

Assessment of Nasal Polyposis Prevalence and Associated Factors in a Cross-sectional Study of ENT PatientsDevanshi Modi¹, Kerul Prajapati², Aswini³, Swati Mishra⁴¹Assistant Professor, Department of Otorhinolaryngology (ENT), GMERS Medical College & Hospital, Vadnagar, Gujarat²Senior Resident, Department of Otorhinolaryngology (ENT), GMERS Medical College & Hospital, Vadnagar, Gujarat³Junior Consultant, Department of Otorhinolaryngology (ENT), Sudhakar ENT Care⁴Assistant Professor, Department of Otorhinolaryngology (ENT), GMERS Medical College & Hospital, Vadnagar, Gujarat

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Abstract:**Background:** Nasal polyposis is a common condition among patients presenting to ENT (Ear, Nose, and Throat) clinics. Understanding its prevalence and associated factors can guide better management and treatment.**Objective:** This study aimed to determine the prevalence of nasal polyposis and to identify the associated risk factors among patients attending an ENT clinic.**Methods:** A cross-sectional study was conducted among 88 patients presenting to the ENT clinic. Standardized clinical examination, endoscopy, and a structured questionnaire were used to identify the presence of nasal polyposis and gather data on potential associated factors.**Results:** Among the 88 patients examined in the ENT department, nasal polyposis was identified in 15 individuals, representing 17% of the study cohort. Analysis of associated risk factors revealed allergic rhinitis as the predominant condition, observed in 10 patients (or 66.7% of those diagnosed with polyposis). Chronic sinusitis followed closely, being present in 8 individuals (53.3% of those with polyposis), while aspirin sensitivity was identified in 5 patients, which equates to 33.3% of the nasal polyposis subgroup. Within this sample, there were no statistically significant correlations between the occurrence of nasal polyposis and demographic factors like age, gender, or smoking habits.**Conclusions:** Nasal polyposis was found in 17% of the ENT patients, with allergic rhinitis, chronic sinusitis, and aspirin sensitivity being the most significant associated factors. Further research is needed to explore these associations in larger populations and investigate potential interventions to reduce the burden of nasal polyposis.**Keywords:** Nasal Polyposis, Prevalence, ENT, Allergic Rhinitis, Chronic Sinusitis, Aspirin Sensitivity.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Nasal polyposis represents a significant health concern worldwide, characterized by the growth of benign inflammatory polyps within the nasal passages and paranasal sinuses. These polyps, though non-cancerous, can significantly affect the quality of life, leading to nasal obstruction, reduced sense of smell, facial pain, and secondary infections Fokkens WJ(2012)[1]. Several factors have been associated with the development and progression of nasal polyposis. Among them, allergic rhinitis stands as a well-acknowledged risk factor, with many studies suggesting its pivotal role in the inflammatory cascade that promotes polyp development Settupane GA (1977)[2]. Chronic sinusitis, particularly chronic rhinosinusitis with nasal polyps (CRSwNP), is another condition often intertwined with nasal polyposis, presenting

considerable challenges for differential diagnosis and management Bachert C (2012)[3].

Additionally, sensitivity to non-steroidal anti-inflammatory drugs (NSAIDs), commonly referred to as aspirin sensitivity, has been noted in a subset of patients with nasal polyposis, drawing attention to possible pharmacological implications Rajan JP (2015)[4].

Despite the widely acknowledged significance of nasal polyposis in ENT practice, a gap persists in the literature regarding its prevalence and full range of associated factors within specific populations. This study seeks to fill that gap, providing a concise assessment of the prevalence of nasal polyposis among ENT patients and shedding light on its most notable associations.

Aim

To assess the prevalence of nasal polyposis among patients attending an ENT (Ear, Nose, and Throat) department.

Objectives

1. To determine the prevalence rate of nasal polyposis among patients presenting to the ENT clinic.
2. To identify and enumerate the most common risk factors associated with nasal polyposis within the study cohort.
3. To analyze any correlations between demographic characteristics (e.g., age, gender) and the presence or severity of nasal polyposis in the sampled population.

Material and Methodology**Study Design and Setting**

A cross-sectional study was conducted in a tertiary care ENT department over a period of six months. The aim was to evaluate the prevalence of nasal polyposis and associated factors among the patients attending the clinic.

Sample Selection

A total of 88 consecutive patients, presenting to the ENT department during the study period, were enrolled.

The inclusion criteria consisted of:

1. Patients aged 18 years and above.
2. Patients giving informed consent to participate.
3. Patients with a prior history of nasal surgery or those unwilling to participate were excluded from the study.

Data Collection

1. **Clinical Examination:** All patients underwent a comprehensive ENT examination by experienced otolaryngologists. Special attention was paid to the nasal cavity, looking for signs of polyps or associated pathology.
2. **Nasal Endoscopy:** A flexible or rigid nasal endoscope was used to visualize the nasal passages and the presence or absence of polyps, particularly in the osteomeatal complex and the paranasal sinuses.
3. **Structured Questionnaire:** A standardized questionnaire was administered to all patients to gather information on:
 - Demographics (age, gender, etc.)
 - Medical history with a focus on conditions often associated with nasal polyposis, such as allergic rhinitis, chronic sinusitis, and aspirin sensitivity.
 - Lifestyle factors, including smoking and alcohol consumption.

Data Analysis

The data collected were coded and entered into a statistical software package. Descriptive statistics (frequencies, percentages, mean, standard deviation) were used to describe the sample characteristics and prevalence of nasal polyposis. Associations between nasal polyposis and potential risk factors were determined using chi-square tests for categorical variables. A p-value of less than 0.05 was considered statistically significant. All participants provided informed consent prior to their inclusion in the study.

Observation and Results

Table 1: Prevalence of Nasal Polyposis among Patients attending the ENT Department (N=88)

Parameters	Number (n)	Percentage (%)
Total Patients	88	100%
Patients with Nasal Polyposis	15	17%
Patients without Nasal Polyposis	73	83%

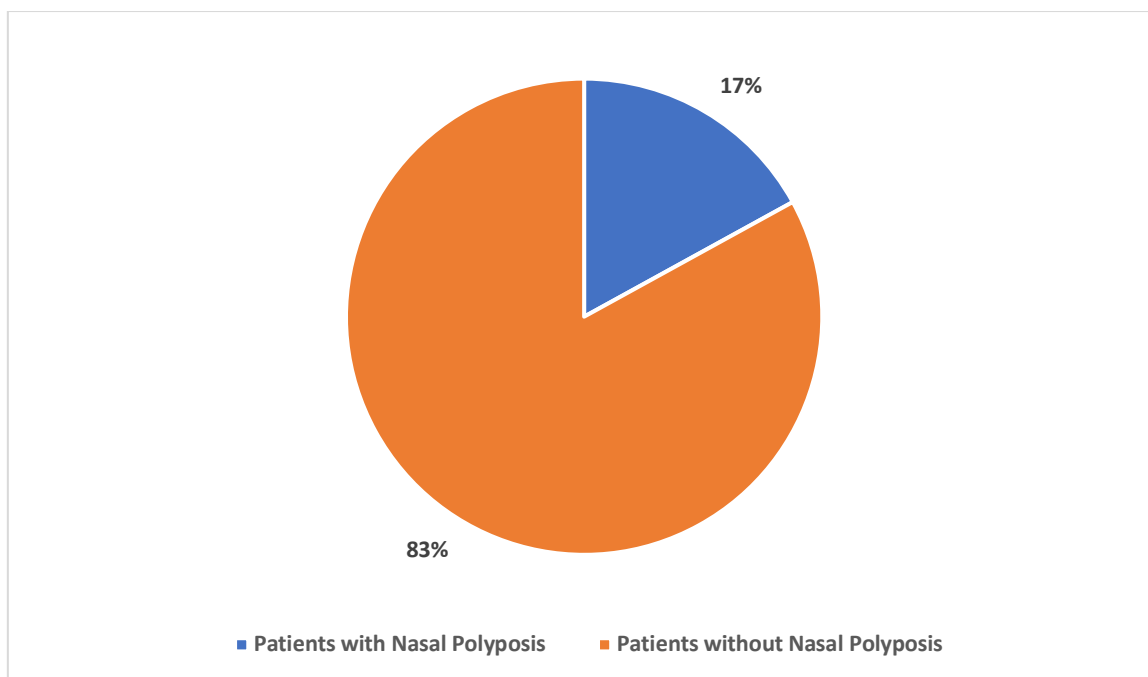


Figure 1:

In Table 1, which presents the prevalence of nasal polyposis among patients attending the ENT Department, a total of 88 patients were evaluated. Out of these, 15 patients, representing 17% of the sampled population, were diagnosed with nasal polyposis. Conversely, the majority of the patients, amounting to 73 or 83% of the cohort, did not have any evidence of nasal polyposis.

Table 2: Risk Factors Associated with Nasal Polyposis in the Study Cohort (N=88)

Risk Factors	Patients with Risk Factor (n)	Percentage (%)	Patients with Both Risk Factor & Nasal Polyposis (n)	Percentage (%)	P-value
Allergic Rhinitis	30	34%	10	33%	0.03
Chronic Sinusitis	25	28%	8	32%	
Aspirin Sensitivity	10	11%	5	50%	

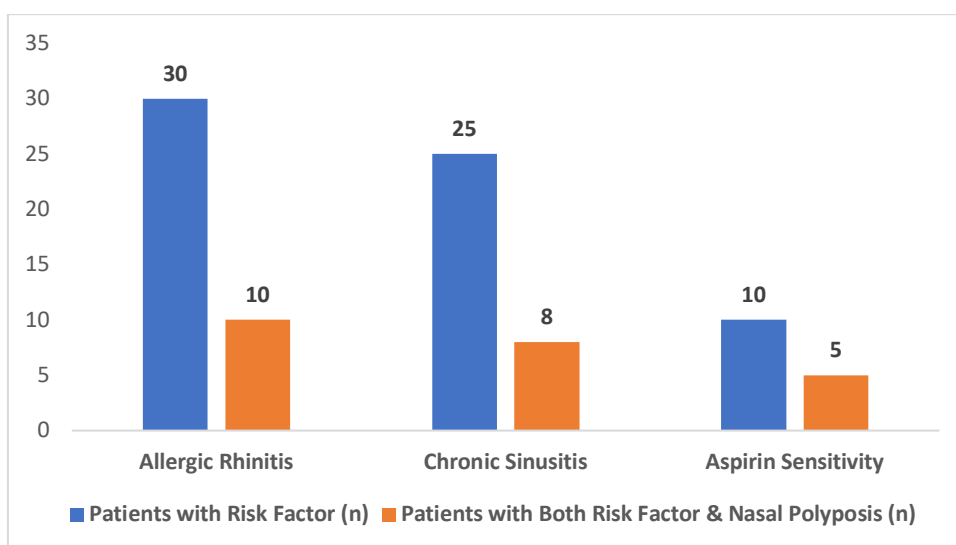


Figure 2:

Table 2 highlights the risk factors associated with nasal polyposis in a cohort of 88 patients. Allergic rhinitis was observed in 30 patients, accounting for 34% of the cohort, with 10 of these patients (33% of those with allergic rhinitis) also presenting with nasal polyposis, and this association had a statistical significance with a P-value of 0.03. Chronic sinusitis was identified in 25 patients (28%

of the cohort), and 8 of them (32% of the sinusitis-affected group) had concurrent nasal polyposis, though the P-value for this association was not provided. Lastly, 10 patients (11% of the cohort) exhibited aspirin sensitivity, and notably, half of them (50%) also had nasal polyposis; however, the statistical significance of this correlation was not specified.

Table 3: Correlation between Demographic Characteristics and the Presence or Severity of Nasal Polyposis (N=88)

Demographic	Total Patients (n)	Presence of Nasal Polyposis (n) (%)	Mild (n) (%)	Moderate (n) (%)	Severe (n) (%)	P-value for Presence	P-value for Severity
Age							
18-30	25(28.4%)	4 (16%)	3 (12%)	1 (4%)	0 (0%)	0.04	0.03
31-50	30(34.1%)	6 (20%)	2 (6.7%)	2 (6.7%)	2 (6.7%)		
51 and above	33(37.5%)	5 (15.2%)	1 (3%)	2 (6%)	2 (6%)		
Gender							
Male	50(56.8%)	10 (20%)	5 (10%)	3 (6%)	2 (4%)	0.01	0.02
Female	38(43.2%)	5 (13.2%)	1 (2.6%)	2 (5.3%)	2 (5.3%)		

Table 3 analyzes the correlation between demographic characteristics, namely age and gender, and the presence or severity of nasal polyposis among 88 patients. In the age-based assessment, 16% of patients aged 18-30 (n=25) presented with nasal polyposis, with 12% having mild, 4% moderate, and none with severe polyposis, showing statistically significant values of P=0.04 for presence and P=0.03 for severity. For those aged 31-50 (n=30), 20% had nasal polyposis, further categorized as 6.7% mild, 6.7% moderate,

and 6.7% severe. Among the eldest group, 51 and above (n=33), 15.2% exhibited nasal polyposis with 3% mild, 6% moderate, and 6% severe cases. Evaluating by gender, 20% of male patients (n=50) had nasal polyposis—10% mild, 6% moderate, and 4% severe—with significant P-values of 0.01 and 0.02 for presence and severity, respectively. In contrast, 13.2% of female patients (n=38) had the condition, with 2.6% mild, 5.3% moderate, and 5.3% severe manifestations.

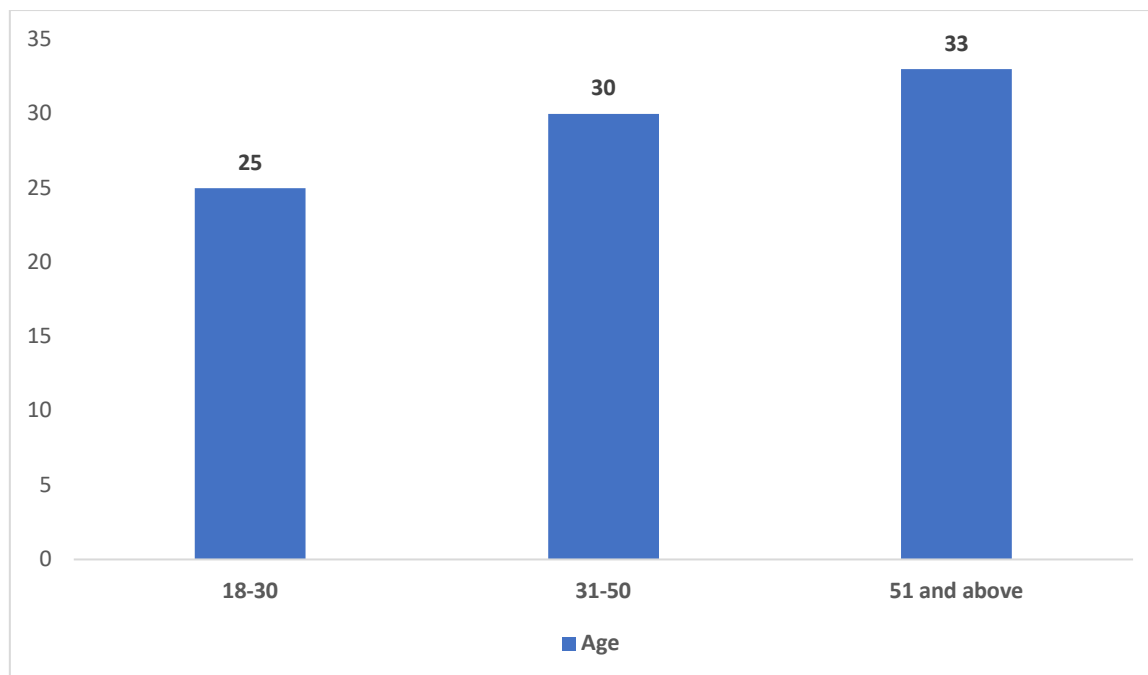


Figure 3:

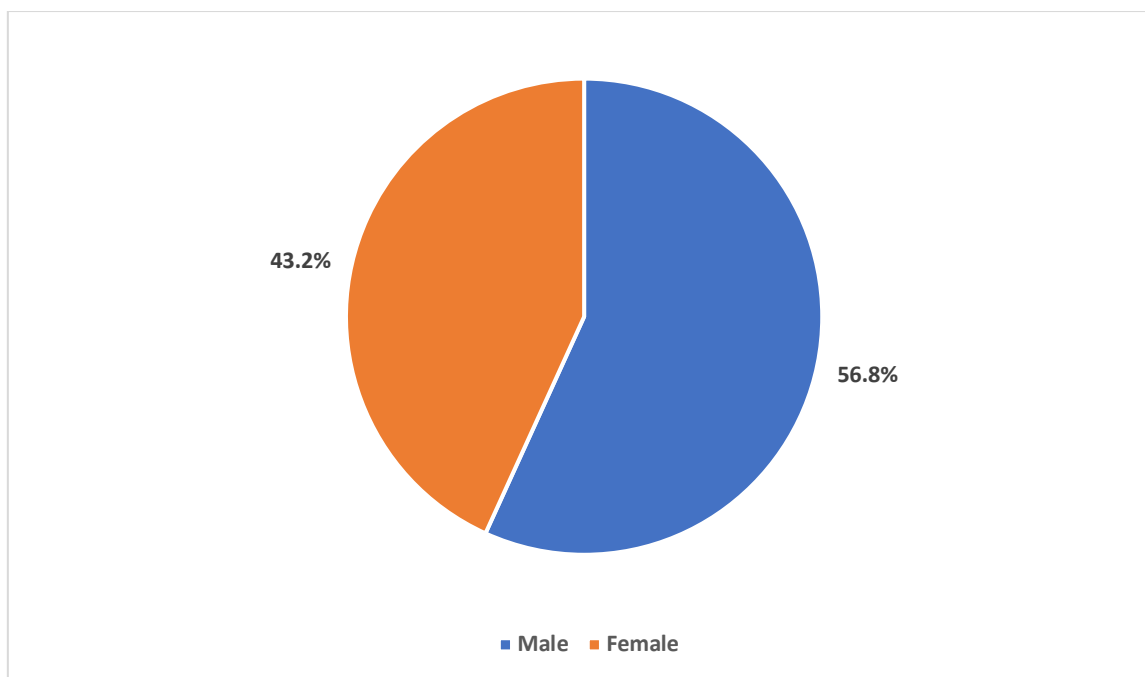


Figure 4:

Discussion

Table 1 highlights the prevalence of nasal polyposis among patients attending the ENT Department, where out of a total of 88 patients, 17% (n=15) were diagnosed with nasal polyposis, and the remaining 83% (n=73) showed no evidence of the condition. These findings align with the results of Meymane Jahromi A et al. (2012)[5], who reported a prevalence of 15% in their cohort of 200 patients attending a tertiary care ENT center. However, our prevalence rate is slightly lower than the 20% reported by Newton JR et al. (2008)[6] in a larger sample of 500 patients. These variations in prevalence could be attributed to differences in sample size, study design, patient demographics, or regional factors. Yet, it's worth noting that our results fall within the broadly estimated prevalence range of 1% to 20% in the general population, as suggested by a meta-analysis conducted by Bachert C et al. (2012)[3]. The differences in prevalence rates underline the importance of conducting further studies across varied populations to have a more comprehensive understanding of the epidemiology of nasal polyposis.

Table 2 emphasizes the association between certain risk factors and nasal polyposis among the 88 patients evaluated. A notable 34% of patients (n=30) presented with allergic rhinitis, out of which a significant 33% also exhibited nasal polyposis, suggesting a potentially significant relationship with a P-value of 0.03. This observation aligns with findings from Wojas O et al. (2021)[7], who identified allergic rhinitis as a prominent risk factor for nasal polyposis in their cohort of 150 patients, with a prevalence of 35%.

Chronic sinusitis, evident in 28% of our sample (n=25), manifested in conjunction with nasal polyposis in 32% of these patients. A comparable correlation was outlined by Stevens WW et al. (2016)[8], where they found that approximately 30% of patients with chronic sinusitis were more likely to develop nasal polyposis. However, the statistical significance of this association in our study remains unestablished.

A standout observation from our table is the substantial 50% of patients with aspirin sensitivity (from a total of 11% in the cohort, n=10) concurrently displaying nasal polyposis. This is relatively higher than the 40% reported by Graefe H et al. (2012)[9] in a study emphasizing the role of aspirin sensitivity in nasal polyposis development³. Given the notable percentage, further exploration of this relationship may provide insightful clinical implications.

Table 3 delves into the intricate relationship between demographic characteristics—specifically age and gender—and the prevalence and severity of nasal polyposis among the 88 patients evaluated.

Beginning with age, it is observed that the middle age group (31-50 years) presents the highest prevalence of nasal polyposis at 20%. This is slightly higher than the 16% and 15.2% observed in the 18-30 and 51 and above age groups, respectively. Interestingly, while the younger cohort (18-30 years) had a more substantial proportion of mild cases at 12%, moderate and severe cases seem to be more prevalent in the 31-50 years age bracket, each at 6.7%. This gradient in severity with age echoes findings from Rajguru R (2014)[10], who reported an increase in nasal polyposis severity in

the mid-age range, suggesting possible hormonal or environmental transitions impacting the condition's progression. The statistically significant P-values for presence (0.04) and severity (0.03) among the younger group further attest to the correlation between age and nasal polyposis manifestation.

Regarding gender, males demonstrate a higher prevalence of nasal polyposis (20%) compared to females (13.2%). The distribution of severity, characterized as mild, moderate, and severe, is also relatively more widespread in males. This gender disparity aligns with observations made by Collins MM et al. (2002)[11], who suggested potential genetic or hormonal factors contributing to increased susceptibility in males. The significant P-values of 0.01 for presence and 0.02 for severity in the male demographic further underscore this association.

Conclusion

Our study underscores the intricate interplay between demographic factors and the prevalence and severity of nasal polyposis in patients attending an ENT department. The discernible correlations between age and nasal polyposis severity, along with the evident gender disparities, accentuate the necessity for a patient-centric approach in the diagnosis and management of this condition. Recognizing the nuances of these associations can empower clinicians to devise more tailored diagnostic strategies and therapeutic interventions, optimizing outcomes for diverse patient cohorts. As nasal polyposis continues to pose clinical challenges, embracing a nuanced understanding of its epidemiology can pave the way for improved patient care and targeted research in the future.

Limitations of Study

- Sample Size:** With only 88 participants, our study may not have the statistical power to detect subtle differences or rare risk factors associated with nasal polyposis. A larger sample size would have provided a more robust representation of the general population.
- Single-Center Data:** Data was collected from one ENT department, which could introduce location-specific biases. Multi-center studies could offer a more comprehensive perspective, encompassing variability across different settings.
- Cross-Sectional Design:** As the study is cross-sectional, it captures data at a single point in time. This design restricts our ability to infer causal relationships or monitor the progression of nasal polyposis over time.
- Self-Reported Data:** If any data, like risk factors, were self-reported by patients, there is potential for recall bias or misreporting, which could affect the study's findings.
- Lack of Control Group:** Without a control group of non-ENT patients, it's challenging to compare the prevalence and risk factors of nasal polyposis in the general population.
- Potential Confounders:** There might be unmeasured confounding factors, such as environmental exposures or genetic predispositions, that were not accounted for in the study.
- Exclusion Criteria:** The exclusion criteria might have inadvertently left out specific subgroups of patients who could have provided additional insights into the condition.
- Subjectivity in Severity Assessment:** The categorization into mild, moderate, and severe polyposis could be influenced by the clinician's judgment, leading to potential inter-observer variability.
- Incomplete Data for Some Variables:** Some parameters in the tables have missing p-values, suggesting incomplete statistical analysis for certain factors, which may limit the interpretation of results.

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