted among general adult Saudi population during the period from August to November 2017

Results: About 32.85% of the subjects suffered from nasal allergies, 29.5% suffer from runny nose, 31.4% had sneezing and itchy nose and 28.9% had red and itchy eye. The overall prevalence of rhinitis after diagnosis and revising the medical history of respondents was 32.8%. There was a significant association between the younger ages, male gender with the prevalence of rhinitis. Also, a highly significant association was found between smoking status and higher prevalence of rhinitis.

Conclusion: The overall prevalence of rhinitis was high among Saudi subjects and it was significantly associated with smoking status. Educational programs and good lifestyle and habits would play an important role in decreasing the prevalence of rhinitis among Saudi population.

Keywords: Rhinitis, prevalence, association, smoking, KSA.

INTRODUCTION

Rhinitis is a common worldwide disease that associated with hypersensitivity of the nose membranes due to immunological inflammation resulting from several types of allergens. Its symptoms are associated with itchy and runny nose, nasal obstruction as well as sneezing which reveal with or without using medication^(1,2).

It is a global disease affecting more than 20% of people around the world⁽³⁾ and its increasing prevalence was detected in many western and developing countries as well⁽⁴⁾. The prevalence of rhinitis is associated with asthma with a higher prevalence among males in childhood and adolescence^(5,6) while during adulthood females are more susceptible than males⁽⁷⁾.

The proper management of asthma include identifying the causes of rhinitis and removing the allergen risk^(8,9). Various risk factors are associated with etiology of rhinitis including genetic and environmental factors. The most important environmental risk factor is smoking and its association with rhinitis and asthma among children and adults⁽¹⁰⁻¹²⁾

AIM OF THE STUDY

This study aimed at assessing the prevalence of rhinitis and its association with smoking in a nationwide survey of Saudi adults.

SUBJECTS AND METHODS

Study design and setting:

This was a national wide survey based on a cross-sectional study conducted among general adult Saudi population during the period from August to November 2017.

Study population and sample size:

This study included Saudi adult subjects aged from 20-60 years old living in thirteen governorates of Saudi Arabia. Adolescents and non-nationals were excluded from the study. The sample size was calculated using web calculator as the proportions of response to the questions is 50% and a margin of error of 5%, a confidence interval of 5%⁽¹³⁾ thus about 2000 subjects were enrolled in the study. The study subjects were chosen from a number of different governorates in Saudi Arabia to be able to generalize the findings.

The study was done after approval of ethical board of Taif university.

Study tools and data processing:

A questionnaire was adopted after reviewing the available literature and studies conducted about rhinitis and its association with smoking. The questions and validity of the questionnaire were reviewed by the supervisors then tested by a pilot study among 50 Saudi subjects. After the pilot study, the questionnaire was modified, validated and translated into simple Arabic form. The subjects were divided into two groups according to having rhinitis

or not. The data were processed using SPSS version 22.0 for windows and the significant value was P. value ≤ 0.05 .

RESULTS

Demographics of the included respondents:

The age of the participants ranged from 20-40 years old among 69.8% and 41-60 years old among 30.2%. Most of the subjects (59.35%) were males and 40.65% were females. The smoking status showed that 47.1% of respondents were smokers and 52.9% were non-smokers (Table 1).

Table. (1): Demographics of Saudi subjects (n = 2000)

	N.	Percentage (%)
20 - 40	1396	69.80%
41 - 60	608	30.20%
Male	1187	59.35%
Female	813	40.65%
Smoking status		
Smoking	942	47.10%
Non-smoking	1058	52.90%

Prevalence of rhinitis

The respondents answered 4 questions related to the definition and diagnosis of rhinitis where 32.85% of the subjects suffered from nasal allergies, 29.5% suffer from runny nose, 31.4% had sneezing and itchy nose and 28.9% had red and itchy eye (Table. 2). The prevalence of rhinitis after diagnosis and revising the medical history of respondents was 32.8%.

Table. (2): Prevalence of rhinitis (n = 2000)

Definition and diagnosis of rhinitis?	N.	Percentage (%)
Do you suffer from nasal allergies?		
Yes	657	32.85%
No	1343	67.15%
Do you usually suffer from watery runny nose		
Yes	592	29.60%
No	1408	70.40%
Do you usually suffer sneezing and itchy nose?		
Yes	628	31.40%
No	1372	68.60%
Do you usually suffer from watery red, itchy eye?		
Yes	578	28.90%
No	1422	71.10%

Association between prevalence of rhinitis and demographics of included participants:

Table 3 clarified the association between prevalence of rhinitis and participants' demographics. There was a significant association between the younger ages, male gender with the prevalence of rhinitis. Also, a highly significant association was found between smoking status and higher prevalence of rhinitis.

Table (3): Association between AR KAP and socio-demographic variables

	Rhinitis (n=656)	Controls (n=1344)	P-value
Age			
20-40	477	919	0.052
	-72.70%	-68.40%	
40-60	179	425	
	-27.30%	-31.60%	
Gender			
Male	411 (62.7%)	776 (57.73%)	0.035
Female	245 (37.3%)	412 (30.7%)	
Smoking status			
Yes	478 (72.9%)	464 (34.5%)	0.001
No	178 (27.1%)	880 (65.5%)	

DISCUSSION

Rhinitis is a common respiratory disorder however it is not a life threatening condition but it can decrease the quality of life and result in many socioeconomic impacts^(14, 15). In Saudi Arabia, few studies were conducted to access the prevalence of rhinitis and its risk factors. There is a lack in studies concerning the association between smoking and rhinitis risks.

The prevalence of rhinitis was 32.8% among the Saudi subjects and this prevalence was higher than other studies from different parts of the world as lower incidence affecting around 19% of the community population was found in Europe while it was 8 -16% in the United States of America (USA)^(16, 17). Also, a lower prevalence was found in Arab countries in about 9% of the middle-east population⁽¹⁴⁾. Over that, different prevalence rates were found around the world ranging from 10-45% due to variation in weather and allergens^(18, 19).

The higher prevalence of rhinitis was associated with younger age, male gender and smoking status^(5, 6).

In the same pattern, rhinitis often affects adolescents and young grownups and its prevalence decreases with getting older after 20 years^(20, 21). Also, rhinitis was higher among men as shown by many studies but another study in Japan showed unexpected results that the prevalence was higher among women than men⁽²²⁾.

As for the smoking status and its association with higher prevalence of rhinitis, many studies reported the same criteria of association between smoking and higher prevalence of rhinitis⁽¹⁰⁻¹²⁾. In contrast, other studies showed contradictory results about the association of smoking with prevalence of asthma^(23, 24). However being the first study to assess the prevalence of rhinitis in KSA and its association with smoking it has some limitations as the respondents inform their symptoms and depend on their experience to report the prevalence. Also, the type of the rhinitis even allergic or non-allergic was underestimated.

CONCLUSION

The overall prevalence of rhinitis was high among Saudi subjects and it was significantly associated with smoking status. Educational programs and good lifestyle and habits would play an important role in decreasing the prevalence of rhinitis among Saudi population.

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