

Original Research Article

Regional prevalence of different types of sinusitis at a tertiary care centre in Northern India

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ABSTRACT

Background: The aim of the study was to determine the incidence of different types of rhinosinusitis in patients attending ENT Department OPD at a tertiary care centre in Ruhelkhand area of Northern India.

Methods: This study was done at department of Otorhinolaryngology, RMRI, Bareilly, India, a tertiary-care Teaching hospital. A total number of 39823 patients (22379 females, 17444 males) were included in this study from December 2017 till February 2020. Age range of selected patients was 3 months to 76 years, 3883 patients were having Rhinosinusitis and remaining having other ENT diseases.

Results: During 27 months period from December 2017 to February 2020, 39823 patients were seen in the OPD and patients were categorized in different disease groups, like chronic suppurative otitis media and acute suppurative otitis media, upper respiratory tract infections, acute and chronic tonsillitis and pharyngitis. Fourth most common disease group was different types of rhinosinusitis.

Conclusions: In this study assessment was done of different ENT patients attending OPD. Chronic rhinosinusitis (46.1%) was the most common type of rhinosinusitis, followed by Acute type (29.7%).

Keywords: Epidemiology, OPD visit frequency, Rhinosinusitis, Ruhelkhand

INTRODUCTION

In most of the ENT OPD's all over Indian subcontinent pattern of disease prevalence is usually same, commonest is otitis media (COM, ASOM and otomycosis), then URTI, then throat infections and then Sinusitis, remaining cases are of multiple complaints and diseases. Among these patients' different types and subtypes of rhinosinusitis are frequently noted by caregivers. The latest European position paper on rhinosinusitis and nasal polyps (EPOS) has defined rhinosinusitis as: inflammation of the nose and the paranasal sinuses characterized by two or more symptoms, one of which should be either nasal blockage or obstruction or congestion or nasal discharge (anterior or posterior nasal

drip): ±facial pain/pressure, ±reduction or loss of smell and either endoscopic signs of: - nasal polyps, and/or - mucopurulent discharge primarily from middle meatus and/or - oedema or mucosal obstruction primarily in middle meatus and/or CT changes like mucosal changes within the ostiomeatal complex and/or sinuses.

It's a diagnosis which is made on clinical grounds based on the presence of characteristic symptoms, combined with evident mucosal inflammation¹. Although alternative classifications and guidelines have been produced, such as by the American Academy of Otorhinolaryngologists Head and Neck Surgeons (AAO-HNSF) rhinosinusitis task force committee but EPOS is considered trend setting.²

Rhinosinusitis is further defined as acute or chronic based on duration of symptoms: acute being less than 12 weeks duration and chronic being greater. Within acute rhinosinusitis (ARS), further distinctions can be made on

a timeline basis such that a common cold (acute viral rhinosinusitis) will last for less than 10 days and acute post-viral rhinosinusitis will last between 10 days and 12 weeks in duration.³

Table 1: Classification of rhinosinusitis.

	AVRS	Present for 10 days and symptoms are not worsening
Acute	ABRS	Present for 10 days to 4 weeks OR worsening disease within 10 days after an initial improvement
	AIFRS	Present for <4 weeks
Recurrent Acute		≥4 episodes/year + each episode lasts from 10 days up to 4 weeks
Subacute		Present for 4-12 weeks
Chronic	CRSs NP	Present for ≥12 weeks
	CRSw NP	Present for ≥12 weeks
	AFRS	Present for ≥12 weeks
Acute exacerbation of chronic		Sudden worsening of CRS, with return to baseline after treatment

ABRS, acute bacterial rhinosinusitis; AFRS, allergic fungal rhinosinusitis; AIFRS, acute invasive fungal rhinosinusitis; AVRS, acute viral rhinosinusitis; CRSs NP, chronic rhinosinusitis without nasal polyps; CRSw NP, chronic rhinosinusitis with nasal polyps; CT, computed tomography; IgE, immunoglobulin E; MRI, magnetic resonance imaging.⁹

Table 2: Annual prevalence in percent of sinusitis in adult us population groups, 1998.

Variables	Percentages
Sex	
Male	11.5
Female	20.7
Age (years)	
18-44	15.3
45-64	19.3
65-74	15.6
75	13.2
Race or ethnicity	
White, non-hispanic	17.3
Black, non-hispanic	16.5
Other, non-hispanic	12.0
Hispanic	9.9
Poverty status	
Poor	15.8
Near-poor	15.5
Not poor	17.4
Total	16.3

Data from Pleis and Coles.^{8,9}

As mentioned earlier ARS is a quite common condition with prevalence rates varying from 6 to 15% with a prevalence of recurrent ARS estimated at 0.035%.¹ It was observed that annually, 900000 individual patients consulted their primary care physician for acute respiratory tract infection. CRS also represents a significant disease burden worldwide, affecting at least 11% of the population and consequently carrying with it a substantial economic burden to healthcare systems, to patients and to the economy from loss of productivity in the workplace.⁴ In fact 'sinusitis' was cited as one of the top ten most costly physical health conditions to

American businesses in 1999, as it has an increasing incidence in middle age with a significant socio-economic impact and impairment of quality of life.⁵ Previous findings from the USA estimate that patients with CRS spend more than \$500 each year on healthcare and miss an average of 5.67 workdays per year versus 3.74 days per year for patients without CRS, suggesting a significant disease burden on both the healthcare system and on individuals that is equal to or exceeds that for diseases that are thought to be more serious.⁶ The overall yearly economic cost was \$1500 per patient and that estimated healthcare expenditures attributable to CRS and common comorbidities were close to \$5.78 billion in 1996 excluding out-of-pocket expenditures or time off work for patients. Similar data for India was not available. As a disease entity in the UK its prevalence is greater than ischemic heart disease (3.7%), diabetes (4%), chronic obstructive pulmonary disease (1.5%), heart failure (<1%) and stroke (<1%) and equivalent to that of peripheral vascular disease, arthritis and back pain, several of which have been shown to have a lesser impact on patients' quality of life than CRS.⁷

The true incidence and prevalence of sinusitis are unknown, since an unknown proportion of cases do not come to medical attention. In Indian subcontinent there was not even one study found on PubMed which can be quoted for sinusitis related data. So, baseline exact prevalence rate, incidence of new cases and other statistical details related to this disease category was not found.

As classified by EPOS, sinusitis is divided into following major groups: as in (Table 1), while in table 2 impact of age, gender, socioeconomic status, race and ethnicity on rhinosinusitis is mentioned by Pleis and Coles.⁸

METHODS

This retrospective epidemiological study, approved by our local institutional research committee, was done at the RMRI, Bareilly, a tertiary care hospital in northwestern UP. OPD patients (in ENT Department) who were seen from December 2017 till February 2020 were selected for the data collection.

Inclusion criteria

All new OPD patients with organic disease were included for whom relevant data was available. Patients ready for endoscopic examination. OPD based 0- degree endoscopic assessment was done for the diagnosis of rhinosinusitis.

Exclusion criteria

Exclusion criteria were patients who refused endoscopic examination and patients having functional or psychosomatic disorders.

Tabulation was done and all the necessary details were registered in all the patients who were presented in the ENT department fulfilling the inclusion criteria. Few disease categories were selected for entering data: diagnosis with type of disease. Associated conditions or any added diagnosis. Type of treatment instituted like conservative or surgery.

A total of 39823 new patients with ENT and head and neck disorders were fulfilling the inclusion criteria for the study. SPSS statistical package V25 was used for data formatting and statistical analysis.

RESULTS

From December 2017 to February 2020, 39823 patients were seen in ENT OPD Department at RMRI Bareilly. Patients were grouped under different disease categories as in table 3. Minimum age of the patient attended OPD was 3 months, maximum age was 76 years and mean age was 35 years (Table 4). Out of total 39823 patients 56.2% were female and 43.8% were male, as shown in table 5. In table 6 gender distribution of the rhinosinusitis patients is shown, where 46% were male and 54% were female. A total of 3883 patients were having rhinosinusitis, whether it was acute, chronic or any other type was also noted down.

Prevalence of disease in different age groups was noted, for both sinusitis and other ENT diseases. In table 7 age group-based patients no. attending OPD is shown. Overall, 11-20 years age group was having maximum OPD attendance, 10232 (25.7%) while 21-30 years age group was having maximum attendance in ENT OPD for sinusitis (Table 8), amounting to 789 (20.3%). Acute viral and bacterial sinusitis was more common in 0-20 age group, while chronic rhinosinusitis was more common in 21-40 years age and allergic fungal

rhinosinusitis was more common in >41 years age. In table 9 number and percentage is mentioned for different types of rhinosinusitis patients and as shown chronic rhinosinusitis was found most common, 46.1%.

Table 3: Different ENT disease groups and frequency of patients.

Diseases	N	Percentage
COM, ASOM and otomycosis	9821	24.7
URTI	8122	20.4
Acute and chronic tonsillitis and pharyngitis	4492	11.3
All types of sinusitis	3883	9.7
Thyroid disorders	743	1.9
Malignant diseases	1331	3.3
Salivary gland disorders	119	0.3
Trauma, foreign bodies etc	823	2.1
Other diseases and vague complaints	10489	26.3

COM: Chronic Otitis Media, ASOM: Acute Suppurative Otitis Media, URTI: Upper respiratory Tract Infection.

Table 4: Age distribution of OPD attendance.

Age distribution	OPD attendance
Minimum age	3 months
Maximum age	76 years
Mean age	35 years

Table 5: Gender distribution of OPD attendance.

Gender	N	Percentage
Male	17444	43.8
Female	22379	56.2

Table 6: Gender distribution of sinusitis patients.

Gender	No.	Percentage
Male	1786	46
Female	2097	54

Table 7: Age distribution for all the OPD patients fulfilling the inclusion criteria.

Age (in years)	N	Percentage
0-10	6263	15.7
11-20	10232	25.7
21-30	8121	20.4
31-40	3242	8.1
41-50	5407	13.6
51-60	3236	8.1
>61	3322	8.4
Total	39823	100

Treatment given, whether conservative or surgical was also noted. 2822 (72.7%) out of 3883 patients were treated with conservative management and rest (27.3%)

were treated by surgery (FESS) (Table 10), and management of different rhinosinusitis patients was also noted (Table 11).

Table 8: Age distribution for all the rhinosinusitis patients.

Age (in years)	N	Percentage
0-10	311	8.0
11-20	711	18.3
21-30	789	20.3
31-40	763	19.7
41-50	553	14.2
51-60	421	10.8
>61	335	8.7

Table 9: Different types of rhinosinusitis and frequency of patients.

Sinusitis type	N	Percentage
Acute rhinosinusitis	1154	29.7
AVRS	531	-
ABRS	544	-
AIFRS	77	-
Recurrent acute rhinosinusitis	125	3.2
Subacute rhinosinusitis	122	3.1
Chronic rhinosinusitis	1789	46.1
CRSs NP	1172	-
CRSw NP	617	-
AFRS	144	3.7
Acute exacerbation of chronic	549	14.2

ABRS: acute bacterial rhinosinusitis; AFRS: allergic fungal rhinosinusitis; AIFRS, acute invasive fungal rhinosinusitis; AVRS: acute viral rhinosinusitis; CRSs NP: chronic rhinosinusitis without nasal polyps; CRSw NP: chronic rhinosinusitis with nasal polyps; CT: computed tomography; IgE, immunoglobulin E; MRI: magnetic resonance imaging.

Table 10: Management in total sinusitis patients.

Treatment	No. of patients	Percent
Conservative	3212	82.7
Surgical	671	17.3

Table 11: Management in different sinusitis patients.

Type of sinusitis	Conservative	Surgical
Acute rhinosinusitis	1151	3
Recurrent acute rhinosinusitis	125	0
Subacute rhinosinusitis	108	14
Chronic rhinosinusitis		
CRSs NP	102	1070
CRSw NP	23	656
AFRS	1	143
Acute exacerbation of chronic	121	428

DISCUSSION

Sinusitis affects about 1 in 8 adults in the United States, resulting in over 30 million annual diagnoses. Prevalence of Sinusitis in developed world is quite high as reported in multiple studies and in European position paper. In one estimate by Benninger et al sinusitis was found to be one of the most common health care problems in the United States, and evidently it was found to be increasing in prevalence and incidence.¹⁰ According to an estimate chronic sinusitis results in 18 to 22 million US physician office visits annually, and all forms of sinusitis result in significant health care expenditures as mentioned earlier.¹¹ In India and bordering countries there were no studies found in online search engines and indexes showing incidence and prevalence precisely. These keywords were used for the search “prevalence” “incidence” “epidemiological data” and “rhinosinusitis”, and there was no other statistical published data available anywhere else. Some western studies were found where estimated data was available for this region but Indian studies were for Fungal sinusitis if available for sinusitis.¹² In these studies also no mention was made of Indian incidence and prevalence of fungal sinusitis. So, this study was done to assess in consecutive large no. of patients the prevalence of different types of sinusitis. EPOS2012 criteria were followed for classification and diagnosis protocols.¹³ As reported in articles from developed world prevalence in percent of selected common chronic rhinosinusitis in US adults, 1998 was 16.3%. While twelve percent of the US population (nearly 1 in 8 adults) reported being diagnosed with rhinosinusitis in the prior 12 months in a 2012 national health survey, Rhinosinusitis was diagnosed more frequently than hay fever (7%), bronchitis (4%), or chronic obstructive pulmonary disease (4%), and the individuals surveyed were almost as likely to receive a diagnosis of rhinosinusitis as they were of asthma (13%).²

CONCLUSION

In Indian population rhinosinusitis is a common disease affecting large number of populations annually but statistically not much data is available. This study showed no. of patients coming to ENT OPD with rhinosinusitis in more than two years period. Chronic rhinosinusitis adds to the cost of patient care due to increased hospital follow ups and medical prescriptions, and the indirect costs due to restricted activity days are enormous. Rhinosinusitis poses an overwhelming economic burden on the government hospitals.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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