Clinical Manifestations of Allergic Rhinitis among Patients Attending BaqubahTeaching Hospital: A Cross Sectional Study

Abdul Salam Abdul Wahid Ibrahim

Abstract

Background: Allergic rhinitis (AR) is a prevalent atopic condition characterized by nasal symptoms such as nasal obstruction, rhinorrhea, sneezing, and itching.

Objective: This study aimed to investigate the demographic distribution, clinical manifestations, and age differences between genders among patients with AR.

Methods: A cross-sectional study was conducted among 100 patients diagnosed with AR at Baqubah Teaching Hospital. Data on demographic characteristics, clinical manifestations, and age differences between genders were collected and analyzed using descriptive statistics and independent sample t-tests.

Results: The majority of participants were females (56%) and housewives (38%), with a mean age of 29.73 years. Common symptoms included sneezing (93%), rhinorrhea (83%), nasal itching (74%), and nasal obstruction (92%). There was no significant age difference between genders ($p = 0.139$).

Conclusion: Our findings highlight the need for comprehensive assessment and personalized management of AR considering demographic characteristics and associated comorbidities. Further research is warranted to explore underlying mechanisms and evaluate tailored interventions for diverse patient populations.

Keywords: Allergic rhinitis, demographic distribution, clinical manifestations, gender differences, personalized management

Introduction

Allergic rhinitis (AR) is an atopic condition characterized by symptoms such as nasal obstruction, clear rhinorrhea, sneezing, postnasal drip, and nasal pruritus. It affects approximately one in six individuals and is linked to considerable morbidity, reduced productivity, and healthcare expenditures. Traditionally perceived as a nasal airway disorder, the unified airway theory has redefined AR as part of a systemic allergic response, sharing underlying systemic pathology with conditions like asthma and atopic dermatitis [1].

AR can be categorized as seasonal (intermittent) or perennial (chronic), with approx. 20% of cases being seasonal, 40% perennial, and 40% exhibiting features of both [2]. Besides nasal symptoms, individuals with AR may also experience associated allergic conjunctivitis, dry cough, Eustachian tube dysfunction, and chronic sinusitis. Upon diagnosis, AR can be managed through various approaches, best one is intra-nasal glucocorticoids, which is serving as first-line therapy [1].

The prevalence of allergic rhinitis (AR) has seen a significant rise since the 1990s [3-5]. Overall , it affects approximately 25% and 40% of children and adults, respectively. Notably, about 80% of AR symptoms manifest before the age of 20, peaking between the ages of 20 and 40 before gradually declining [6, 7]. In children, the incidence rate of AR within the first 5 years of life stands at 17.2%, with the highest diagnosis frequency occurring between 24 and 29 months (2.5%) [8]. Meta-analyses have revealed sex-specific differences in AR prevalence, with males being more affected during childhood and females showing a higher prevalence in adolescence [9, 10].

The increasing prevalence of AR over the years can be attributed to various risk factors, including global urbanization. Many studies comparing AR prevalence between urban and rural areas have consistently demonstrated higher rates in urban settings [11, 12]. Urbanization brings about elevated levels of pollutants, such as traffic-related pollutants and particulate matter 2.5 (PM2.5), which can exacerbate pollen-sensitized AR [13-15]. Reports indicate a higher prevalence of AR in urban locales compared to rural regions [12]. In addition, climate changes have led to prolonged pollen seasons, as observed in Europe over the last three decades, contributing to more frequent seasonal allergies [16].

Rhinitis encompasses a spectrum of inflammatory conditions affecting the nasal mucosa, with etiological classifications providing insights into their diverse origins (Table 1). IgE-mediated rhinitis, characterized by allergic reactions, involves inflammation driven by IgE antibodies and eosinophilic infiltration, manifesting as either intermittent or persistent symptoms. Autonomic rhinitis encompasses various causes, including vasomotor disturbances, drug-induced reactions, hormonal fluctuations, and non-allergic rhinitis with eosinophilia syndrome (NARES).Rhinitis that caused by infections it's commonly viral in nature, arises from viral, bacterial, or fungal infections. Finally, idiopathic rhinitis denotes cases where the underlying cause remains elusive despite investigation. Understanding these classifications aids in targeted diagnosis and management strategies tailored to the specific etiological factors contributing to rhinitis onset and progression [17].

Table 1: Etiological classification of rhinitis [17]

Classification	Description
IgE-mediated (Allergic)	Involves inflammation of the nasal mucosa triggered by IgE antibodies, leading to eosinophilic and Th2-cell infiltration in the nasal lining. Further categorized as intermittent or persistent.
Autonomic	Encompasses various causes, including vasomotor disturbances, drug-induced rhinitis (rhinitis medicamentosa), hypothyroidism, hormonal fluctuations, and non-allergic rhinitis with eosinophilia syndrome (NARES).
Infectious	Precipitated by infections, with viral, bacterial, or fungal origins being common.
Idiopathic	Denotes cases where the exact cause cannot be determined, remaining unknown despite evaluation and investigation.

Methods

2.1 Study Design and setting

A cross-sectional research design was conducted in the consultancy clinic of Baqubah Teaching Hospital from the period of 1st July 2023 to 1st march 2024..

2.2 Study population and sampling

The study population were patients with allergic rhinitis attending the ENT (Ears, Nose, and Throat) consultancy clinic of Baqubah Teaching Hospital

All patients were invited to participate and a convenience sample, who accepted to participate, were included in the current study.

Sample size was 100 patients.

2.3 Data Collection

A structured questionnaire was developed after an extensive literature review, and filled personally by us for each patient.

2.5 Ethical Consideration

The study was conducted in accordance with ethical principles. Participation was voluntary, and confidential. Participants were free to withdraw from the study at any point without providing a reason. The study aimed to be beneficial and harmless to the participants.

2.6 Statistical Analysis

Data analysis was performed using SPSS version 25.0. Descriptive statistics were used to summarize sociodemographic characteristics, and clinical manifestations. Independent sample t tests were applied for quantitative variables comparison. A significance level of $p < 0.05$ and a 95% confidence interval were used.

Results

Demographic Distribution of Study Participants: Table 2 and Figure 1

The study included 100 participants diagnosed with allergic rhinitis, comprising 56% females and 44% males. Regarding occupations, the majority were housewives (38%) and students (33%). The mean age of the participants was 29.73 years with a standard deviation of 11.522. Among the participants, 13% reported history of eczema and asthma, 52% reported a history of conjunctivitis, and 17% reported a history of drug sensitivity.

Table 2: Demographic Distribution of Study Participants

Demographic	**Frequency**	**Percent%**
Sex		
Female	56	56
Male	44	44
Occupation		
Worker	2	2
Animal Breeder	2	2
Baker	2	2
Farmer	11	11
Housewife	38	38
Student	33	33
Teacher	2	2
Worker	10	10
History of Asthma		
No	87	87
Yes	13	13
History of Eczema		
No	87	87
Yes	13	13
History of Conjunctivitis		
No	48	48
Yes	52	52

History of Drug Sensitivity		
No	83	83
Yes	17	17
Total	**100**	**100**
Age Mean ± Sd. (Years)	**29.73 ± 11.522**	

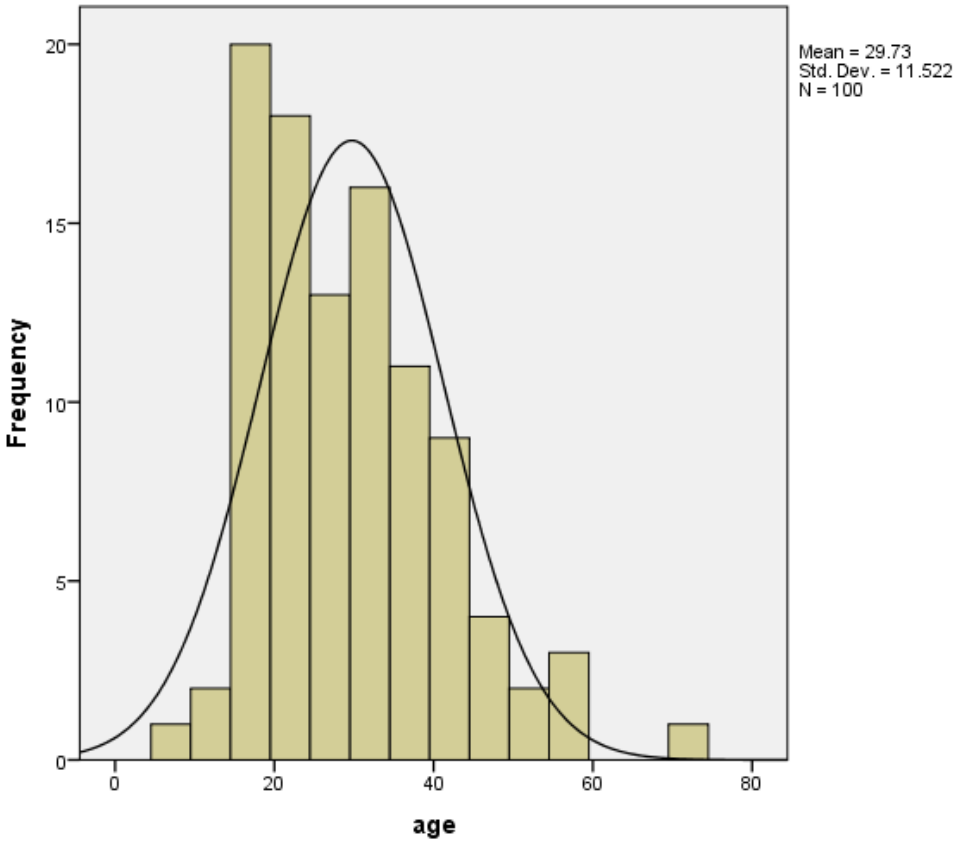

Figure 1: Age Distribution of Study Participants

Allergic Rhinitis Manifestations: Table 3

The allergic rhinitis manifestations were evaluated among the participants. Sneezing was reported by 93% of the participants, rhinorrhea by 83%, nasal itching by 74%, and nasal obstruction by 92%.

Table 3: Allergic Rhinitis Manifestations

Symptom	Frequency	Percent%
Sneezing		
No	7	7
Yes	93	93
Total	100	100
Rhinorrhea		
No	17	17
Yes	83	83
Total	100	100
Nasal Itching		
No	26	26
Yes	74	74
Total	100	100
Nasal Obstruction		
No	8	8
Yes	92	92
Total	100	100

Age Difference between Genders among Patients with Allergic Rhinitis: Table 4

Among patients with allergic rhinitis, the mean age for females was 28.21 years (SD = 10.337) and for males was 31.66 years (SD = 12.735). An independent sample t-test showed a non-significant difference in age between genders ($p = 0.139$).

Table 4: Age Difference between Genders among Patients with Allergic Rhinitis

Mean	**Age Mean ± Sd. (Years)**	**Independent sample t test *p* value**
Female	28.21 ± 10.337	**0.139**
Male	31.66 ± 12.735	

Discussion

The demographic breakdown of participants enrolled in this study on allergic rhinitis offers significant insights into the prevalence and distinctive features of the condition within the surveyed population. Notably, the study revealed a majority of female participants, comprising 56% of the total sample size. This observation resonates with established literature, which consistently indicates a heightened prevalence of allergic rhinitis among women in comparison to men [18]. The underlying factors contributing to this gender disparity are multifaceted, encompassing hormonal influences and inherent variations in immune responses between the sexes. By exploring the nuanced interplay of hormonal fluctuations, genetic predispositions, and immunological mechanisms, researchers may unveil novel therapeutic targets and intervention strategies tailored to address the specific needs of female patients afflicted by allergic rhinitis. Thus, the gender distribution observed in this study underscores the imperative for further investigations aimed at elucidating the complex determinants shaping the epidemiology and pathogenesis of allergic rhinitis across diverse demographic cohorts.

Regarding occupations, the study found that housewives and students comprised the largest proportions, indicating that allergic rhinitis affects individuals across various occupational backgrounds, although further investigation into occupational exposures may be warranted.

The reported mean age of participants, standing at 29.73 years, serves as a pivotal indicator that allergic rhinitis transcends age boundaries, manifesting across diverse age groups and underscoring its prevalence throughout the lifespan. This observation resonates with findings from previous studies, which similarly documented a peak prevalence of allergic rhinitis among both young adults and

older individuals [19]. Such age distribution highlights the pervasive nature of allergic rhinitis, indicating its potential impact on individuals across different life stages. By recognizing the wide-ranging susceptibility to allergic rhinitis across age demographics, healthcare practitioners can adopt more nuanced approaches to diagnosis, treatment, and preventive interventions tailored to meet the distinct needs of patients at various life phases. Moreover, understanding the age-specific patterns of allergic rhinitis prevalence paves the way for targeted public health initiatives and educational campaigns aimed at raising awareness and promoting early intervention strategies across diverse age cohorts. Thus, the convergence of age-related data underscores the necessity for comprehensive, age-tailored approaches to allergic rhinitis management, aiming to optimize patient outcomes and enhance quality of life across the lifespan.

The documentation of participants' medical histories revealing occurrences of asthma, eczema, conjunctivitis, and drug sensitivity underscores the intricate interconnection between allergic rhinitis and other allergic conditions. This observation underscores the necessity for healthcare providers to conduct comprehensive patient assessments, taking into account potential comorbidities, to formulate effective management strategies. The coexistence of these allergic conditions within the same individual suggests shared underlying mechanisms and potential common triggers, necessitating a holistic approach to patient care.

Parallel findings from a study conducted in Tehran, Iran, further reinforce the importance of integrated approaches to allergic disease management [20]. The recognition of similar associations in diverse geographical settings underscores the universal nature of these interrelations and emphasizes the imperative for collaborative efforts among healthcare professionals to address the multifaceted nature of allergic diseases comprehensively. By adopting integrated management

strategies that acknowledge the interconnectedness of allergic conditions, healthcare providers can optimize treatment outcomes, mitigate symptom burden, and enhance patients' overall quality of life.

The evaluation of allergic rhinitis manifestations among participants revealed common symptoms such as sneezing, rhinorrhea, nasal itching, and nasal obstruction. These findings are consistent with typical presentations of allergic rhinitis reported in the literature, confirming the clinical relevance and symptomatology associated with the condition [21].

In terms of age differences between genders among patients with allergic rhinitis, the study found a non-significant difference in mean age between females and males. While this finding contrasts with some previous studies suggesting a higher prevalence of allergic rhinitis in younger age groups and among females [18,19], it highlights the need for further exploration of demographic factors and their associations with allergic rhinitis.

Conclusion and Recommendations

Conclusions:

1. Understanding the demographic characteristics and clinical manifestations of allergic rhinitis is crucial for effective management and treatment planning. Our study revealed a predominance of female participants, common symptoms such as sneezing, rhinorrhea, nasal itching, and nasal obstruction, and associations with other allergic conditions like eczema and conjunctivitis.

2. The non-significant difference in mean age between genders among patients with allergic rhinitis suggests that the condition affects individuals across various age groups, highlighting the need for comprehensive healthcare approaches that consider diverse demographic factors.

3. Further research is warranted to explore the underlying mechanisms and risk factors associated with allergic rhinitis, as well as to investigate the effectiveness of tailored interventions and management strategies for different patient populations.

Recommendations:

1. Healthcare providers should prioritize comprehensive assessments and personalized treatment plans for patients with allergic rhinitis, considering individual symptomatology, comorbidities, and demographic characteristics.

2. Public health initiatives should focus on raising awareness about allergic rhinitis and its associated symptoms, risk factors, and management options among healthcare professionals, patients, and the general population.

3. Future research endeavors should emphasize longitudinal studies and prospective cohort designs to elucidate the long-term impact of allergic rhinitis on patient outcomes, quality of life, and healthcare utilization, as well as to evaluate the efficacy of emerging therapeutic modalities and preventive interventions.