



PROFILE OF OCCUPATIONAL VOICE DISORDERS AND THEIR IMPACT ASSESSED BY VOICE HANDICAP INDEX-10

Otorhinolaryngology

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ABSTRACT

Background: Occupational voice disorders represent a significant category of benign laryngeal pathologies encountered in otorhinolaryngology practice. Professions involving prolonged, excessive, or forceful voice use predispose individuals to phono traumatic and inflammatory vocal fold disorders, leading to varying degrees of voice handicap. Objectives: To comprehensively analyze the epidemiological profile of occupational voice disorders and quantify their functional impact using the Voice Handicap Index-10 (VHI-10) as a validated patient-reported outcome measure.

Materials and Methods: This cross-sectional observational study was conducted on 30 adult patients presenting with voice change to analyze the profile of occupational voice disorders and assess their impact on voice-related quality of life using the Voice Handicap Index-10 (VHI-10).

Results: The study population included professional, semi-professional, and heavy voice users. Sales personnel (26.7%), teachers (20%), singers (13.3%), and call center workers (10%) formed the predominant occupational groups. Laryngopharyngeal reflux-related disorders (40%) and phono traumatic lesions (33.3%) were the most common diagnoses. A striking 73.3% of patients demonstrated severe voice handicap, with the highest VHI-10 scores observed among singers (mean: 28.5), teachers (mean: 26.2), and call center workers (mean: 25.1). **Conclusion:** Occupational voice use significantly influences both the type of benign laryngeal pathology and the degree of perceived voice handicap. VHI-10 serves as a reliable tool for quantifying functional impact across occupational groups and should be routinely incorporated in the evaluation of occupational voice disorders.

KEYWORDS

Occupational Voice Disorders, Voice Handicap Index-10, Dysphonia, Professional Voice Users, Voice-Related Quality Of Life, Laryngopharyngeal Reflux

INTRODUCTION

Voice is a primary tool of communication and an essential occupational requirement for several professions. Individuals engaged in professional, semi-professional, and heavy voice use are at increased risk of developing benign vocal fold disorders due to chronic phonotrauma, inappropriate voice technique, and adverse environmental conditions.

Voice symptoms are not a single uniform clinical entity but represent the patient's subjective perception of their voice and, in many cases, their impression of how the voice is perceived by others. Structural laryngeal findings alone may not accurately reflect the functional severity of a voice disorder. Therefore, self-administered voice questionnaires and perceptual voice assessment tools are essential components of voice evaluation, not only assisting in quantifying the severity of voice impairment from the patient's perspective but also providing a reliable means of assessing treatment outcomes and monitoring changes following therapeutic intervention.[1]

Occupational voice disorders encompass a spectrum of conditions including vocal nodules, polyps, chronic laryngitis, functional dysphonia, and reflux-related laryngeal changes. While these disorders are benign, their impact on voice-related quality of life can be substantial, particularly in individuals whose livelihood depends on effective voice use.

The Voice Handicap Index-10 (VHI-10) is a concise, validated patient-reported outcome measure that reliably reflects the functional impact of voice disorders. It has been shown to correlate well with broader voice-related quality-of-life instruments and demonstrates strong validity for use in both clinical practice and research settings.[2] This study aims to profile occupational voice disorders and evaluate their functional impact using VHI-10.

MATERIALS AND METHODS

Study Design: Cross-sectional observational study conducted at the Department of Otorhinolaryngology, tertiary care centers, from October 2024 to October 2025 (12 months duration).

Inclusion Criteria: Patients aged ≥ 18 years with presence of voice change, occupation involving regular or excessive voice use, and benign laryngeal pathology confirmed on laryngeal examination.

Exclusion Criteria: History of laryngeal surgery, structural

malignancy of larynx, acute systemic illness affecting voice, and incomplete clinical data.

Sample Size: A total of 30 consecutive patients fulfilling the inclusion criteria were enrolled using convenience sampling.

Clinical Evaluation: All patients underwent detailed history taking with emphasis on voice-related complaints and occupational voice use. A comprehensive ENT examination was performed, including indirect laryngoscopy to assess vocal fold pathology. Relevant blood and radiological investigations were carried out when indicated.

Voice Handicap Assessment: Voice-related quality of life was assessed using the Voice Handicap Index-10 (VHI-10) questionnaire, a validated 10-item instrument derived from the original 30-item Voice Handicap Index. The VHI-10 demonstrates excellent internal consistency and strong correlation with the full VHI.[1] Patients completed the questionnaire based on their perceived voice-related difficulties.

Box 1: Voice Handicap Index-10 (VHI-10) Questionnaire¹

These are statements that many people have used to describe their voices and the effects of their voices on their lives. Ask the patient to circle the response that indicates how frequently they have the same experience:

0 = never, 1 = almost never, 2 = sometimes, 3 = almost always, 4 = always

Statement	0	1	2	3	4
1 My voice makes it difficult for people to hear me.	0	1	2	3	4
2 I run out of air when I talk.	0	1	2	3	4
3 People have difficulty understanding me in a noisy room.	0	1	2	3	4
4 The sound of my voice varies throughout the day.	0	1	2	3	4
5 My family has difficulty hearing me when I call them.	0	1	2	3	4
6 I use the phone less often than I would like to.	0	1	2	3	4
7 I'm tense when talking to others because of my voice.	0	1	2	3	4
8 I tend to avoid groups of people because of my voice.	0	1	2	3	4
9 People seem irritated with my voice.	0	1	2	3	4
10 People ask, "What's wrong with your voice?"	0	1	2	3	4
Total score					

Scoring Interpretation:
Total Score Range: 0-40
• Mild: 0-10 • Moderate: 11-20 • Severe: >20

RESULTS

Occupational Distribution: The study cohort demonstrated diverse occupational distribution across professional, semi-professional, and heavy voice user categories.

Table 1: Occupational Distribution of Study Participants (N=30)

Occupation	Voice Use Category	n	%
Sales Personnel	Heavy	8	26.7
Teachers	Professional	6	20.0
Singers	Elite Professional	4	13.3

Call Centre Workers	Professional	3	10.0
Shopkeepers	Heavy	3	10.0
Traffic Police	Heavy	2	6.7
Security Personnel	Semi-Professional	2	6.7
Manual Labourers	Heavy	2	6.7
Total		30	100.0

Figure 1: Occupational Distribution of Study Participants (N=30)

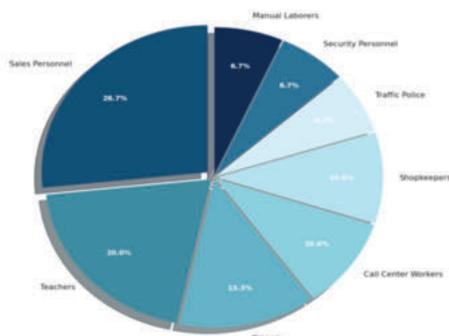


Figure 1: Occupational Distribution of Study Participants

Diagnosis Distribution: Laryngopharyngeal reflux-related disorders emerged as the predominant diagnostic category (40%), followed by phono traumatic lesions including vocal nodules and polyps (33.3%).

Table 2: Distribution of Laryngeal Diagnoses

Diagnosis	n	%	Mean VHI-10
LPRD / GERD-related changes	12	40.0	22.8
Vocal Nodules	6	20.0	26.3
Vocal Polyps	4	13.3	25.5
Functional Dysphonia	3	10.0	24.7
Chronic Laryngitis	3	10.0	21.3
Plica Ventricularis	1	3.3	19.0
Acute Laryngitis	1	3.3	15.0

Figure 2: Distribution of Laryngeal Diagnoses

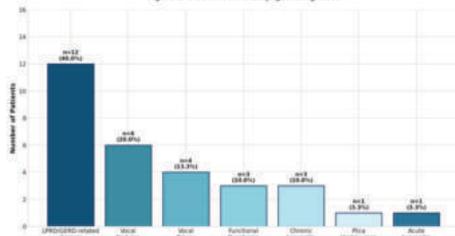


Figure 2: Distribution of Laryngeal Diagnoses

VHI-10 Severity Distribution: Analysis of VHI-10 scores revealed a striking preponderance of severe voice handicap, with 73.3% of patients scoring above 20.

Table 3: VHI-10 Severity Distribution

VHI-10 Severity	Score Range	n	% of Total
Mild	0 - 10	1	3.3
Moderate	11 - 20	7	23.3
Severe	> 20	22	73.3
Total	-	30	100.0

Figure 3: VHI-10 Severity Distribution Among Study Participants

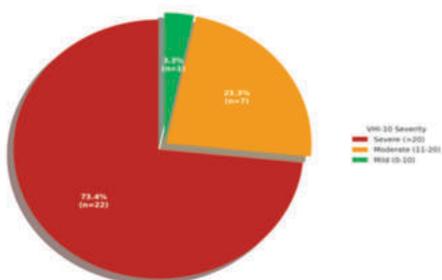


Figure 3: VHI-10 Severity Distribution Among Study Participants

Table 4: Occupation-specific VHI-10 SCORES

Occupation	N	Mean VHI-10	Range	Severity
Singers	4	28.5	24-32	Severe
Teachers	6	26.2	18-31	Severe
Call Centre Workers	3	25.1	21-29	Severe
Shopkeepers	3	24.3	19-28	Severe
Sales Personnel	8	22.4	14-29	Mod-Severe
Traffic Police	2	21.5	19-24	Severe
Security Personnel	2	18.5	16-21	Moderate
Manual Labourers	2	17.0	14-20	Moderate

Figure 4: Mean VHI-10 Scores by Occupation

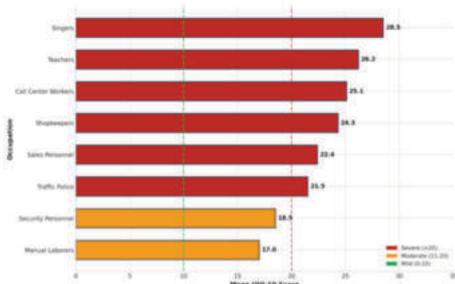


Figure 4: Mean VHI-10 Scores by Occupation

DISCUSSION

Occupational voice disorders are primarily determined by cumulative vocal load and environmental conditions rather than occupational title alone. While most existing literature has focused on teachers as a high-risk group, the present study demonstrates that significant voice-related morbidity also occurs among manual labourers, shopkeepers, and other heavy voice users who constituted the majority of the study population.

Sala et al. reported a higher prevalence of voice disorders among daycare teachers compared with nurses, attributing this difference to sustained voice use, background noise, and unfavorable acoustic environments.[3] These factors are similarly encountered by shopkeepers and other heavy voice users who are required to speak continuously in noisy surroundings. Thus, although teachers were fewer in the present cohort, the occupational risk factors described provide a relevant explanatory framework for the observed voice disorders in non-traditional professional voice users.

In the present study, most patients demonstrated moderate to severe voice handicap on VHI-10 assessment. Alarouj et al. showed significantly higher VHI-10 scores among teachers compared to the general population, emphasizing that increased vocal demand is associated with greater perceived voice handicap.[4] The similarly elevated VHI-10 scores observed among shopkeepers and other heavy voice users in this study suggest that prolonged voice use and environmental strain, rather than professional classification, are the key determinants of self-perceived vocal disability.

Reflux-related and inflammatory laryngeal disorders were the most common diagnoses in this study. Despite their benign nature, these conditions resulted in considerable functional impairment, as reflected by high VHI-10 scores. This reinforces the importance of patient-reported outcome measures in capturing the true impact of occupational voice disorders.

CONCLUSIONS

Occupational voice disorders predominantly affect individuals with high vocal demand and are commonly associated with benign laryngeal pathologies. The severity of voice handicap, as measured by VHI-10, correlates strongly with occupational voice use rather than diagnosis alone. Similar observations have been reported in previous studies demonstrating that occupation significantly influences self-perceived vocal impairment among patients presenting with voice complaints.[5]

Key findings include: (1) 73.3% of occupational voice disorder patients demonstrated severe voice handicap; (2) Singers, teachers, and call centre workers exhibited the highest mean VHI-10 scores; (3) LPRD-related disorders (40%) and phonotraumatic lesions (33.3%) were the predominant diagnoses; (4) Vocal load and environmental factors supersede occupational category in determining voice handicap severity.

Routine use of VHI-10 allows comprehensive assessment of functional impairment and should be integrated into the evaluation and management of occupational voice disorders. Preventive voice care strategies should be extended to encompass a broader range of at-risk occupations beyond traditional professional voice users.

Limitations

The study has certain limitations including small sample size (n=30) limiting statistical power, lack of objective acoustic analysis, cross-sectional design precluding causal inference, and absence of control group for comparison.

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