

# “Prevalence and risk factors of laryngitis among suspected patients attending otolaryngology department of a tertiary care hospital”

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## Abstract

**Introduction:** Laryngitis, also known as laryngopharyngeal reflux disease (LPR) refers to the inflammation of the laryngeal mucosa with resulting dysphonia, and pain or discomfort in the anterior neck. Common symptoms of laryngeal inflammation are voice changes, early vocal fatigue, or a dry cough. This study aimed to identify the risk factors and prevalence of laryngitis among suspected patients attending the otolaryngology department for early diagnosis and management.

**Methods:** This was a retrospective study conducted in the Department of Otolaryngology (ENT), Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh, from March 2024 to August 2024. In this study, we included 100 patients with laryngopharyngeal reflux symptoms irrespective of gender attending the ENT department at our institution.

**Result:** Out of 100 patients, the age group between 21 and 30 years was most commonly seen with a mean age of  $37.39 \pm 18.92$  years. Most of our study patients (62%) were male and 38% were female. The most common presenting symptoms were hoarseness of voice (86%), chronic cough (34%), thyroid swelling (27%), and vocal fatigue (21%). Most of our study patients (32%) had growth supraglottic, and growth laryngopharynx (29%). The prevalence of Laryngitis was 72% followed by left vocal cords nodule (12%) and left & right vocal cord polyps (5%). Smoking (42%) and vocal abuse (28%) were the most common risk factors.

**Conclusion:** The findings show that Laryngitis is highly prevalent among patients attending ORL services at our study institution. The most common presenting symptoms were hoarseness of voice, chronic cough, thyroid swelling, and vocal fatigue.

**Keywords:** Prevalence, Laryngitis, Hoarseness, Larynx, Vocal cords

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## I. Introduction

Laryngitis is the inflammation of the laryngeal mucosa with resulting dysphonia, and pain or discomfort in the anterior neck. [1] It is also known as laryngopharyngeal reflux disease (LPR). Common symptoms of laryngeal inflammation can result from a variety of causes. Hoarseness is one of the common symptoms of laryngitis, which can be either acute or chronic, inflammatory or infectious, a separate condition, or a component of a systemic illness. Laryngitis, which is frequently linked to upper respiratory tract infections, may have a serious impact on a person's physical and mental well-being, as well as their ability to work if symptoms persist.[1] Laryngitis encompasses a collection of general laryngeal symptoms and indicators that may also be brought on by other illnesses. As such, diagnosis can be challenging and necessitates a combination of history, examination, and, if required, expert evaluation, which includes stroboscopy and laryngeal visualization. [1] Acute laryngitis is a mild, self-limiting condition that typically lasts three to seven days; if it lasts more than three weeks, it is called chronic laryngitis. The most frequent cause of acute laryngitis is a viral upper respiratory infection, which is frequently diagnosed by asking the patient about their current sickness in detail. It is necessary to look into other

non-infectious laryngitis reasons when there is no history of infection or ill contact. Presenting symptoms often include voice changes (like hoarseness or a "raspy" voice), early vocal fatigue, or a dry cough. [2] The hoarseness can be divided into acute or chronic. [3] The acute onset is more common and mainly caused by inflammation like acute laryngitis whereas other causes could be viral infection, smoking, vocal abuse, laryngeal trauma, or thyroid surgery. [4] Chronic onset is primarily caused by vocal cord nodules, polyps, laryngeal papillomatosis, vocal cord tumor, functional dysphonia, smoking, vocal abuse, laryngopharyngeal reflux disease, post nasal drip, vocal abuse, thyroid, esophageal, and lung neoplasms, chronic granulomatous diseases such as tuberculosis, and systemic diseases such as diabetes mellitus. [5-7] There are two categories for the etiology of acute laryngitis: infectious and non-infectious. The infectious type is more prevalent and typically occurs after an infection of the upper respiratory tract. Potential causative agents include coronavirus, adenovirus, influenza, respiratory syncytial virus, rhinovirus, and parainfluenza. Viral laryngitis may be accompanied by bacterial superinfection. This classically occurs approximately 7 days after symptoms begin. [1,8]

In that order, the most commonly encountered bacterial organisms are *Cryptococcus neoformans*, *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis*. Laryngitis caused by fungal infection is very rare in immunocompetent individuals and more often presents as chronic laryngitis in the immunocompromised or patients using inhaled steroid medications. [2,9]

However, other conditions, including trauma or chronic inflammatory illnesses, can also induce acute laryngitis. [1]. Acute laryngitis can manifest as laryngotracheobronchitis (croup), epiglottitis, or simple hoarseness. It is often diagnosed and treated in basic care.

Therefore, this study aimed to identify the risk factors and prevalence of laryngitis among suspected patients attending the otolaryngology department for early diagnosis and management.

## **II. Methodology & Materials**

This was a retrospective study conducted in the Department of Otolaryngology (ENT), Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh, from March 2024 to August 2024. In this study, we included 100 patients with laryngopharyngeal reflux symptoms irrespective of gender attending the ENT department at our institution.

These are the following criteria to be eligible for enrollment as our study participants:

### **Inclusion Criteria:**

- a) Patients aged more than 5 years old;
- b) Patients with an indication of voice hoarseness, burning sensation in the voice, chronic cough and swelling throat;
- c) Patients who were willing to participate.

### **Exclusion Criteria:**

- a) Patients with previous ENT surgery;
- b) Patients with known allergies;
- c) Patients with any history of acute illness (e.g., renal or pancreatic diseases, ischemic heart disease, asthma, etc.) were excluded from our study.

**Data Collection Procedure:** Informed consent was then taken for the procedure. The equipment used was an Xion Flexible Fiberoptic Nasopharyngolaryngoscope with video monitoring. As preparation, the nose was sprayed with a solution of topical decongestant agent and local anesthetic (4% xylocaine solution and xylometazoline) ten minutes before the procedure. A detailed history, clinical examination, routine, as well as special investigation (flexible nasopharyngolaryngoscopy and direct laryngoscopy were performed to find the diagnosis. The nose was not packed with this solution. The throat was further sprayed with the local anesthetic. Under sterile conditions, the flexible nasopharyngolaryngoscope was passed transnasally and the required area was visualized and examined. Biopsies were taken where deemed necessary.

**Statistical Analysis:** All data were recorded systematically in the preformed data collection sheet. Quantitative data was expressed as mean and standard deviation and qualitative data was expressed as frequency distribution and percentage. Statistical analysis was performed by using SPSS 23 (Statistical Package for Social Sciences) for Windows version 10.

### III. Results

**Figure 1: Age distribution of our study patients**

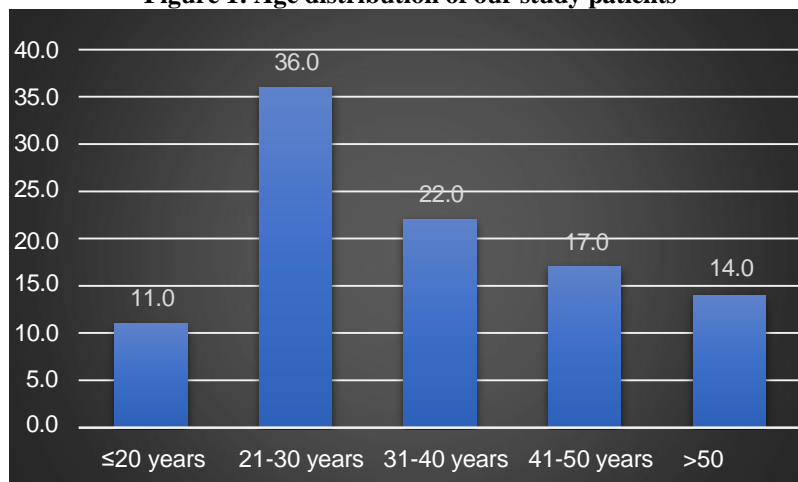
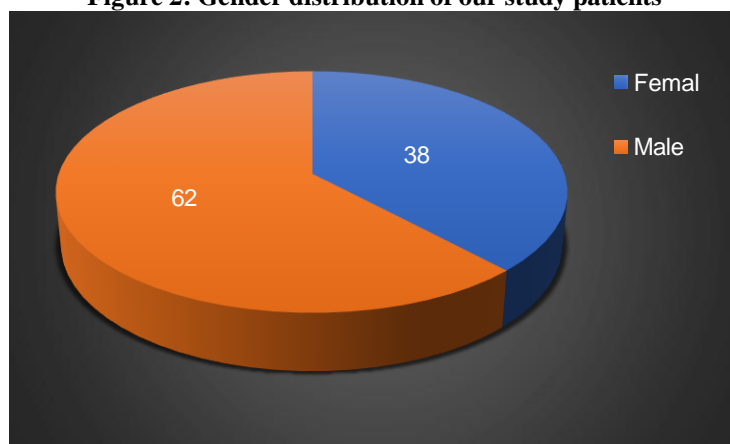


Figure 1 shows that the majority (36%) of our patients were in the age group of 21-30 years, followed by 22% of them aged 31-40 years, 17% & 14% of patients were in the 41-50 & >50 years age group respectively. Only 11% of patients were aged ≤20 years old. The mean age of our patients was  $37.39 \pm 18.92$  years, with a p-value of 0.01 which is significant.

**Figure 2: Gender distribution of our study patients**



The pie chart shows that most of our study patients (62%) were male and 38% were female. The male and female ratio was 1.63:1 in our study.

**Table 1: Distribution of our study patients by clinical presentations**

Clinical presentations	N	P(%)
Hoarseness of voice	86	86.0
Thyroid swelling	27	27.0
FB sensation/irritation in the throat	12	12.0
Vocal fatigue	21	21.0
Chronic cough	34	34.0
Others	9	9

Table 1 shows the distribution of study patients by clinical presentation. The most common presenting symptom was hoarseness of voice, reported by 86% of patients, followed by a chronic cough (34%), thyroid swelling (27%), vocal fatigue (21%), and FB sensation/irritation in the throat (12%). There were minor cases with other symptoms like dysphagia, dyspnea, and laryngeal trauma.

**Table 2: Distribution of study patients by nasopharyngoscopic findings**

Findings	N	P (%)
Growth supraglottic	32	32
Growth laryngopharynx	29	29
Growth glottis	8	8
Growth oropharynx	9	9
VC polyp	4	4
VC paralysis	6	6
VC nodule	12	12
Total	100	100

Table 2 shows the nasopharyngoscopic findings of our study patients. Most of our study patients (32%) had growth supraglottic, followed by 29% had growth laryngopharynx, 12% had VC nodules, 9% and 8% had growth oropharynx & glottis respectively.

**Table 3: Distribution of study patients by final diagnosis**

Diagnosis	N	P(%)
Laryngitis	72	72
Vocal cords nodule	12	12
Right vocal cord polyp	2	2
Left vocal cord polyp	3	3
Right vocal cord palsy	2	2
Left vocal cord palsy	6	6
Other	3	3

Table 3 shows the final diagnosis of our study patients. Laryngitis was the most common condition, affecting 72% of patients followed by left vocal cords nodule (12%), and left & right vocal cord polyps (5%). Both right and left vocal cord palsy were observed in 2% and 6% of patients, respectively, while other diagnoses like growths involving the vallecula and left tonsil and phonatory gap accounted for 3% of cases.

**Table 4: Distribution of study patients by predisposing risk factors**

Risk Factors	N	P (%)
Smoking	42	42
Tobacco	12	12
Smoking + Alcohol	14	14
Vocal abuse	28	28
Traumatic or surgical	4	4
Comorbid disease		
T2DM	17	17
HTN	12	12
Chronic infectious disease	6	6

Table 4 shows that smoking was the most common (42%) risk factor among our study patients, followed by vocal abuse (28%), and consumption of tobacco (12%). The patients who had DM, HTN, and chronic infectious disease as comorbidity had a prevalence rate of laryngitis of 17%, 12%, and 6% respectively.

#### **IV. Discussion**

In the current study, most of them (36%) were between the ages of 21 and 30, with 22% between the ages of 31 and 40. Our patients had a mean age of 37.39±18.92 years. Witwit et al studied 200 patients aged 2 to 82 years old and discovered that the most common age group afflicted is 31-40 years (37.5%). [10] Shamsheer et al discovered that the most prevalent age group was 41-60 years old (49.8%).[11] Soni et al found a greater frequency (55%) among adults aged 50 to 70 years.[12] Massawe et al found the majority (24.2%) of participants belong to the age group 28 to 37 years.[13] Several studies found a median age of 40 with an inter-quintile range of 18 to 73 years. [14-16] Kambic et al. in a series of 591 patients described the age group of 30–40 years in whom the maximum incidence of benign lesion of the larynx was observed. [17]

Most of the study patients (62%) were male and 38% were female. The male and female ratio was 1.63:1 in the current study. Witwit et al found that males were 87.5% and females were 12.5%. [10] Shamsheer et al found the male prevalence was 64.7% and female prevalence was 35.3% with a male-to-female ratio of about 1.83:1 in their study. [11] Soni et al found that out of 100 patients, 89 patients were male and only 11 were female. Male to female ratio was 8:1. [12] The findings of our study show that males were affected more than females, which is consistent with other reports. [18-22] Male predominance may be explained by various habits, such as smoking, chewing tobacco with lime, and alcohol consumption. Males were subjected more to occupational hazards than women who spend the majority of their time indoors. [12]

The most common presenting symptom was hoarseness of voice, reported by 86% of patients, followed by a chronic cough (34%), and thyroid swelling (27%). According to Shamsheer et al., 255 patients (0.46% of the total) had hoarseness of voice upon presentation. [11] Similar incidences were reported in other research, including the Prabhu study (0.3%), Sambu Baitha et al. (0.66%), and Rao et al. (0.51%). [18,19,23] The varied results were due to various etiologies as well as a lack of awareness of the condition that caused the hoarseness. Massawe et al. found the most reported symptoms by clients diagnosed with LPRD were Globus sensation followed by hoarseness of voice and the excessive urge to clear the throat with 95.7%, 88.1%, and 83.0% respectively [13]; this was similar to other studies. [14,24,25] In our study, most of the patients had hoarseness of voice complaints having a duration of 3 months (45%). Soni et al found that 45% had complaints of hoarseness of voice with a duration of 3 months, 3–6 months (28%), 6–12 months (23%), and 4% had complaints for more than 1 year. [11]

In the present study, nasopharyngoscopic findings show that most of our study patients (32%) had growth supraglottic, followed by 29% had growth laryngopharynx. Massawe et al. found the most observed clinical signs among LPRD patients were thick endolaryngeal mucus followed by Vocal cord edema and partial ventricular obliteration with 90.9%, 88.6%, and 72.7% respectively. [13] These findings are similar to the findings reported by other authors. [24,26,27] From this study, the least observed findings were VC nodules (12%), 9% and 8% had growth oropharynx & glottis respectively, while Massawe et al. found the least observed signs were granuloma formation and posterior commissure hypertrophy with 11.4%. similar to the findings of other studies. [13,26,28]

In the current study, the most common condition was Laryngitis, affecting 72% of patients. Massawe et al. found the overall prevalence of LPRD (laryngopharyngeal reflux disease) was 18.4%, with male and female prevalence being 19.1% and 17.6% respectively. [13] Sone et al found the overall LPR rate was 7.1% (men, 9.2%; women, 5.8%). [29]

Feshan et al. found the prevalence of laryngopharyngeal reflux was 19.80% in their study. [30]

In the current study, smoking (42%), patients with comorbidities (35%), and vocal abuse (28%) were the most common risk factors. Witwit et al found voice abuse to be the most important predisposing factor (45%) followed by smoking (40%). [10] Massawe et al found that going to sleep less than two hours after a meal and eating spice or fatty foods were mostly correlated with LPRD. [13] Van Rensburg et al found that consumption of alcohol, tobacco caffeine increases the risk for LPRD. [31]

## **V. Limitations Of The Study**

This study was a single-center study. The sample size was small due to the short study period, so it doesn't represent the whole community. After evaluating those patients, we did not follow up with them for the long term and did not know other possible interference that may happen in the long term with these patients.

## **VI. Conclusion And Recommendations**

In our study, we found that Laryngitis is highly prevalent among patients attending ORL services at our study institution. The most common presenting symptoms were hoarseness of voice, chronic cough, thyroid swelling, and vocal fatigue. Growth supraglottic and growth laryngopharynx were the most common nasopharyngoscopic findings among LPRD patients. Laryngitis symptoms were more prominent in men than women. Comprehensive diagnoses based on LPR symptoms and findings are necessary for our study patients. So further study with a prospective and longitudinal study design including a larger sample size needs to be done to validate the findings of our study.

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