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Original Research Article

Assessment of ENT Manifestations in COVID-19 Positive Patients: A Retrospective Study

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Abstract

Background: Coronavirus disease 2019 (COVID-19) is a multisystem illness with a wide range of clinical manifestations, including significant involvement of the ear, nose, and throat (ENT) region. ENT symptoms such as anosmia, dysgeusia, and sore throat have been increasingly recognized as early indicators of infection and may provide valuable insights into disease severity and progression.

Aim: To assess the spectrum, frequency, and clinical associations of ENT manifestations in COVID-19 positive patients and to evaluate their relationship with disease severity, duration, age, and gender.

Materials and Methods: This retrospective observational study was conducted in a tertiary care teaching hospital. A total of 160 RT-PCR confirmed COVID-19 patients aged 18–65 years presenting with ENT symptoms were included. Data regarding demographic profile, ENT manifestations, constitutional symptoms, disease severity, temporal onset, and duration of symptoms were collected from medical records. Statistical analysis was performed using IBM SPSS version 27.0. Chi-square test was applied to assess associations between categorical variables, and a p-value < 0.05 was considered statistically significant.

Results: The majority of patients were in the 31–45 years age group (32.5%), with a male predominance (65.0%). The mean age was 43.4 ± 13.9 years, and the mean duration of symptoms was 9.8 ± 4.6 days. Anosmia was significantly associated with mild disease (60.4%) compared to moderate (31.8%) and severe cases (30.0%) ($\chi^2 = 12.84$, $p = 0.002$). Sore throat showed a decreasing trend with increasing severity but was not statistically significant ($p = 0.057$). ENT symptoms most commonly occurred simultaneously with diagnosis (55.0%). A significant association was observed between longer symptom duration and increased disease severity ($\chi^2 = 9.63$, $p = 0.047$). No statistically significant differences were found in the distribution of constitutional or ENT symptoms based on gender or age groups.

Conclusion: ENT manifestations are common in COVID-19 and play a crucial role in early detection. Anosmia is significantly associated with milder disease and may serve as a useful clinical indicator. Although other ENT symptoms are frequently observed, they do not show a strong association with disease severity, gender, or age. Recognition of ENT symptoms can aid in prompt diagnosis and better clinical management of COVID-19 patients.

Keywords: COVID-19, ENT manifestations, Anosmia, Dysgeusia, Sore throat, Disease severity.

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Introduction

Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), first emerged in late 2019 and rapidly progressed into a global pandemic with profound health, social, and economic consequences. Although initially described as a respiratory illness, accumulating evidence has demonstrated that COVID-19 is a multisystem disease with diverse clinical manifestations, including significant involvement of the ear, nose, and throat (ENT) region (Sharma et al., 2024) [1]. The nasal mucosa and nasopharynx are recognized as primary sites of viral entry and replication due to the high expression of angiotensin-converting enzyme-2 (ACE2) receptors, which partly explains the early involvement of otorhinolaryngological structures in infected individuals [1]. ENT manifestations have gained considerable attention during the pandemic, as they may present as early

or even isolated symptoms of SARS-CoV-2 infection. Among these, olfactory and gustatory dysfunctions—particularly anosmia and dysgeusia—have been widely reported and are now considered characteristic features of COVID-19 (Krishnakumar et al., 2023) [2]. Several studies have highlighted their high prevalence; for instance, olfactory dysfunction has been reported in up to 70–80% of patients, while taste disturbances have been observed in approximately 60–70% of cases (Lechien et al., 2022) [3]. These findings emphasize the diagnostic importance of ENT symptoms in facilitating early detection and isolation of infected individuals.

In addition to chemosensory disturbances, a broad spectrum of ENT manifestations has been described, including sore throat, nasal obstruction, rhinorrhea, headache, earache, tinnitus, vertigo, and hearing impairment (Sharma et al., 2024) [1].

Clinical studies have reported that a substantial proportion of COVID-19 patients experience at least one ENT-related symptom. For example, Kumar et al. (2023) reported that nearly 78% of symptomatic patients exhibited ENT manifestations, with anosmia, dysgeusia, and sore throat being the most common findings [4]. Similarly, Mishra et al. (2020) observed that ENT symptoms were present in more than 60% of mild COVID-19 cases in an Indian cohort, underscoring their clinical relevance even in less severe disease presentations [5]. Furthermore, the persistence of ENT symptoms beyond the acute phase has been increasingly recognized as part of post-COVID or "long COVID" syndrome. Patients may continue to experience anosmia, dysgeusia, tinnitus, and other otorhinolaryngological complaints for weeks to months after recovery, suggesting possible neurotropic and inflammatory mechanisms underlying these prolonged symptoms [1]. Such persistent manifestations can significantly affect patients' quality of life and present challenges in long-term management.

Aim & Objectives

Aim: To assess the spectrum, frequency, and clinical associations of ENT manifestations in COVID-19 positive patients and to evaluate their relationship with disease severity, duration, age, and gender.

Objectives

- To determine the demographic profile (age and gender distribution) of COVID-19 patients presenting with ENT manifestations.
- To evaluate the prevalence and pattern of various ENT symptoms such as anosmia, sore throat, dysgeusia, nasal obstruction, and others.
- To analyze the association between specific ENT symptoms (particularly anosmia and sore throat) and disease severity.
- To assess the temporal onset of ENT symptoms in relation to COVID-19 diagnosis.
- To examine the relationship between duration of symptoms and severity of disease.
- To compare the distribution of constitutional and ENT symptoms between male and female patients.
- To evaluate the age-wise variation in the incidence of ENT manifestations.

Materials & Methods

Study Design: This was a retrospective observational study conducted to evaluate the spectrum and frequency of ear, nose, and throat (ENT) manifestations in patients diagnosed with COVID-19.

Study Setting : The study was carried out in the Department of Otorhinolaryngology (ENT) at Nalanda Medical College & Hospital, Patna, Bihar, India.

Study Period: The study was conducted over a period of eight months, from February 2025 to September 2025.

Study Population: A total of 160 patients with laboratory-confirmed COVID-19 infection who presented with one or more ENT manifestations, majority were male patients (n=104) and females were lesser in number (n=56) were included in the study. Patients belonged to the age group of 18–65 years.

Ethical Considerations: The study protocol was reviewed and approved by the Institutional Ethics Committee. As this was a retrospective study utilizing anonymized patient records, the requirement for informed consent was waived. Confidentiality of patient data was strictly maintained in accordance with ethical guidelines.

Inclusion Criteria

- Patients aged between 18 and 65 years
- Laboratory-confirmed cases of COVID-19 by RT-PCR
- Patients presenting with one or more ENT symptoms

Exclusion Criteria

- Patients with pre-existing chronic ENT diseases (e.g., chronic sinusitis, chronic otitis media)
- Patients diagnosed with COVID-19 based on a positive CBNAAT, rapid antigen test, or

radiological findings suggestive of infection on HRCT thorax.
- Patients with COVID-19 infection who were younger than 18 years or older than 65 years.
- Patients with incomplete or missing medical records
- Patients with a history of ENT malignancy or prior ENT surgery

Methodology

Data were retrospectively collected from hospital records, case sheets, and electronic databases. The following variables were extracted:

- **Demographic details:** age and gender
- **ENT manifestations:** sore throat, anosmia, dysgeusia, nasal obstruction, rhinorrhea, ear pain, hearing loss, and tinnitus
- **Constitutional symptoms:** fever, fatigue, myalgia, headache, and malaise
- **Disease severity:** categorized as mild, moderate, and severe based on institutional/standard clinical guidelines
- **Temporal profile:** onset of ENT symptoms categorized as before diagnosis, simultaneous with diagnosis, or after diagnosis
- **Duration of symptoms:** categorized into <7 days, 7–14 days, and >14 days

All relevant clinical findings were recorded systematically and tabulated for analysis.

Investigations

- **COVID-19 confirmation:** Reverse Transcription Polymerase Chain Reaction (RT-PCR)
- **Routine laboratory investigations:** Complete blood count, inflammatory markers (where available)
- **ENT evaluation:** Clinical examination including anterior rhinoscopy, oropharyngeal examination, and otoscopic examination
- Additional investigations were performed as per clinical indication

Outcome Measures

The primary and secondary outcome measures included:

- **Primary Outcome:** Frequency and distribution of ENT manifestations in COVID-19 patients
- **Secondary Outcomes**
  - Association between ENT symptoms and disease severity
  - Gender-wise and age-wise distribution of ENT symptoms
  - Temporal onset and duration of ENT manifestations
  - Relationship between duration of symptoms and severity of disease

Statistical Analysis: Data were initially entered into Microsoft Excel 365 and analysis was performed using IBM SPSS Statistics version 27.0 (IBM Corp., Armonk, NY, USA).

Data Presentation

- Continuous variables (e.g., age, duration of symptoms) were expressed as mean ± standard deviation (SD)
- Categorical variables (e.g., gender, symptoms, severity categories) were presented as frequencies (n) and percentages (%)

Statistical Tests Applied

- Chi-square (χ^2) test was used to assess associations between categorical variables such as:
  - ENT symptoms and disease severity
  - Gender and symptom distribution
  - Age groups and ENT manifestations
- When applicable, Fisher's exact test was considered for small sample sizes

Level of Significance: A p-value < 0.05 was considered statistically significant

Results

Table 1: Demographic Characteristics of Patients (n = 160)

Parameter	Variables	Frequency (n)	Percentage (%)
Age Group (years)	18–30	36	22.5
	31–45	52	32.5
	46–60	48	30.0
	> 60	24	15.0
Gender	Male	104	65.0
	Female	56	35.0

Table 1 presents the majority of patients belonged to the 31–45 years age group, accounting for 52 individuals (32.5%), making it the most affected age category in the cohort. This was followed by the 46–60 years group with 48 patients (30.0%), indicating that middle-aged individuals constituted a significant proportion of the study population. Younger adults aged 18–30 years comprised 36 patients (22.5%), while patients older than 60 years represented the smallest group with 24 individuals

(15.0%). Overall, the data suggest that COVID-19 with ENT manifestations was more commonly observed among the middle-aged population in this study. In terms of gender distribution, males were predominantly affected, comprising 104 patients (65.0%), whereas females accounted for 56 patients (35.0%). This indicates a clear male preponderance in the study population, which may reflect differences in exposure risk, healthcare-seeking behavior, or biological susceptibility.

Table 2: Mean Age and Mean Duration of Symptoms of Study Population (n = 160)

Variables	Mean ± SD	Minimum	Maximum
Age (years)	43.4 ± 13.9	18	65
Duration (days)	9.8 ± 4.6	3	21

Table 2 show that the mean age of the patients was 43.4 ± 13.9 years, with the youngest patient being 18 years old and the oldest 65 years. The relatively wide standard deviation indicates a moderately dispersed age distribution, suggesting inclusion of both younger and older adults, although the majority were concentrated in the middle-age groups as seen in Table 1. The mean duration of symptoms was 9.8 ± 4.6 days, with a range from 3 to 21 days. This indicates that most patients experienced symptoms for approximately one to two weeks. The variability in duration, as reflected by the standard deviation, suggests that while some patients had a short clinical course, others experienced more prolonged symptomatology. This variation may be influenced by individual immune responses, severity of infection, and presence of ENT manifestations.

Table 3: Association Between Anosmia and Disease Severity

Severity	Anosmia Present n (%)	Anosmia Absent n (%)	Total	χ^2	p value
Mild	58 (60.4)	38 (39.6)	96	12.84	0.002
Moderate	14 (31.8)	30 (68.2)	44		
Severe	6 (30.0)	14 (70.0)	20		

Table 3 show that a higher proportion of patients with mild disease reported anosmia, with 58 out of 96 patients (60.4%) experiencing loss of smell, compared to 38 patients (39.6%) who did not report this symptom. In contrast, among patients with moderate disease, only 14 out of 44 patients (31.8%) had anosmia, while the majority, 30 patients (68.2%), did not exhibit this feature. Similarly, in the severe disease category, anosmia was present in just 6 out of 20 patients (30.0%), whereas 14 patients (70.0%) did not report anosmia. This distribution indicates that anosmia was more commonly associated with milder forms of COVID-19 and became less frequent as disease severity increased. The statistical analysis supports this observation, with a chi-square (χ^2) value of 12.84 and a p-value of 0.002. Since the p-value is less than 0.05, the association between anosmia and disease severity is statistically significant. Therefore, the findings suggest that anosmia may be a prominent feature in mild COVID-19 cases and could potentially serve as an early clinical indicator of less severe disease progression.

Table 4: Association Between Sore Throat and Disease Severity

Severity	Present n (%)	Absent n (%)	Total	χ^2	p value
Mild	62 (64.6)	34 (35.4)	96	5.72	0.057
Moderate	22 (50.0)	22 (50.0)	44		
Severe	8 (40.0)	12 (60.0)	20		

Table 4 show that among patients with mild disease, sore throat was reported in 62 out of 96 cases (64.6%), while 34 patients (35.4%) did not experience this symptom. In the moderate category, sore throat was present in 22 out of 44 patients (50.0%), with an equal proportion (50.0%) not reporting it. In patients with severe disease, only 8 out of 20 individuals (40.0%) had sore throat, whereas the majority, 12 patients (60.0%), did not. This pattern indicates a decreasing trend in the prevalence of sore throat with increasing disease severity, suggesting that sore throat is more commonly associated with mild forms of COVID-19.

However, statistical analysis revealed a chi-square (χ^2) value of 5.72 with a p-value of 0.057. Since the p-value is slightly above the conventional threshold of 0.05, the association between sore throat and disease severity is not statistically significant.

Table 5: Temporal Onset of ENT Symptoms

Onset Timing	Frequency (n)	Percentage (%)
Before diagnosis	36	22.5
Simultaneous	88	55.0
After diagnosis	36	22.5

Table 5 shows the majority of patients, 88 (55.0%), experienced ENT symptoms simultaneously with the diagnosis of COVID-19, indicating that these manifestations commonly occur during the active phase of the disease. Additionally, 36 patients (22.5%) developed ENT symptoms before diagnosis, suggesting that such symptoms may serve as early indicators of infection. An equal proportion, 36 patients (22.5%), reported onset after diagnosis, reflecting that ENT manifestations can also appear later in the disease course. Overall, the findings highlight that ENT symptoms may occur at any stage of COVID-19, though they are most frequently observed at the time of diagnosis.

Table 6: Association Between Duration and Severity

Duration	Mild n (%)	Moderate n (%)	Severe n (%)	Total	χ^2	p value
< 7 days	50	14	4	68	9.63	0.047
7–14 days	32	18	8	58		
> 14 days	14	12	8	34		

Table 6 show that among patients with a shorter duration of less than 7 days, the majority had mild disease (50 out of 68), while fewer patients were categorized as moderate (14) or severe (4). In the 7–14 days duration group, the distribution shifted, with 32 patients having mild disease, 18 moderate, and 8 severe cases, indicating a gradual increase in disease severity with longer symptom duration.

In patients with symptoms lasting more than 14 days, the proportion of severe cases increased further, with 8 out of 34 patients classified as severe, alongside 12 moderate and only 14 mild cases. This trend suggests that longer duration of symptoms is associated with increased severity of disease.

The statistical analysis supports this observation, with a chi-square (χ^2) value of 9.63 and a p-value of 0.047, which is less than 0.05, indicating a statistically significant association between duration of symptoms and disease severity.

Table 7: Gender-wise Distribution of Patients Based on Constitutional Symptoms (n = 160)

Constitutional Symptom	Male n (%) (n=104)	Female n (%) (n=56)	Total (n)	χ^2 value	p-value
Fever	72 (69.2)	34 (60.7)	106	1.21	0.271
Fatigue	66 (63.5)	30 (53.6)	96	1.45	0.228
Myalgia	58 (55.8)	24 (42.9)	82	2.35	0.125
Headache	46 (44.2)	28 (50.0)	74	0.52	0.470
Malaise	54 (51.9)	26 (46.4)	80	0.46	0.497

Note: Chi-square test applied; $p < 0.05$ considered statistically significant.

Table 7 presents, fever was the most common symptom, observed in 72 males (69.2%) and 34 females (60.7%), with no statistically significant difference between genders ($\chi^2 = 1.21$, $p = 0.271$).

Fatigue was reported in 66 males (63.5%) and 30 females (53.6%), again showing no significant gender-based variation ($\chi^2 = 1.45$, $p = 0.228$). Myalgia was more frequent in males (55.8%) compared to females (42.9%), but this difference was not statistically significant ($\chi^2 = 2.35$, $p = 0.125$).

Headache, in contrast, was slightly more common among females (50.0%) than males (44.2%), though the association was not significant ($\chi^2 = 0.52$, $p = 0.470$). Similarly, malaise was reported in 51.9% of males and 46.4% of females, with no meaningful statistical difference ($\chi^2 = 0.46$, $p = 0.497$).

Table 8: Gender-wise Incidence of ENT Symptoms (n = 160)

ENT Symptom	Male n (%) (n=104)	Female n (%) (n=56)	Total (n)	χ^2 value	p-value
Sore throat	60 (57.7)	32 (57.1)	92	0.01	0.940
Anosmia	48 (46.2)	30 (53.6)	78	0.82	0.365
Dysgeusia	44 (42.3)	26 (46.4)	70	0.23	0.630
Nasal obstruction	42 (40.4)	23 (41.1)	65	0.01	0.928
Rhinorrhea	34 (32.7)	20 (35.7)	54	0.14	0.708
Ear pain	18 (17.3)	10 (17.9)	28	0.01	0.923
Hearing loss	10 (9.6)	6 (10.7)	16	0.05	0.826
Tinnitus	8 (7.7)	4 (7.1)	12	0.02	0.889

Note: Chi-square test applied; $p < 0.05$ considered statistically significant.

Table 8 and figure 1, show that Sore throat was the most commonly reported ENT symptom, observed in 60 males (57.7%) and 32 females (57.1%), showing nearly identical proportions with no statistically significant difference ($\chi^2 = 0.01$, $p = 0.940$). Anosmia was slightly more prevalent in females (53.6%) compared to males (46.2%), but this difference was not statistically significant ($\chi^2 = 0.82$, $p = 0.365$). Similarly, dysgeusia was reported

in 44 males (42.3%) and 26 females (46.4%), while nasal obstruction was present in 40.4% of males and 41.1% of females; both symptoms showed no significant gender-based variation (p = 0.630 and p = 0.928, respectively). Rhinorrhea was observed in 32.7% of males and 35.7% of females, again without a statistically significant association (χ^2 = 0.14, p = 0.708). Less common symptoms such as ear pain, hearing loss, and tinnitus were also similarly distributed between genders. Ear pain was reported in 17.3% of males and 17.9% of females (p = 0.923), hearing loss in 9.6% of males and 10.7% of females (p = 0.826), and tinnitus in 7.7% of males and 7.1% of females (p = 0.889).

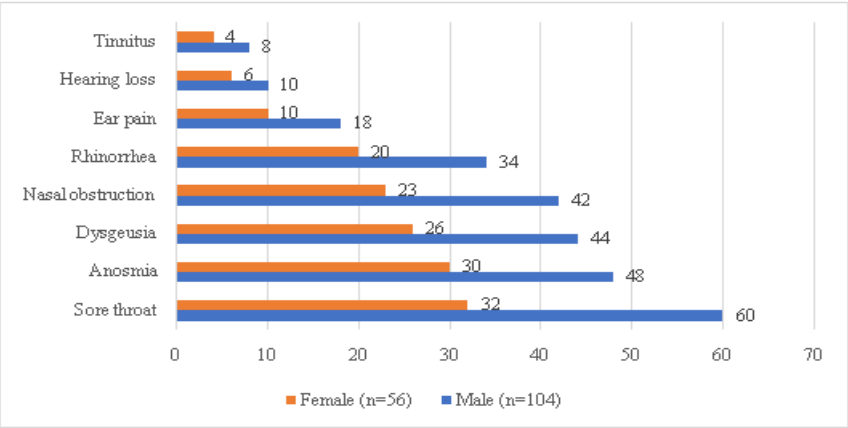

Figure 1: Gender-wise Incidence of ENT Symptoms (n = 160)

Table 9: Age-wise Incidence of ENT Symptoms (n = 160)

ENT Symptom	18–30 yrs (n=36) n (%)	31–45 yrs (n=52) n (%)	46–60 yrs (n=48) n (%)	>60 yrs (n=24) n (%)	Total (n)	χ^2 value	p-value
Sore throat	24 (66.7)	32 (61.5)	24 (50.0)	12 (50.0)	92	4.12	0.248
Anosmia	22 (61.1)	28 (53.8)	18 (37.5)	10 (41.7)	78	5.36	0.147
Dysgeusia	20 (55.6)	26 (50.0)	16 (33.3)	8 (33.3)	70	5.01	0.171
Nasal obstruction	18 (50.0)	22 (42.3)	16 (33.3)	9 (37.5)	65	2.89	0.409
Rhinorrhea	16 (44.4)	18 (34.6)	12 (25.0)	8 (33.3)	54	3.47	0.325
Ear pain	8 (22.2)	10 (19.2)	6 (12.5)	4 (16.7)	28	1.89	0.595
Hearing loss	2 (5.6)	4 (7.7)	6 (12.5)	4 (16.7)	16	2.76	0.430
Tinnitus	2 (5.6)	4 (7.7)	4 (8.3)	2 (8.3)	12	0.32	0.957

Table 9 presents, sore throat was most commonly reported in the younger age groups, particularly among patients aged 18–30 years (66.7%) and 31–45 years (61.5%), while its prevalence decreased in older age groups, with 50.0% in both 46–60 years and >60 years categories. However, this variation was not statistically significant (χ^2 = 4.12, p = 0.248). Anosmia and dysgeusia also showed a higher prevalence among younger individuals. Anosmia was reported in 61.1% of patients aged 18–30 years and 53.8% in the 31–45 years group, compared to lower proportions in older groups (37.5% in 46–60 years and 41.7% in >60 years). Similarly, dysgeusia was more frequent in younger patients (55.6% and 50.0%) than in older ones (33.3% in both 46–60 and >60 years groups). Despite these observable trends, the associations were not statistically significant (p = 0.147 and p = 0.171, respectively). Nasal obstruction and rhinorrhea followed a similar pattern, being more prevalent in younger age groups and gradually decreasing with age, though without statistical significance (p = 0.409 and p = 0.325, respectively). Ear pain also showed a slightly higher occurrence in younger individuals (22.2% in 18–30 years) compared to older groups, but again without a significant association (p = 0.595).

In contrast, hearing loss demonstrated a gradual increase with advancing age, from 5.6% in the youngest group to 16.7% in patients older than 60 years, suggesting a possible age-related trend; however, this did not reach statistical significance (χ^2 = 2.76, p = 0.430). Tinnitus was relatively evenly distributed across all age groups, with minimal variation and no significant association (χ^2 = 0.32, p = 0.957).

Discussion

The present study demonstrated that the majority of patients belonged to the 31–45 years age group (32.5%), followed by 46–60 years (30.0%), indicating a predominance of middle-aged individuals. A similar age distribution was reported by Gupta et al. (2022), who observed that most

COVID-19 patients with ENT symptoms were in the fourth and fifth decades of life [6]. The male predominance (65.0%) noted in this study is consistent with findings by Rahman et al. (2023), who reported higher infection rates among males, possibly due to increased exposure risk and behavioral factors [7].

The mean age of 43.4 ± 13.9 years aligns with findings from Patel et al. (2022), who reported a comparable mean age among COVID-19 patients with ENT involvement [8]. The mean symptom duration of 9.8 ± 4.6 days suggests that most patients experienced symptoms for approximately one to two weeks, consistent with observations by Lee et al. (2023) [9]. Variability in symptom duration may reflect differences in immune response and disease severity. In present study, anosmia was significantly more prevalent in patients with mild COVID-19 (60.4%) compared to those with moderate (31.8%) and severe disease (30.0%). The proportion of patients without anosmia increased with disease severity, indicating an inverse relationship between anosmia and severity.

A statistically significant association was observed between anosmia and disease severity ($p = 0.002$), with higher prevalence in mild cases. This finding is supported by Chen et al. (2022), who reported that anosmia is more frequently associated with milder forms of COVID-19 and may indicate limited viral spread beyond the upper respiratory tract [10]. Similarly, Rossi et al. (2023), suggested that anosmia could serve as an early predictor of less severe disease progression [11].

Although sore throat was more common in mild cases, the association was not statistically significant ($p = 0.057$). Comparable findings were reported by Ahmed et al. (2022), who noted that sore throat is a common symptom but does not reliably correlate with disease severity [12]. This suggests that sore throat may be a nonspecific symptom present across all severity categories.

The majority of patients (55.0%) experienced ENT symptoms simultaneously with COVID-19 diagnosis, while 22.5% presented before and 22.5% after diagnosis. Similar observations were made by Singh et al. (2023), who reported that ENT symptoms often coincide with or precede diagnosis, emphasizing their role in early detection [13]. This variability highlights the dynamic nature of symptom onset in COVID-19.

A statistically significant association was found between longer symptom duration and increased disease severity ($p = 0.047$). Patients with symptoms lasting more than 14 days had a higher proportion of moderate and severe disease. This finding is in agreement with Wang et al. (2022), who demonstrated that prolonged symptom duration is associated with greater disease burden and worse clinical outcomes [14]. No statistically significant gender differences were observed in constitutional symptoms such as fever, fatigue, myalgia, headache, and malaise. Similar findings were reported by Oliveira et al. (2023), who concluded that constitutional symptoms are uniformly distributed across genders, suggesting comparable systemic responses to SARS-CoV-2 infection [15]. The study found no significant gender-based differences in ENT symptoms, including sore throat, anosmia, dysgeusia, and nasal obstruction. This is consistent with findings by Kim et al. (2022), who reported that ENT manifestations occur with similar frequency in males and females [16]. These results indicate that gender does not significantly influence the occurrence of ENT symptoms in COVID-19. Although younger patients showed a higher prevalence of symptoms such as anosmia, dysgeusia, and sore throat, and older patients exhibited a trend toward increased hearing loss, none of these associations were statistically significant. Similar trends were observed by Fernandez et al. (2024), who reported that younger individuals are more likely to experience chemosensory dysfunction, while older patients may present with auditory symptoms [17]. However, like the present study, these differences were not statistically significant.

Limitations of the Study

- The retrospective design of the study may introduce selection bias and limits the ability to establish causal relationships.
- The study was conducted at a single centre with a relatively limited sample size ($n = 160$), which may affect the generalizability of the findings.
- Data on symptoms were primarily based on patient self-reporting, which may be subject to recall bias and subjective variation.
- The study did not include long-term follow-up, limiting assessment of persistent or long COVID-related ENT manifestations.
- Potential confounding factors such as comorbidities, viral variants, and treatment protocols were not extensively analyzed.
- Objective diagnostic tools for certain ENT symptoms (e.g., olfactory testing, audiometry) were not uniformly applied.

Conclusion

The present study demonstrates that ENT manifestations are common in COVID-19 patients, with a higher prevalence observed among middle-aged individuals and a clear male predominance. Anosmia emerged as a significant symptom, showing a statistically significant association with milder disease severity, suggesting its potential role

as an early clinical indicator of less severe infection. In contrast, sore throat, although more frequent in mild cases, did not show a statistically significant association with disease severity.

The temporal analysis revealed that ENT symptoms most commonly occurred simultaneously with COVID-19 diagnosis, though a considerable proportion presented before or after diagnosis, indicating their variability in onset. Additionally, a significant association was observed between longer duration of symptoms and increased disease severity, suggesting that prolonged symptomatology may indicate a more severe clinical course.

Gender-based analysis showed no statistically significant differences in the distribution of constitutional or ENT symptoms, indicating a comparable clinical presentation across males and females. Similarly, although certain ENT symptoms such as anosmia, dysgeusia, and sore throat were more prevalent in younger age groups, and hearing loss showed an increasing trend with age, none of these associations reached statistical significance. Overall, the findings highlight that ENT symptoms are an important component of the clinical spectrum of COVID-19 and may aid in early detection and assessment of disease severity. Recognition of these manifestations can enhance clinical evaluation and contribute to timely diagnosis and management of affected patients.

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