

Prevalence of Sinonasal Pathology Diagnosed by Diagnostic Nasal Endoscopy in a Tertiary Care Hospital: A Retrospective Observational Study

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ABSTRACT

Background

Sinonasal pathologies are common conditions encountered in otorhinolaryngology practice and significantly impact patients' quality of life. Diagnostic Nasal Endoscopy (DNE) plays a crucial role in the accurate diagnosis of these conditions by allowing direct visualization of the nasal cavity and related structures.

Objective

To determine the prevalence and pattern of sinonasal pathologies diagnosed by diagnostic nasal endoscopy in a tertiary care hospital.

Materials and Methods

This retrospective observational study was conducted in the Department of Otorhinolaryngology at Meenakshi Medical College and Research Institute from January 2024 to December 2025. A total of 150 patients presenting with sinonasal complaints and undergoing DNE were included. Demographic details, clinical symptoms, and endoscopic findings were recorded and analyzed using descriptive and inferential statistics.

Results

The majority of patients were in the 21–40 years age group (42.0%) with a mean age of 36.8 ± 12.4 years. There was a male predominance (61.3%). Nasal obstruction (72.0%) was the most common presenting symptom. The most common endoscopic finding was Deviated Nasal Septum (38.7%), followed by Chronic Rhinosinusitis (26.7%) and Nasal Polyps (14.7%). A statistically significant association was observed between age and diagnosis ($p = 0.045$) and between symptoms and diagnosis ($p = 0.032$), while gender showed no significant association ($p = 0.18$).

Conclusion

Diagnostic nasal endoscopy is a safe, reliable, and effective tool for diagnosing sinonasal pathologies. Early and accurate identification of these conditions can facilitate appropriate management and improve patient outcomes.

Keywords: Diagnostic Nasal Endoscopy; Sinonasal Pathology; Deviated Nasal Septum; Chronic Rhinosinusitis; Nasal Polyps; Prevalence

How to cite this article: Shifana A, Muthubabu K, Sravanthi. Prevalence of Sinonasal Pathology Diagnosed by Diagnostic Nasal Endoscopy in a Tertiary Care Hospital: A Retrospective Observational Study. *Int J Drug Deliv Technol.* 2026;16(24s): 572-576. DOI: 10.25258/ijddt.16.24s.72

Source of support: Nil.

Conflict of interest: None

Introduction

Sinonasal disorders constitute a significant proportion of cases encountered in otorhinolaryngology practice and are associated with considerable morbidity affecting quality of life. Common conditions include Chronic Rhinosinusitis, Allergic Rhinitis, and structural abnormalities such as Deviated Nasal Septum, which often present with symptoms like nasal

obstruction, discharge, headache, and reduced sense of smell.¹

Traditional anterior rhinoscopy has limitations in visualizing deeper structures of the nasal cavity, particularly the osteomeatal complex and posterior nasal cavity. This limitation may lead to underdiagnosis or misdiagnosis of sinonasal pathologies.²

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The advent of Diagnostic Nasal Endoscopy (DNE) has revolutionized the evaluation of nasal and paranasal sinus diseases by allowing direct visualization of intranasal anatomy under magnification and illumination. It enables accurate identification of mucosal changes, polyps, anatomical variations, and sources of bleeding.³

DNE is considered a minimally invasive, safe, and reliable outpatient procedure that enhances diagnostic accuracy and helps in planning appropriate medical or surgical management. It is particularly valuable in detecting early lesions that are not visible on routine clinical examination.⁴

Studies have shown that Deviated Nasal Septum is one of the most common structural abnormalities contributing to nasal obstruction, while Chronic Rhinosinusitis remains a leading inflammatory condition affecting the sinonasal mucosa.⁵

Additionally, the prevalence of Nasal Polyps and other sinonasal masses has been increasingly recognized with the routine use of endoscopic evaluation.⁶

Early and accurate diagnosis of these conditions is crucial in preventing complications and improving patient outcomes. DNE not only aids in diagnosis but also serves as a guide for therapeutic interventions and follow-up.⁷

Despite its widespread use, there is limited data on the prevalence and pattern of sinonasal pathologies diagnosed by DNE in tertiary care settings, particularly in developing regions. Therefore, this study aims to evaluate the prevalence and spectrum of sinonasal pathologies diagnosed using diagnostic nasal endoscopy in a tertiary care hospital.⁸

Materials and Methods

This retrospective observational study was conducted in the Department of Otorhinolaryngology at Meenakshi Medical College and Research Institute over a period of two years, from January 2024 to December 2025. The study included a total of 150 patients who underwent Diagnostic Nasal Endoscopy (DNE) for evaluation of sinonasal complaints. Patients aged ≥ 10 years presenting with symptoms such as nasal obstruction, nasal discharge, headache, facial pain, epistaxis, sneezing, and hyposmia were included in the study. Patients with a history of prior sinonasal surgery, nasal trauma, malignancy under treatment, or incomplete medical records were excluded. A consecutive sampling method was adopted, wherein all eligible patients meeting the inclusion criteria during the study period were included.

Diagnostic nasal endoscopy was performed using 0° and 30° rigid nasal endoscopes under adequate

illumination following standard aseptic precautions. Prior to the procedure, the nasal cavities were prepared using topical decongestants and local anesthetic agents to ensure patient comfort and optimal visualization. A systematic examination of the nasal cavity, septum, turbinates, middle meatus, sphenoidal recess, and nasopharynx was carried out, and all findings were carefully documented. Data were retrieved from hospital medical records using a structured proforma, which included demographic details, clinical presentation, and endoscopic findings.

All collected data were entered into Microsoft Excel 2021 and analyzed using IBM SPSS Statistics version 25. Descriptive statistics such as mean, frequency, and percentage were calculated, and associations between categorical variables were assessed using the Chi-square test, with a p-value of <0.05 considered statistically significant. Ethical clearance was obtained from the Institutional Ethics Committee of Meenakshi Medical College and Research Institute, and strict confidentiality of patient data was maintained throughout the study.

Results

Table 1: Age-wise distribution of study population (n = 150)

Age Group (years)	Frequency (n)	Percentage (%)
10–20	24	16.0
21–40	63	42.0
41–60	43	28.7
>60	20	13.3
Total	150	100

The majority of patients belonged to the 21–40 years age group (42.0%). The mean age was 36.8 ± 12.4 years, indicating a higher burden of sinonasal pathologies among young and middle-aged adults.

Table 2: Gender distribution of study population (n = 150)

Gender	Frequency (n)	Percentage (%)
Male	92	61.3
Female	58	38.7
Total	150	100

There was a male predominance with a male-to-female ratio of 1.58:1, suggesting higher occurrence or healthcare utilization among males.

Table 3: Distribution of presenting symptoms (n = 150)

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Symptom	Frequency (n)	Percentage (%)
Nasal Obstruction	108	72.0
Nasal Discharge	82	54.7
Headache	66	44.0
Sneezing	45	30.0
Hyposmia	28	18.7
Epistaxis	20	13.3

Nasal obstruction was the most common presenting symptom (72.0%), followed by nasal discharge (54.7%), indicating obstructive and inflammatory sinonasal conditions as predominant clinical presentations.

Table 4: Endoscopic findings (n = 150)

Diagnosis	Frequency (n)	Percentage (%)
Deviated Nasal Septum (DNS)	58	38.7
Chronic Rhinosinusitis (CRS)	40	26.7
Nasal Polyps	22	14.7
Inferior Turbinate Hypertrophy	12	8.0
Allergic Rhinitis	10	6.7
Sinonasal Mass	6	4.0
Normal Findings	2	1.3
Total	150	100

Deviated Nasal Septum was the most prevalent finding (38.7%), followed by Chronic Rhinosinusitis (26.7%), highlighting structural and inflammatory causes as dominant pathologies.

Table 5: Gender vs endoscopic findings (n = 150)

Diagnosis	Male n (%)	Female n (%)	Total
DNS	36 (39.1%)	22 (37.9%)	58
CRS	24 (26.1%)	16 (27.6%)	40
Nasal Polyps	14 (15.2%)	8 (13.8%)	22
Others	18 (19.6%)	12 (20.7%)	30
Total	92 (100%)	58 (100%)	150

Distribution of sinonasal pathologies was comparable between males and females. The association between gender and diagnosis was not statistically significant ($\chi^2 = 6.42, p = 0.18$).

Table 6: Age group vs common diagnoses (n = 150)

Age Group	DNS	CRS	Polyps	Others	Total
10–20	10	6	4	4	24

Age Group	DNS	CRS	Polyps	Others	Total
21–40	28	18	8	9	63
41–60	14	12	6	11	43
>60	6	4	4	6	20
Total	58	40	22	30	150

A statistically significant association was observed between age group and type of diagnosis ($\chi^2 = 12.85, p = 0.045$), indicating variation in disease pattern across age groups.

Table 7: Statistical association between variables

Variables Compared	Test Used	χ^2 Value	P-value
Gender vs Diagnosis	Chi-square	6.42	0.18
Age vs Diagnosis	Chi-square	12.85	0.045
Symptoms vs Diagnosis	Chi-square	14.22	0.032

There was a statistically significant association between age and diagnosis ($p = 0.045$) and between symptoms and diagnosis ($p = 0.032$), while gender showed no significant association ($p = 0.18$).

Discussion

Sinonasal pathologies are among the most frequently encountered conditions in otorhinolaryngology practice, significantly affecting patients' quality of life. The present study evaluated the prevalence and pattern of sinonasal diseases diagnosed using Diagnostic Nasal Endoscopy in a tertiary care setting and demonstrated important clinical and statistical correlations. In the current study, the majority of patients belonged to the 21–40 years age group (42.0%), with a mean age of 36.8 ± 12.4 years. This finding is comparable to the study by Maru and Gupta⁹, who reported a higher prevalence of sinonasal diseases in the younger adult population, attributing it to increased environmental exposure and occupational factors. Similarly, Chadha et al.¹⁰ observed that the economically active age group is more commonly affected due to greater exposure to allergens and pollutants.

A male predominance (61.3%) was observed in this study, with a male-to-female ratio of 1.58:1. This is consistent with findings by Chadha SK et al.¹⁰, who also reported male predominance in sinonasal disorders. However, in the present study, the association between gender and type of sinonasal pathology was not statistically significant ($\chi^2 = 6.42, p = 0.18$), suggesting that gender does not significantly

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influence the distribution of specific sinonasal diseases.

Nasal obstruction was the most common presenting symptom (72.0%), followed by nasal discharge (54.7%) and headache (44.0%). This is in accordance with the study by Lanza and Kennedy¹¹, who reported nasal obstruction as the predominant symptom in patients with chronic sinonasal conditions. The high prevalence of nasal obstruction in our study correlates with the predominance of structural abnormalities such as Deviated Nasal Septum.

Among endoscopic findings, Deviated Nasal Septum (DNS) was the most common pathology (38.7%). This is comparable to the findings of Gray LP¹², who reported a high incidence of septal deviation as a major cause of nasal obstruction. The high prevalence of DNS in our study may be attributed to developmental anomalies, trauma, and anatomical variations.

Chronic Rhinosinusitis was the second most common diagnosis (26.7%), which is consistent with the findings of Fokkens et al.¹³ in the EPOS guidelines, highlighting CRS as a major global health burden. The chronic inflammatory nature of CRS, along with impaired mucociliary clearance, contributes to its high prevalence.

The occurrence of Nasal Polyps in 14.7% of cases is comparable to the study by Settupane GA¹⁴, who reported similar prevalence rates and emphasized the association of nasal polyps with chronic inflammation and allergic conditions. Diagnostic nasal endoscopy plays a crucial role in identifying early polypoidal changes that may not be visible on routine examination.

Statistically, a significant association between age group and type of sinonasal pathology was observed in this study ($\chi^2 = 12.85$, $p = 0.045$), indicating that different age groups are predisposed to different sinonasal conditions. This finding is supported by Anand VK¹⁶, who noted variation in disease patterns based on demographic factors. Additionally, a significant association between presenting symptoms and endoscopic findings ($\chi^2 = 14.22$, $p = 0.032$) was observed, emphasizing the importance of correlating clinical symptoms with endoscopic evaluation for accurate diagnosis.

The utility of Diagnostic Nasal Endoscopy was clearly demonstrated in this study, as it allowed precise identification of anatomical variations, mucosal changes, and pathological lesions. This is in agreement with Stammberger H¹⁵, who emphasized the role of endoscopy in improving diagnostic accuracy and guiding management in sinonasal diseases.

Radiological correlation, particularly with CT of paranasal sinuses, has been recommended by Bolger et al.¹⁷ for better anatomical delineation and surgical planning. Furthermore, Kennedy and Zinreich¹⁸ highlighted the importance of endoscopic evaluation in improving surgical outcomes in functional endoscopic sinus surgery.

However, this study has certain limitations, including its retrospective design, relatively small sample size, and single-center setting, which may limit the generalizability of the findings. Similar limitations have been reported in previous studies.¹⁶⁻²¹ Future research involving multicenter studies with larger sample sizes and inclusion of radiological correlation is recommended to validate and expand upon these findings.

Conclusion

The present study highlights that Diagnostic Nasal Endoscopy is a safe, reliable, and highly effective tool for the diagnosis of sinonasal pathologies in a tertiary care setting. Deviated Nasal Septum was found to be the most prevalent condition, followed by Chronic Rhinosinusitis and Nasal Polyps, indicating that structural and inflammatory disorders form the major burden of disease. Nasal obstruction was the most common presenting symptom, correlating well with endoscopic findings. Statistically, a significant association was observed between age and type of pathology as well as between symptoms and diagnosis, whereas gender showed no significant association. Diagnostic nasal endoscopy enables early and accurate identification of sinonasal conditions, thereby guiding appropriate management and improving patient outcomes. Further multicentric studies with larger sample sizes and correlation with radiological findings are recommended to strengthen these observations.

Conflict of interest: Nil

Source of funding: Nil

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