

## Allergic Rhinitis Symptoms, Causes and Treatment among Medical Students in Basra City

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### ABSTRACT

**Background:** Allergic rhinitis (AR) is a chronic upper respiratory disorder that has an impact on performance, attendance at work, and education, and is a growing global health concern.

**Objective:** The aim of the present investigation was to study the allergic rhinitis in Iraqi medical students and treatment schedules. **Patients and methods:** A cross-sectional study obtained through a web-based structured questionnaire was used to collect both qualitative and quantitative data. 359 peoples with AR have taken part in this study.

**Results:** The most prevalent bothersome symptoms in AR patients were 72% sneezing, and it's important to note that females experienced these symptoms with more severity than males. 82% of those observed had allergy to dust, 60% took loratadine for therapy. 78% preferred tablets as a dosage form and 60% of both males and females used vitamin C as adjuvant.

**Conclusion:** It has been determined that medical university students frequently experience allergic rhinitis, with a slightly higher incidence among females. Sneezing is the common symptom, dust appeared as major allergen and loratadine was the most used drug by the patients.

**Keywords:** Allergic rhinitis, Treatment, Causes, Medical students.

### INTRODUCTION

Allergic rhinitis is an atopic disorder that causes nasal pruritus, clear rhinorrhea, postnasal drip, and nasal congestion as symptoms <sup>[1]</sup>. One of the most common chronic diseases globally, it is brought on by immune system reactions to inhaled allergens through the immunoglobulin E (IgE) receptor <sup>[2]</sup>. Seasonal AR accounts for 20% of cases, perennial AR for 40%, and mixed AR accounts for 40% of cases. AR can be classified as seasonal (intermittent) or perennial (chronic) <sup>[3]</sup>.

There are several risk factors for developing AR, including atopy in the family, male, the presence of allergen-specific IgE, serum IgE levels greater than 100 IU/mL before age 6, and higher socioeconomic class <sup>[4]</sup>. The cornerstones of managing AR continue to be anti-inflammatory therapies, symptomatic medication, and avoiding allergens <sup>[5]</sup>.

For the treatment of allergic rhinitis, pharmacological options include intranasal corticosteroids, leukotriene receptor antagonists, oral and topical antihistamines, intranasal anticholinergics, decongestants, and intranasal cromolyn (Nasal crom) <sup>[6]</sup> <sup>[7]</sup>, other treatment option is allergen immunotherapy which usually need to be saved for individuals whose best avoidance practices and medication are either poorly tolerated or ineffective in controlling their symptoms<sup>[8]</sup>.

Approximately 67% of AR patients have sneezing, 63% have dust allergies, 51% take the second-generation antihistamine loratadine as a therapy, and 41% prefer tablet dosage forms, according to a study conducted in Iraq <sup>[9]</sup>.

The aim of this work was to study the allergic rhinitis symptoms, triggering agents and treatment schedules in Iraq medical students.

### MATERIALS & METHOD

**Study Design:** This cross-sectional population survey was carried out through the period from December 9 to December 26, 2022. A web-based structured questionnaire was utilized to collect both qualitative and quantitative data for this investigation.

**Participants and eligibility Criteria:** Based on earlier investigations, a screening questionnaire form was created for this aim. In this study, only respondents who were willing to provide information and were conveniently available for data collection were included. The study eliminated those who did not feel comfortable providing information.

#### Data collection, sampling and recruitment:

All of the respondents were asked to complete this survey, which had both closed-ended and open-ended questions. Only the responses to these questionnaires were employed as the study's data source, and it was distributed online across telegram groups and other social media. This Arabic-language survey asked for information like demographic information of the participants, allergic rhinitis symptoms, triggers and medications and their dosage form.

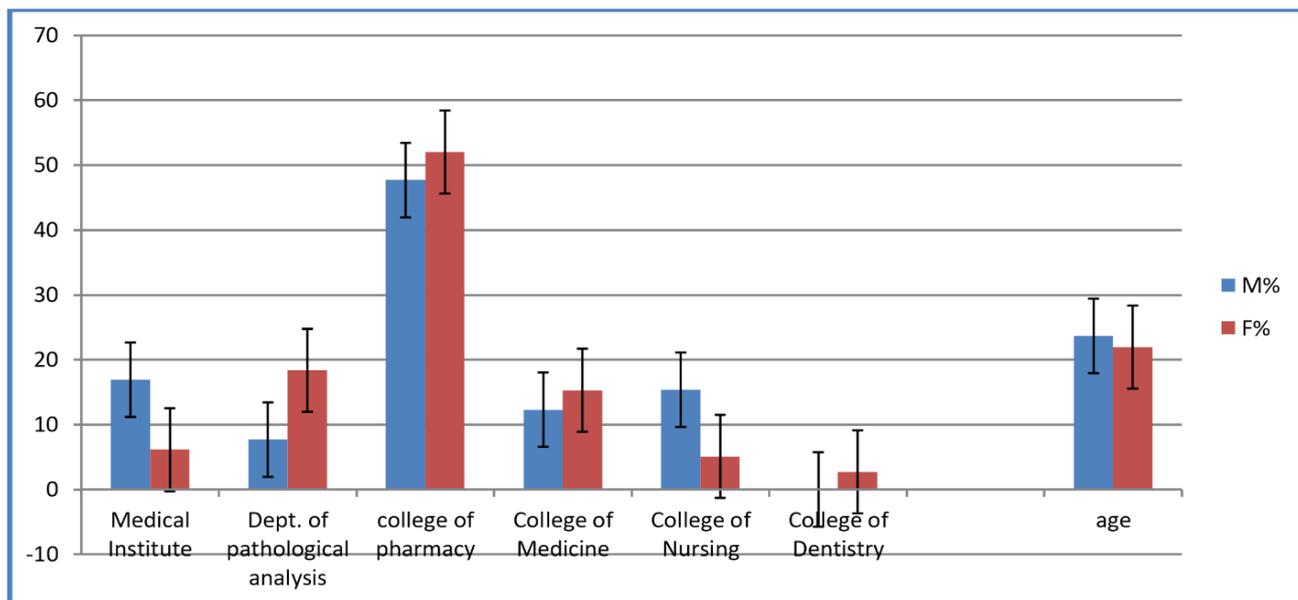
**Data analysis:** The data were collected, then using statistical analysis and using descriptive T-test, tables and diagrams to display the outcomes of Microsoft Excel programs for Windows.

### RESULTS

**Demographic data:** A total of 359 volunteers participated in the study; 294 were females (mean age was  $21.94 \pm 2.39$  years) and 65 were males (mean age was  $23.68 \pm 3.78$  years). According to the results showed at both table (1) and figure (1), there was no significant differences in age between males and females.

**Table (1):** Details of participated patient

	Male	Female
Age (Years)	23.68±3.78	21.94±2.39
Patient number	65	294
Institute	M %	F %
Medical Institute	16.92308	6.122449
Dept. of pathological analysis	7.692308	18.36735
college of pharmacy	47.69231	52.04082
College of Medicine	12.30769	15.30612
College of Nursing	15.38462	5.102041
College of Dentistry	0	2.721088



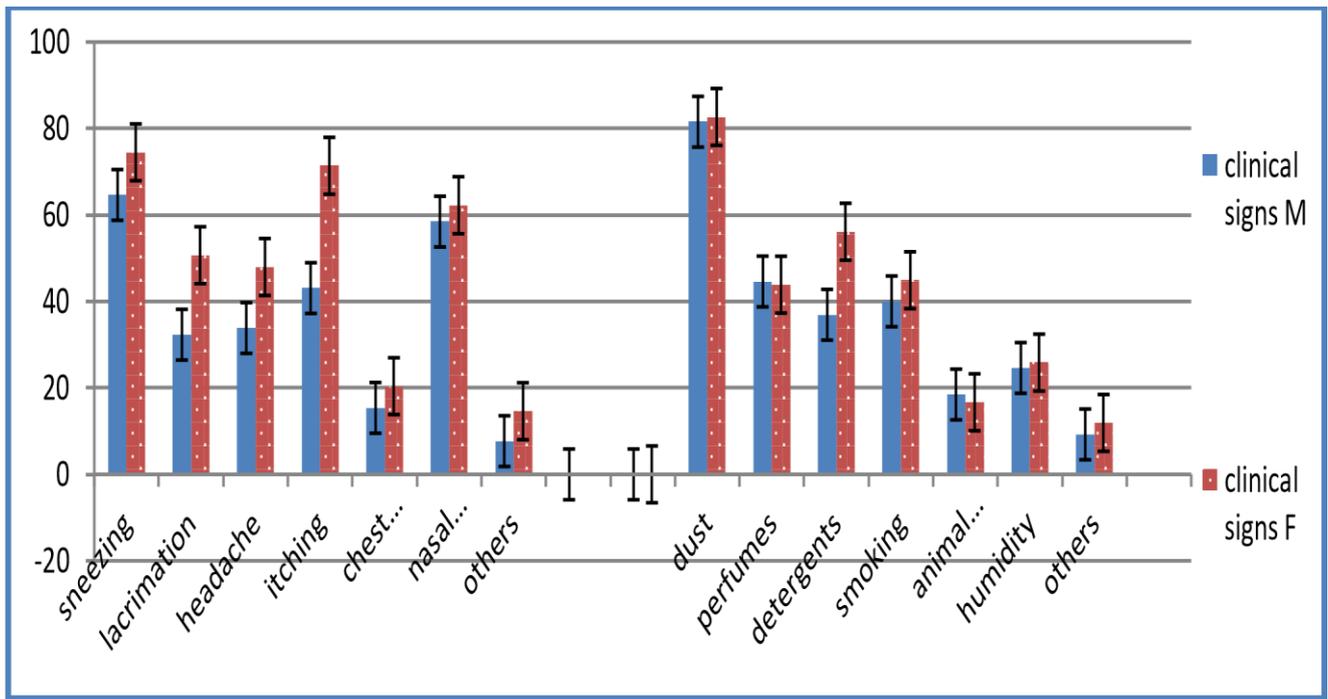
**Figure (1):** Institutions of participant students

**Allergic rhinitis signs and symptoms:**

Table (2) and figure (2) revealed only significant increasing in lacrimation, headache and itching in females' group than in males. All other clinical signs were statistically similar at both genders. When studying the common allergens, dust was the most common allergen in both males and females. All allergens were similar in females and males except for detergents, which were highly significant in females group.

**Table (2):** Allergic rhinitis signs & symptoms in patients and common allergens

	Clinical signs			Allergens	
	M	F		M	F
Rhinorrhea	52.30	65.30	Dust	81.538	82.65
Sneezing	64.61	74.48	Perfumes	44.61	43.87
Lacrimation	32.30	50.68*	Detergents	36.92	56.12*
Headache	33.84	47.95*	Smoking	40	44.89
Itching	43.07	71.35*	Animal dander	18.46	16.66
Chest tightness	15.38	20.40	Humidity	24.61	25.85
Nasal obstruction	58.46	62.24	Others	9.23	11.90
Others	7.692	14.59			



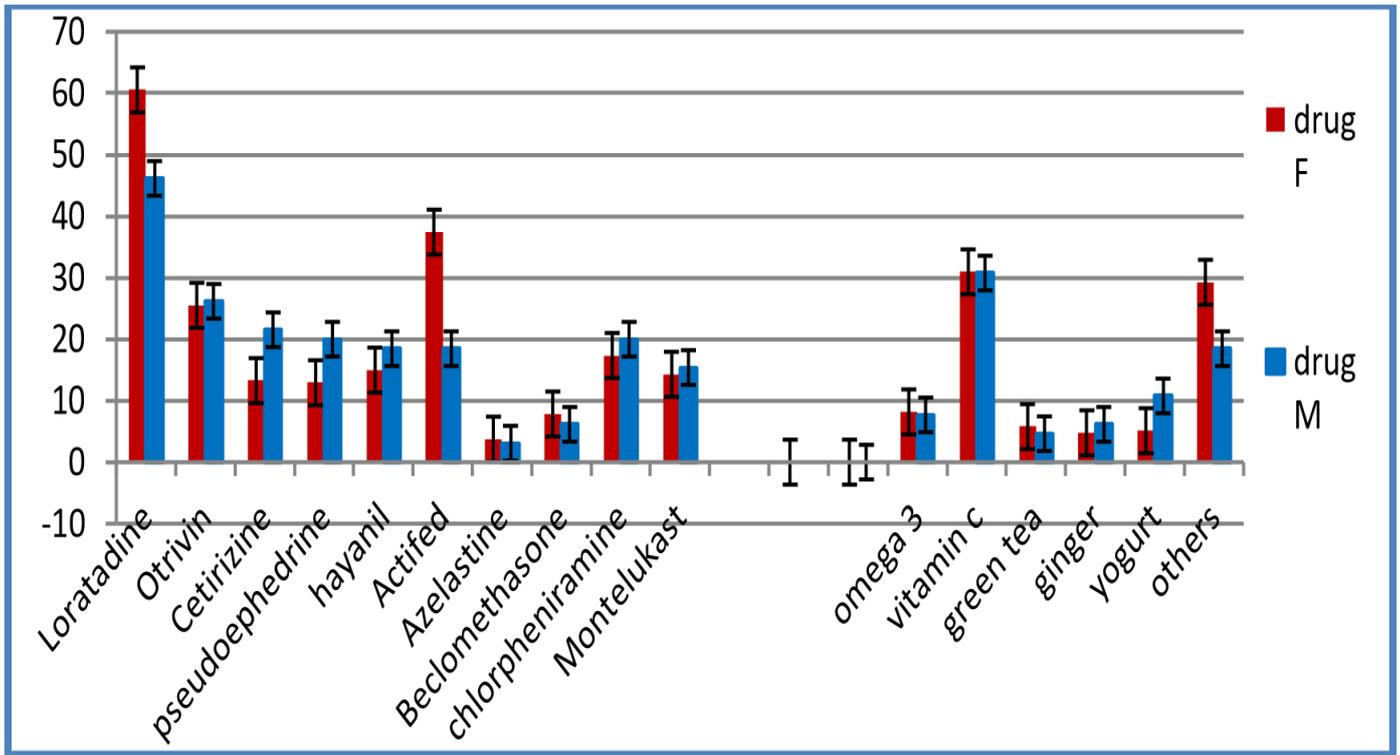
**Figure (2):** Signs & symptoms of allergic rhinitis patients and common allergens

**Allergic rhinitis drugs:**

This study showed that loratadine was the most common drug used in both male and female groups. At female group, loratadine and actifed were significantly more. While, in male group, cetirizine and pseudoephedrine were more used. The common adjuvant treatments were the same in both groups, vitamin C was the most common adjuvant treatment used in both male and female groups (Table 3 and figure 3).

**Table (3):** Drugs and adjuvant treatments used by allergic rhinitis patients

Drug	F	M	Adj.	F	M
Loratadine	60.54*	46.15	omega 3	8.16	7.69
Otrivin	25.51	26.15	vitamin c	30.95	30.76
Cetirizine	13.26	21.53*	green tea	5.78	4.61
Pseudoephedrine	12.97	20*	ginger	4.76	6.15
Hayanil	14.96	18.46	yogurt	5.10	10.76
Actifed	37.41*	18.46	others	29.25*	18.46
Azelastine	3.74	3.07			
Beclomethasone	7.82	6.15			
Chlorpheniramine	17.34	20			
Montelukast	14.28	15.38			

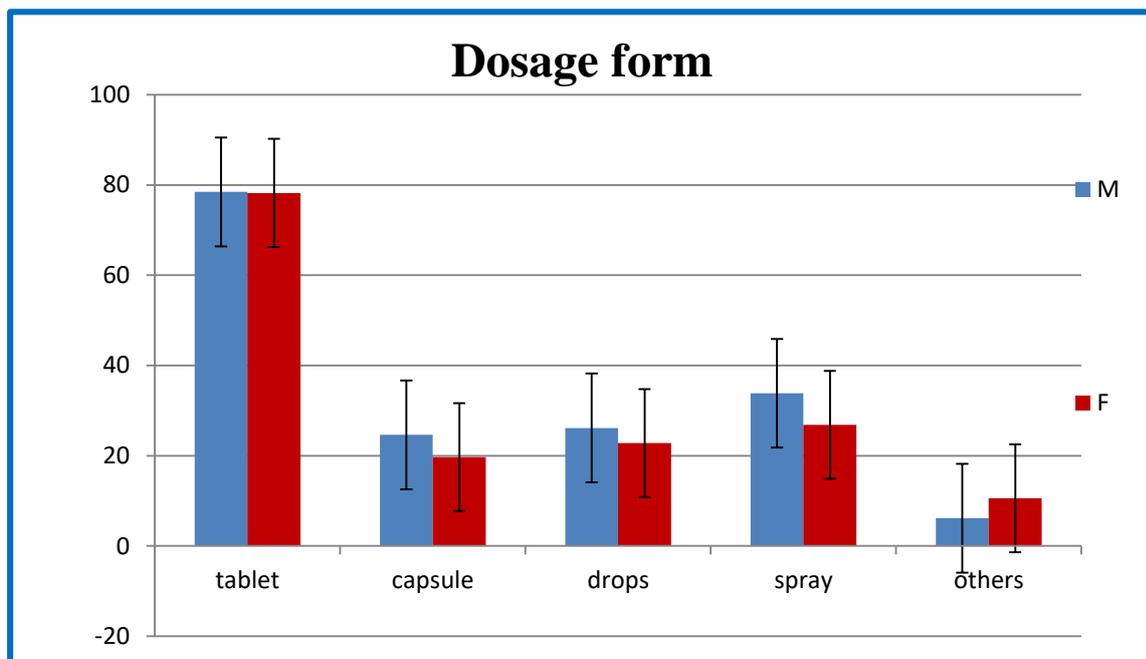


**Figure (3):** The most popular medications and adjuvant therapies used to treat people with allergic rhinitis

The dosage forms of drugs showed no significant differences between males and females included at the present study. According to data in table (4) and figure (4) the patients favored tablets over alternative dosage forms.

**Table 4.** Dosage form of allergic rhinitis drugs

	Dosage form	
	M	F
<b>Tablet</b>	78.46154	78.23129
<b>Capsule</b>	24.61538	19.72789
<b>Drops</b>	26.15385	22.78912
<b>Spray</b>	33.84615	26.87075
<b>Others</b>	6.153846	10.54422



**Figure (4):** Dosage form of allergic rhinitis drugs.

## DISCUSSION

Patients with AR may have a range of bothersome clinical symptoms, most of which are not adequately recognized and reported, delaying medical therapy and eventually lowering the quality of life for the patient in terms of their health <sup>[10]</sup>.

In this study, a number of variables that may improve AR patients' therapy and quality of life were considered. At least 72% of AR patients reported sneezing, 63% reported rhinorrhea, 61% reported nasal obstruction, 47% reported lacrimation, 46% reported itching, 45% reported headaches, and 19% reported chest tightness as their most bothersome symptoms. It's worth mentioning that severity of these symptoms in females are more than in males. These irritating symptoms were included as one of the most prevalent AR symptoms in a prior work conducted in the Middle East region, which comprised five nations (Egypt, Iran, Lebanon, Saudi Arabia, and the United Arab Emirates) <sup>[11]</sup>.

Histamine, tryptase, chymase, kinins, and heparin are among the mediators that are quickly released <sup>[12, 13]</sup>. Leukotrienes and prostaglandin D<sub>2</sub> are two more mediators that the mast cells manufacture quickly. These mediators ultimately cause the symptoms through a variety of interactions, through the identification of the most common symptoms, the impact of AR on the population, and the highlighting of treatment gaps. A better understanding of AR and treatment of it will lead to improvements in the overall patient's management and life quality <sup>[14]</sup>.

The research also showed that at least 82% of patients had allergic reactions after coming into contact with dust. This was anticipated given that Iraq's changing environment is recognized for its rising frequency of sandstorms. In other nations with a similar

environment to the United States, such as Saudi Arabia and the United Arab Emirates, where at least 74% and 59% of patients with allergies to dust, respectively, were present, dust was a trigger factor for AR <sup>[15]</sup>.

According to a previous study, Iraq's south and north are home to desert regions, while the Tigris and Euphrates rivers both feed the rich lower Mesopotamian plain. Dust and sandstorms happen every year, peaking from May to October <sup>[16]</sup>.

As a result of the majority of the patients participating in the current study being women who frequently use perfumes, around 44% of those who were allergic to such products. Additionally, 17% of patients and at least 44% of patients exhibited allergies to cigarette smoke and to animal dander. The reason for this reduction may be social constraints or an unfavorable environment that make it challenging to care for or raise dogs, yet in the near future. As more age groups in society express a preference for specific kinds of animals, there is a great possibility that the number of people allergic to animal dander will increase. This extremely low number was also reported by other nations, such as Iran and the UAE, which in 2021 reported 18% and 4% of allergic patients to animals respectively <sup>[14]</sup>.

Additionally, the current study revealed that loratadine was used by more than half of the patients to treat AR symptoms, which may be connected to cost (it is inexpensive) or effectiveness in treating symptoms and few adverse effects. Antihistamine of the second generation, loratadine has no sedative effects. When used frequently or as a preventative measure when allergic reaction symptoms are at their worst, second-generation oral antihistamines have been shown to considerably reduce rhinorrhea, itching, and sneezing <sup>[15]</sup>.

Diphenhydramine and chlorpheniramine, first-generation sedating antihistamines, were utilized by the patients in the study at lower rates than second-generation oral antihistamines (17% and 18% respectively). The older first generation antihistamines have been demonstrated to have a detrimental impact on patients' functioning and cognition due to their somnolence effect, despite the fact that they are still helpful in lowering AR symptoms. As a result, they are not frequently suggested for the treatment of AR. For people with more severe AR symptoms, intranasal steroids are also recommended as the first line of treatment in addition to second-generation antihistamines [16,17].

Results showed that 73% of patients prefer tablets, while 27% of patients prefer spray dosage forms exclusively, 8% prefer both tablets and spray. Oral tablets are more affordable than other dosage forms and simpler for self-administration while preserving dose accuracy [18]. As a result, it was discovered that recognizing the undesired symptoms was essential for managing AR, and emphasizing the most prevalent symptoms will surely aid in the selection of the most effective treatment to be used. Subject to future testing, such information medications might aid in developing customized regimens for persons with AR.

## CONCLUSION

According to this research, allergic rhinitis is a common condition among medical university students, with a slightly greater incidence among females. Patients can considerably improve their quality of life and prevent serious issues by understanding and managing allergic rhinitis, which includes avoiding triggers and dealing with immunotherapy, and pharmacological treatment.

- **Funding:** The expenditure of research was done by researchers.
- **Conflict of interest:** No competing interests

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