



CLINICAL SYMPTOM PATTERNS OF ALLERGIC RHINITIS: A CROSS-SECTIONAL STUDY OF 120 PATIENTS IN A TERTIARY CARE CENTRE

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ABSTRACT

Background: Allergic rhinitis (AR) is a common chronic atopic disorder with significant impact on quality of life. Despite its high prevalence, systematic evaluation of symptom distribution and patient-perceived severity in routine clinical practice is limited. This study aimed to assess the distribution and severity of key symptoms, sneezing, rhinorrhoea, and nasal congestion along with demographic characteristics, duration of symptoms, the most troublesome symptom, and the association between symptom severity and gender among patients with allergic rhinitis. **Materials and Methods:** A hospital-based cross-sectional observational study was conducted in the Department of Otorhinolaryngology at DY Patil Medical College and Hospital, Navi Mumbai. A total of 120 adult patients aged 18–60 years with a clinical diagnosis of allergic rhinitis were included using convenience sampling. Data were collected using a structured proforma documenting demographic details, symptom duration, severity grading (mild, moderate, severe), and patient-identified most troublesome symptom. Statistical analysis was performed using SPSS version 26, with the Chi-square test applied to assess gender associations. **Observations:** The mean age of participants was 34.6 ± 10.8 years, with a slight male predominance. More than half of the patients reported symptoms for over one year. All patients presented with sneezing, rhinorrhoea, and nasal congestion. Sneezing was the most severe and most troublesome symptom, while rhinorrhoea and nasal congestion were commonly of moderate severity. No significant association was found between gender and symptom severity. **Conclusion:** Allergic rhinitis commonly presents as a chronic condition in young adults, with sneezing being the dominant and most troublesome symptom. Symptom-focused assessment can aid in early diagnosis and individualized management.

KEYWORDS

Allergic rhinitis, Sneezing, Nasal congestion

INTRODUCTION

Allergic rhinitis (AR) is a common chronic atopic disorder characterised by IgE-mediated inflammation of the nasal mucosa, resulting in symptoms such as sneezing, clear rhinorrhoea, nasal congestion, postnasal drip, and nasal pruritus (Akhoury & House, 2025). It affects approximately one in six individuals worldwide and is associated with significant morbidity, impaired quality of life, reduced work and school productivity, and increased healthcare costs (Lakhani et al., 2012). Although often perceived as a minor or self-limiting condition, AR can substantially interfere with sleep, daily functioning, and overall well-being, particularly when symptoms are persistent or poorly controlled (Lakhani et al., 2012).

Allergic rhinitis was previously considered a disease confined to the nasal passages; however, it is now recognised as part of a systemic allergic inflammatory response under the “united airway” concept (Nur Husna et al., 2022). This concept highlights the close anatomical and immunological relationship between the upper and lower airways and explains the frequent coexistence of AR with asthma, allergic conjunctivitis, chronic rhinosinusitis, and atopic dermatitis (Lakhani et al., 2012). The presence of AR has been shown to adversely affect asthma control and increase disease burden, emphasising the importance of early diagnosis and appropriate management (Nur Husna et al., 2022).

Clinically, allergic rhinitis may present as seasonal, perennial, or mixed, depending on the pattern of allergen exposure (Akhoury & House, 2025). Seasonal AR is commonly associated with exposure to outdoor allergens such as pollens, while perennial AR is more often linked to indoor allergens, including house dust mites, moulds, and animal dander (Nur Husna et al., 2022). However, many patients are polysensitized and experience symptoms throughout the year, limiting the usefulness of this traditional classification (Lakhani et al., 2012). The Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines, therefore propose classification based on symptom duration (intermittent or persistent) and severity (mild or moderate–severe), providing a more clinically relevant framework that reflects disease burden and quality-of-life impairment (Nur Husna et al., 2022).

The pathophysiology of allergic rhinitis involves a type I hypersensitivity reaction predominantly driven by T helper 2 immune responses (Nur Husna et al., 2022). Allergen exposure leads to IgE

production, mast cell activation, and release of inflammatory mediators such as histamine and leukotrienes, producing early-phase symptoms including sneezing and rhinorrhoea (Nur Husna et al., 2022). This is followed by a late-phase inflammatory response characterised by eosinophilic infiltration and persistent nasal congestion (Nur Husna et al., 2022). Recent evidence also implicates epithelial barrier dysfunction in facilitating allergen penetration and perpetuating chronic inflammation (Nur Husna et al., 2022).

Among the clinical manifestations of AR, sneezing, rhinorrhoea, and nasal congestion are the most prominent and frequently reported symptoms (Lakhani et al., 2012). Nasal congestion is often perceived as the most troublesome symptom due to its association with sleep disturbance, fatigue, and impaired concentration (Lakhani et al., 2012). The severity and relative impact of these symptoms vary among individuals and may be influenced by demographic factors, duration of disease, and environmental exposures (Allergic Rhinitis: Clinical Manifestations, Epidemiology, Pathogenesis, and Diagnosis - UpToDate, n.d.).

Despite the high prevalence of allergic rhinitis, systematic evaluation of symptom distribution, patient-perceived severity, and demographic correlates in routine practice remains limited. This study aims to assess the distribution and severity of key symptoms—sneezing, rhinorrhoea, and nasal congestion—along with patients' demographic profile, duration of symptoms, the most troublesome symptom, and the association between symptom severity and gender. These findings may help improve symptom-focused assessment and individualised management of allergic rhinitis.

METHODOLOGY

Study Design and Setting

This was a hospital-based cross-sectional observational study conducted in the Department of Otorhinolaryngology at DY Patil Medical College and Hospital, Navi Mumbai, a tertiary care referral centre.

Study Participants and Sampling

The study included 120 adult patients who attended the ENT outpatient department and were clinically diagnosed with allergic rhinitis. Patients were enrolled using a convenience sampling technique, wherein consecutive eligible patients presenting during the study

period.

Eligibility Criteria

Patients aged 18–60 years presenting with symptoms suggestive of allergic rhinitis, such as sneezing, rhinorrhoea, or nasal congestion and not on antihistamines or corticosteroids in the preceding two weeks were included. Patients with nasal polyposis, chronic rhinosinusitis, acute upper respiratory tract infections, bronchial asthma requiring daily controller therapy, and pregnant women were excluded from the study.

Sample Size Calculation

All patients presenting to the study site during the data collection period were consecutively screened, and all individuals who fulfilled the predefined inclusion and exclusion criteria were recruited into the study.

Data Collection

Data were collected using a structured proforma that included demographic details (age and gender), duration of symptoms, identification of the most troublesome symptom, and severity of sneezing, rhinorrhoea, and nasal congestion. Symptom severity was graded as mild, moderate, or severe based on patient-reported perception at the time of presentation.

Statistical Analysis

Data were entered into Microsoft Excel 2021 and analysed using Microsoft Excel 2021 and SPSS (Version 26) software. Categorical variables were expressed as frequencies and percentages. The Chi-square test was applied to assess the association between gender and symptom severity. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

Written informed consent was obtained from all participants. Confidentiality and anonymity of patient data were strictly maintained throughout the study.

RESULTS

Demographic Characteristics and Duration of Symptoms

A total of 120 patients with allergic rhinitis were included in the study. The mean age of the study population was 34.6 ± 10.8 years. The majority of patients (60%) belonged to the 21–40 year age group, followed by 30% in the 41–60 year age group. There was a slight male predominance with a male-to-female ratio of 1.18:1.

More than half of the patients (54.2%) reported symptoms for more than one year, suggesting chronic disease at the time of presentation.

Table 1. Demographic Profile and Duration of Symptoms (n = 120)

Variable	Category	Number (%)
Age (years)	18–20	12 (10.0)
	21–40	72 (60.0)
	41–60	36 (30.0)
Gender	Male	65 (54.2)
	Female	55 (45.8)
Duration of symptoms	< 6 months	20 (16.7)
	6–12 months	35 (29.2)
	> 1 year	65 (54.2)

Symptom Severity Distribution

All patients presented with the classical triad of sneezing, rhinorrhoea, and nasal congestion. Sneezing was the most severe symptom overall, with 45% of patients reporting severe sneezing. Moderate rhinorrhoea (50%) and moderate nasal congestion (45%) were the most frequently observed severity grades for those symptoms.

Table 2. Severity Distribution of Allergic Rhinitis Symptoms (n = 120)

Symptom	Mild n (%)	Moderate n (%)	Severe n (%)
Sneezing	18 (15.0)	48 (40.0)	54 (45.0)
Rhinorrhoea	24 (20.0)	60 (50.0)	36 (30.0)
Nasal Congestion	24 (20.0)	54 (45.0)	42 (35.0)

Most Troublesome Symptom and Gender Association

Sneezing was identified as the most troublesome symptom by the majority of patients (68.3%), followed by rhinorrhea (20%) and nasal congestion (11.7%). Sneezing remained the predominant troublesome

symptom across both genders.

Chi-square analysis revealed no statistically significant association between gender and the most troublesome symptom ($\chi^2 = 1.84, p > 0.05$).

Table 3. Gender-wise Distribution of Most Troublesome Symptom (n = 120)

Symptom	Male n (%)	Female n (%)	Total n (%)
Sneezing	44 (36.7)	38 (31.6)	82 (68.3)
Rhinorrhoea	12 (10.0)	12 (10.0)	24 (20.0)
Nasal Congestion	9 (7.5)	5 (4.1)	14 (11.7)

DISCUSSION

In my study, allergic rhinitis (AR) predominantly affected young and middle-aged adults, with most patients belonging to the 21–40 year age group and showing a slight male predominance. This differs from studies by (Katotomichelakis et al., 2017) and (De Bot et al., 2013), which focused on paediatric populations where AR was more common in school-aged children. However, the male predominance observed in my study is comparable to that reported by (De Bot et al., 2013). Importantly, my study found no significant association between gender and the most troublesome symptom, a finding consistent with both paediatric studies, suggesting that gender does not significantly influence symptom severity or perception.

More than half of the patients in my study reported symptoms persisting for longer than one year, indicating that AR commonly presented as a chronic condition. Similar findings were reported by (Katotomichelakis et al., 2017), who observed that perennial AR was associated with greater symptom severity compared to seasonal disease. This supports the association between disease chronicity and increased symptom burden across age groups.

All patients in my study presented with the classical symptom triad of sneezing, rhinorrhoea, and nasal congestion. Sneezing emerged as the most severe and most troublesome symptom, whereas rhinorrhoea and nasal congestion were predominantly of moderate severity. In contrast, (Katotomichelakis et al., 2017), reported nasal obstruction as the most frequent symptom in children, although sneezing and rhinorrhoea were also common. These differences may reflect age-related variations in symptom perception and reporting. (De Bot et al., 2013) similarly, demonstrated higher nasal symptom scores among sensitised children, emphasising the relationship between sensitisation and symptom severity.

The predominance of sneezing in my study aligns with findings by (Wu et al., 2023), who identified more severe upper respiratory symptoms in patients with weed pollen–dominant sensitisation, suggesting a possible seasonal or pollen-related component in patients with prominent sneezing. Although allergen sensitisation was not assessed in my study, this comparison highlights the relevance of symptom-based phenotyping.

While asthma comorbidity was not evaluated in my study, the chronic and significant symptom burden observed supports the unified airway concept described by (Eriksson et al., 2011), which demonstrated strong overlap between AR and asthma, with increasing nasal disease burden associated with greater asthma severity.

Overall, my study highlights that allergic rhinitis in adults commonly presents as a chronic condition with sneezing as the dominant and most bothersome symptom, independent of gender. When compared with paediatric and sensitisation-based studies, these findings underscore the importance of symptom-focused assessment and individualised management strategies in allergic rhinitis.

CONCLUSION

The study shows that allergic rhinitis commonly affects young adults and often presents with chronic symptoms. Sneezing was the most predominant, severe, and troublesome symptom, while rhinorrhoea and nasal congestion were also frequent with moderate to severe intensity. No significant association was found between gender and symptom severity or perception. Recognising baseline symptom patterns and patient-perceived severity can support early diagnosis, effective counselling, and individualised management of allergic rhinitis in routine clinical practice.

REFERENCES

1. Akhouri, S., & House, S. A. (2025). Allergic Rhinitis. In StatPearls. StatPearls Publishing. <http://www.ncbi.nlm.nih.gov/books/NBK538186/>
2. Allergic rhinitis: Clinical manifestations, epidemiology, pathogenesis, and diagnosis-UpToDate. (n.d.). Retrieved December 24, 2025, from <https://www.uptodate.com/contents/allergic-rhinitis-clinical-manifestations-epidemiology-pathogenesis-and-diagnosis>
3. De Bot, C. M., Röder, E., Pols, D. H., Bindels, P. J., Van Wijk, R. G., Van Der Wouden, J. C., & Moed, H. (2013). Sensitisation patterns and association with age, gender, and clinical symptoms in children with allergic rhinitis in primary care: A cross-sectional study. *Primary Care Respiratory Journal*, 22(2), 155–160. <https://doi.org/10.4104/pcrj.2013.00015>
4. Eriksson, J., Bjerg, A., Lötvall, J., Wennergren, G., Rönmark, E., Torén, K., & Lundbäck, B. (2011). Rhinitis phenotypes correlate with different symptom presentation and risk factor patterns of asthma. *Respiratory Medicine*, 105(11), 1611–1621. <https://doi.org/10.1016/j.rmed.2011.06.004>
5. Katotomichelakis, M., Iliou, T., Karvelis, I., Giotakis, E., Daniilides, G., Erkotidou, E., Lazaridis, C., & Anastassopoulos, G. K. (2017). Symptomatology Patterns in Children with Allergic Rhinitis. *Medical Science Monitor*, 23, 4939–4946. <https://doi.org/10.12659/MSM.903136>
6. Lakhani, N., North, M., & K. Ellis, A. (2012). Clinical Manifestations of Allergic Rhinitis. *Journal of Allergy & Therapy*, 01(S5). <https://doi.org/10.4172/2155-6121.S5-007>
7. Nur Husna, S. M., Tan, H.-T. T., Md Shukri, N., Mohd Ashari, N. S., & Wong, K. K. (2022). Allergic Rhinitis: A Clinical and Pathophysiological Overview. *Frontiers in Medicine*, 9, 874114. <https://doi.org/10.3389/fmed.2022.874114>
8. Wu, L., Zhang, T., Luo, W., Zheng, X., Zhang, H., Ren, H., Huang, D., Li, G., Wei, C., Dong, L., Sun, X., Zhang, R., Wang, Y., Hu, P., Chen, Y., Zhao, Q., Hao, C., & Sun, B. (2023). Rhinitis symptom in patients with self-reported allergic rhinitis is influenced by sensitization pattern: A cross-sectional study of China. *International Forum of Allergy & Rhinology*, 13(6), 1007–1016. <https://doi.org/10.1002/alr.23098>