

## ETIOLOGICAL SPECTRUM OF HOARSENESS OF VOICE ACCORDING TO GENDER

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### Abstract

**Objectives:** To determine incidence of etiological spectrum of hoarseness of voice according to gender

**Methodology:** After ethical approval, this study was carried out at the ENT department of Jinnah Postgraduate Medical Center, Karachi for six months. Inclusion criteria included patients between 18-60 years of age, of either gender diagnosed with hoarseness while those with history of any severe systemic disease or refused to consent were excluded. Vocal cords of all patients were checked at presentation. SPSS v 20.0 was used for analysis of data with chi-square test applied for testing of significance keeping p-value <0.05 as statistically significant.

**Results:** Total of 177 patients included in the study with mean age of  $42.56 \pm 12.53$  years. 111 (62.71 %) patients were male while 66 (37.2 %) females. According to diagnosis, 39 (22 %) patients reported hoarseness of voice after thyroid surgery, 37 (20.90 %) had left vocal cord paralysis, 14 (7.90 %) had right vocal cord paralysis, 13 (7.34 %) had carcinoma, 19 (10.7 %) had vocal cord nodules, 16 (9.03 %) vocal polyps, 20 (11.2 %) chronic laryngitis and 19 (10.16 %) had acute laryngitis. The most common etiological factor for hoarseness in males as well as in females was thyroid surgery, in 11.3 % and 10.7 % each.

**Conclusion:** Most common etiological factor hoarseness in both males and females was thyroid surgery while least common in males was right vocal cord paralysis while in females was vocal polyps.

**Keywords:** Hoarse Voice; Etiological spectrum; Organic Voice Disorders; Non-organic Voice Disorders

## Introduction

Hoarseness is a vague term which is used for describing any change in voice quality that ranges from voice weakness to voice harshness (1). It refers to dysfunction of the larynx due to abnormal vibrations of the vocal cords (2). Voice is a natural medium which is well adapted for communicating emotional contact, while speech is cultural medium which is used suitably for conveying intellectual contact (3). It can be described as an abnormal voice quality which is grading, rough, more or less discordant, harsh and as compared to normal individuals, has lower pitch is known as hoarseness of voice (4).

Hoarseness of voice is termed as a symptom and not diagnosis; as a result it is recommended for carefully determining the overlying etiology in every patient (5). Since hoarseness is accompanied by a variety of diagnoses, even gender variations are observed in terms of the underlying cause of hoarseness, therefore a complete history and thorough examination along with associated investigations are warranted (6).

The etiology behind hoarseness of voice is fairly diverse, and so great variation in the underlying cause of hoarseness is observed (7). On the basis of etiology, hoarseness can be classified into acute and chronic (8). The cause of acute might be because of voice abuse, thyroid surgery, trauma, smoking or viral infection (9). Whereas the chronic onset is most because of vocal polyps, vocal abuse, functional dysphonia, malignant thyroid neoplasms, systemic diseases like diabetes mellitus or in chronic diseases such as in tuberculosis (10). Complaints of hoarseness might imply a serious disease or disorder; therefore it must not be ignored (11). Predisposing factors to hoarseness also include profession, respiratory infections, gender, dehydration and other environmental factors as well (12).

Studies have shown that females tend to suffer from hoarseness more often than males (13). Moreover it occurs in elderly females than in younger ones (14). Furthermore, it occurs in certain occupational groups as well such as in teachers and singers, both of them being at higher risk for hoarseness of voice (15). Depending upon the etiological factor of hoarseness and its treatment, the symptom can subside. However depending upon the factors involved in causing hoarseness, its treatment differs (16).

The objective of this study was to determine the incidence of etiological spectrum of hoarseness of voice according to gender.

## Methodology

This was a cross sectional observational study carried out through non-probability consecutive sampling technique for six months at department of ENT, Jinnah Postgraduate Medical Center, Karachi, Pakistan. Patients of either gender visiting the ENT department between the ages of 18 and 60 years and diagnosed with hoarseness for over 3 months were included in the study while patients having previous history of thyroid surgery, prior vocal cord paralysis (diagnosed on indirect laryngoscope done pre-operatively), or with any severe systemic disease were excluded from the study.

The sample size was calculated using Epi Info 7, keeping hoarseness of voice as a cause of Ca larynx at 8 % with 95 % confidence level, margin of error (d) =4%, the sample size came out to be n=177 (17).

After taking ethical approval from ERC of JPMC and informed consent from all patients, data collection procedure was started. When patients presented to ENT department, their vocal cords were thoroughly examined.

## Data Analysis

SPSS 22.0 was used for analysis of data. Mean and standard deviation was reported for quantitative variables while frequency and percentages for qualitative variables. Chi-square test was applied for determining the significance of etiological spectrum of hoarseness of voice according to gender keeping p-value of <0.05 as statistically significant.

## Results

A total of 177 patients were included, with mean age of patients being  $42.56 \pm 12.53$  years. The age ranged from minimum of 20 years to maximum of 60 years. [Table I].

From the 177 patients, 66 (37.2%) of patients were females while 111 (62.71 %) were male [Figure I].

According to diagnosis, 39 (22 %) of patients reported hoarseness of voice after thyroid surgery, 37 (20.90 %) patients had left vocal cord paralysis, 14 (7.90 %) had right vocal cord paralysis, 13 (7.34 %) had carcinoma, 19 (10.7 %) had vocal cord nodules, 16 (9.03 %) vocal polyps, 20 (11.2 %) chronic laryngitis and 19 (10.16 %) had acute laryngitis [Figure II].

Regarding stratification of etiological spectrum according to gender (males and females), acute laryngitis was observed in 11 (6.2 %) males and 8 (4.5 %) females having an insignificant difference of  $p=0.508$ . Thyroid surgery was reported in 20 (11.3 %) males and 19 (10.7 %) females having an insignificant difference of  $p=0.095$ . Chronic laryngitis was observed in 11 (6.2 %) males and 09 (5.1 %) females having an insignificant difference of  $p=0.449$ . Vocal polyps were found in 13 (7.3 %) males and 3 (1.7 %) females having an insignificant difference of  $p=0.108$ . Vocal cord nodules were reported in 12 (6.8 %) males and 07 (4.0 %) females having an insignificant difference of  $p=0.966$ . Carcinoma was seen in 09 (5.1 %) males and 04 (2.3 %) females having an insignificant difference of  $p=0.614$ . Right vocal cord paralysis was reported in 08 (4.5 %) males and 06 (3.4 %) females having an insignificant difference of  $p=0.653$ . Left vocal cord paralysis was observed in 19 (10.7 %) males and 18 (10.2 %) females having an insignificant difference of  $p=0.108$  [Table II].

Table I: Patients demographics according to age (n=177)

Mean age (years)	42.56
$\pm$ SD	12.53
Minimum	20
Maximum	60

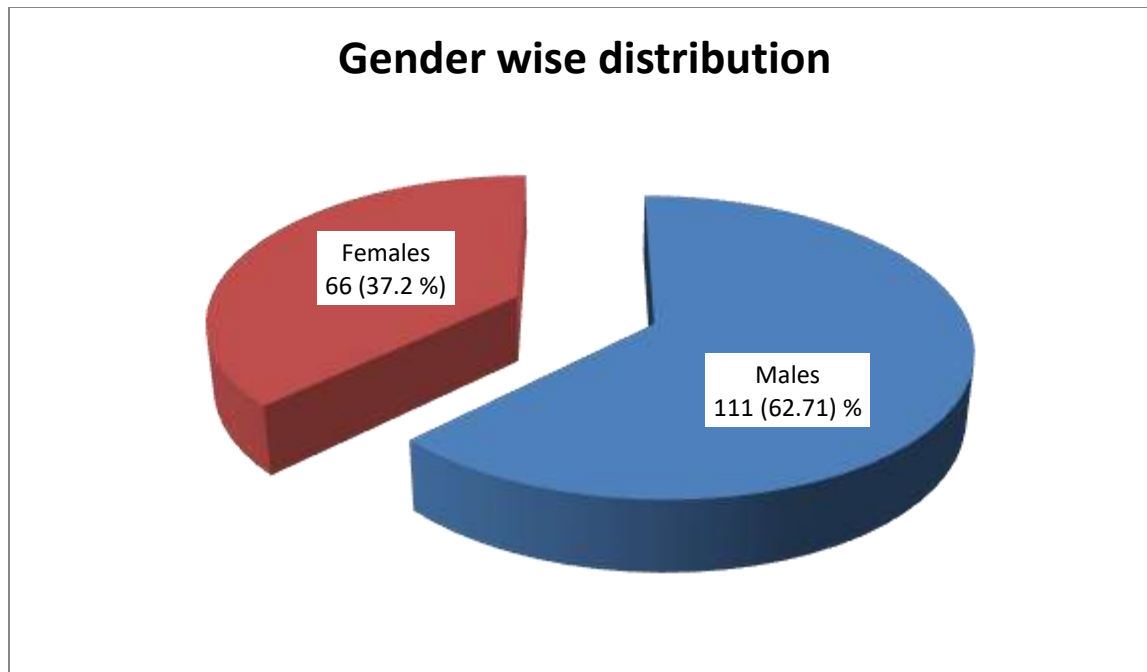


Figure I: Graphical representation of gender wise distribution of patients (n=177)

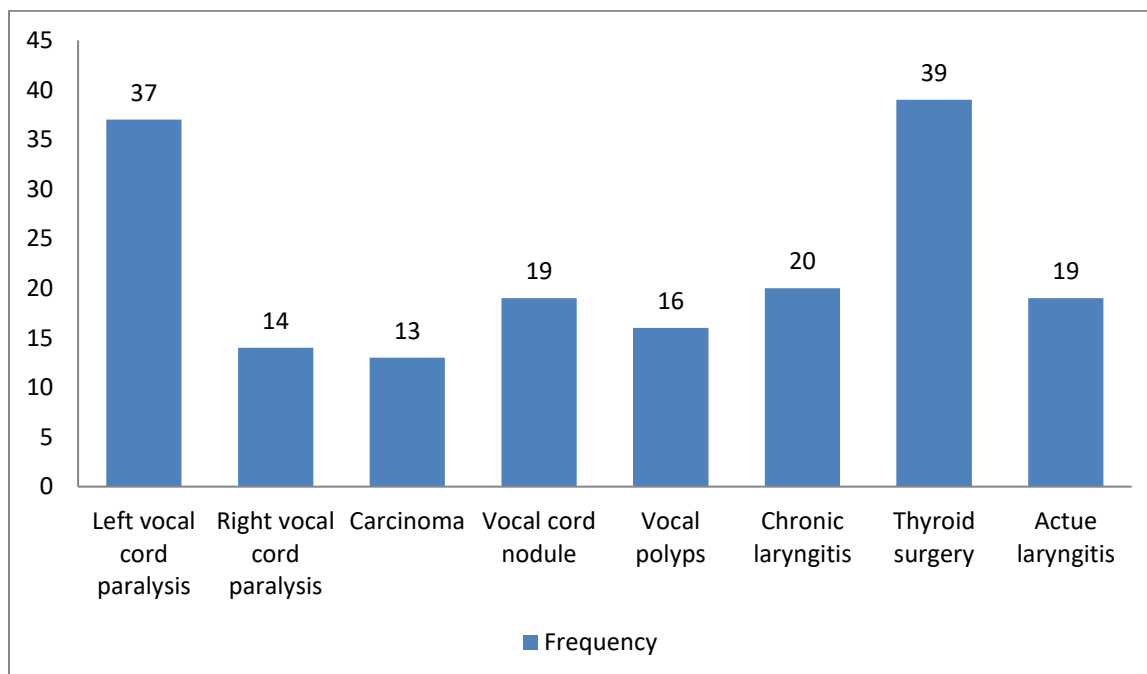


Figure II: Graphical representation of etiological spectrum of hoarseness of voice (n=177)

Table II: Cross tabulation of etiological spectrum hoarseness of voice according to gender (n=177)

Etiological Spectrum		Gender Groups		p-value
		Males	Females	
Acute Laryngitis	Yes	11 (6.2%)	8 (4.5%)	0.508
	No	100(56.5%)	58(32.8%)	
Thyroid Surgery	Yes	20 (11.3%)	19 (10.7%)	0.095
	No	91 (51.4%)	47(26.6%)	
Chronic Laryngitis	Yes	11(6.2%)	9 (5.1%)	0.449
	No	100 (56.5%)	57(32.2%)	
Vocal Polyps	Yes	137.3(%)	3(1.7%)	0.108
	No	98(55.4%)	63 (35.6%)	
Vocal Cord Nodule	Yes	12 (6.8%)	7 (4%)	0.966
	No	99 (55.9%)	59 (33.3%)	
Carcinoma	Yes	09 (5.1%)	4 (2.3%)	0.614
	No	102 (57.6%)	62 (35%)	
Right Vocal Cord Paralysis	Yes	8 (4.5%)	6 (3.4%)	0.653
	No	103 (58.2%)	60(33.9%)	
Left Vocal Cord Paralysis	Yes	19 (10.7%)	18 (10.2%)	0.108
	No	92 (52%)	48 (27.1%)	

## Discussion

In accordance with the findings of this study, the most common etiological factor for hoarseness among males was due to thyroid surgery, in 20 (11.3 %) of patients. Similar even in females, the most common cause of hoarseness was thyroid surgery, in about 9 (10.7 %) of patients. The least common cause in males was right vocal cord paralysis, in 8 (4.5 %) of patients while vocal polyps in females, in (3 (1.7 %) of patients. The male to females' ratio in our study was 1.5:1 with male pre-dominance.

Likewise in a study by Singh Det al, on 251 patients with 164 (65.3%) male pre-dominance compared to females, 87 (34.7%), the ratio of male to female was 1.89:1. Males in the study were observed in be in the higher age groups (above 50 years) in about 27 % of patients (18). In our study as well, majority of males presented in the age group >42 years of age, in about 62.7 % of patients while in females, majority presented in between 20-42 years of age group (in 57.5 % of patients).

Similar to the findings on our study, Gaurav Ket al, in their study on the etiological spectrum of hoarseness of voice, 180 patients were included in the study with 113 (62.8 %) males and 67 (37.2 %) females, with a male predominance of 1.69:1 per female. Majority of male patients presenting with hoarseness in the study presented with chronic laryngitis (in 16 % of patients) as the etiological factor whereas in females, the most common etiology was vocal cord nodule (in 9 %) of patients (19).

Only one contrasting study reported higher frequency of females, 187 (68 %) as compared to males, 88 (32 %) from the total of 275 patients included in the study, presenting with hoarseness of voice (20). The reason of higher female's frequency in the study was owed to the fact that the patients included in the study were majority from such communities where females needed to raise their voices at home when dealing with children and when taking care of elderly with hearing deficits. Likewise majority of the females in the study were teachers (21).

Published literature suggests that the point prevalence of hoarseness in either gender remains more or less the same. However, the females' teachers and those requiring raising their voices present more with vocal cord disuse or misuse and functional dysphonia (22).

Although the findings of this study were in line with the results observed in other studies, however, the study was not free from limitations. Limited sample size and single-centered study along with the study design and sample selection technique could have been a source of bias, due to which the further studies are required so that the findings of this study can be generalized.

## Conclusion

The findings of this study showed that majority of patients with hoarseness of voice were males pre-dominant. However the most common etiological factor of hoarseness of voice In either gender was due to thyroid surgery.

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