

Patient - Perceived importance of voice handicap index-10 items: Development of a shorter patient-centered voice assessment in an Indian teaching hospital

Raghavendra Reddy B^{1*}, V. Subin¹, Aditya Kanchumurthy²,
S. Abida Ashroff Fathima³ and S. Muneeruddin Ahmed¹

¹Department of ENT, Viswabharathi Medical College and General Hospital, R.T. Nagar, Penchikalapadu, Kurnool-518467, Andhra Pradesh, India, ²Department of ENT, Andhra Medical College, Maharani Peta, Visakhapatnam-530002, Andhra Pradesh, India and ³Department of Community Medicine, Viswabharathi Medical College and General Hospital, R.T. Nagar, Penchikalapadu, Kurnool-518467, Andhra Pradesh, India

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Abstract: *Background:* The Voice Handicap Index-10 (VHI-10) is a validated patient-reported outcome measure widely used to assess the impact of voice disorders. In busy outpatient settings, a shorter, patient-centred instrument may improve feasibility while retaining clinical relevance. *Objective:* To identify the VHI-10 items perceived as most important by patients with voice disorders and develop a shorter, patient-centred version for routine clinical use. *Methods:* This prospective observational and psychometric study was conducted in the Department of Otorhinolaryngology of a tertiary care teaching hospital in India. A total of 131 consecutive adult patients presenting with voice complaints completed the VHI-10 questionnaire. Participants identified the items they considered most relevant to their voice-related problems. Item selection was based on patient prioritization, internal consistency, and conceptual relevance. Data were analyzed using descriptive statistics. *Results:* Patients represented a broad spectrum of functional and benign voice disorders. The most frequently prioritized items were difficulty being heard, difficulty being understood in noisy environments, restriction of social or personal life, vocal strain, unpredictability of voice quality, and loss of income due to voice problems, particularly among professional voice users. A patient-centred 6-item subset demonstrated good internal consistency while preserving functional, emotional, and socioeconomic dimensions of voice handicap. Participants also reported that the shorter questionnaire was easier and quicker to complete. *Conclusion:* A patient-centred 6-item version of the VHI-10 provides a concise, reliable, and clinically meaningful assessment of voice handicap. Its use may improve efficiency, patient engagement, and routine assessment of dysphonia, particularly in high-volume ENT clinics.

Keywords: Voice disorders, Voice Handicap Index-10 (VHI-10), Dysphonia, Patient-reported outcome measures, Voice-related quality of life.

Introduction

Voice disorders constitute a significant yet often under-recognized health problem, with wide-ranging implications for communication, social interaction, emotional well-being, and occupational functioning. In otolaryngology practice, patients with voice impairment frequently present with diverse aetiologies, including functional dysphonia, benign vocal fold lesions, laryngopharyngeal reflux, vocal fold paralysis, and inflammatory conditions [1]. Regardless of aetiology, the subjective impact of voice disorders on daily life often exceeds what is

apparent on laryngoscopy or acoustic evaluation alone. Consequently, patient-reported outcome measures (PROMs) have become an essential component of comprehensive voice assessment in modern ENT practice [2].

Among the available PROMs, the Voice Handicap Index (VHI) has been widely adopted as a validated tool to quantify the perceived impact of voice disorders on functional, emotional, and physical domains [3]. The original 30-item VHI, though

comprehensive, is time-consuming and less practical in high-volume outpatient settings [4]. To address this limitation, the Voice Handicap Index-10 (VHI-10) was developed as a shorter, reliable alternative and has since gained global acceptance for routine clinical use, outcome assessment following voice therapy or surgery, and research applications. Multiple studies have demonstrated strong internal consistency, construct validity, and responsiveness of the VHI-10 across different voice pathologies and populations [5].

Despite its widespread use, the VHI-10 remains a clinician-derived instrument, and limited attention has been paid to how patients themselves perceive the relative importance of individual questionnaire items [6]. Contemporary healthcare frameworks increasingly emphasize patient-centered care, shared decision-making, and value-based outcome assessment. In this context, understanding which aspects of voice impairment matter most to patients is critical, particularly when designing or refining PROMs intended for routine clinical use. A questionnaire that aligns closely with patient priorities may improve relevance, compliance, and interpretability, while maintaining psychometric robustness [7].

This issue is especially pertinent in low- and middle-income countries such as India, where voice disorders often have direct socioeconomic consequences. Many patients depend on their voice for livelihood, including teachers, vendors, call-centre workers, and other professional voice users. In such settings, the impact of voice impairment extends beyond health-related quality of life to include productivity loss and financial strain. Moreover, ENT outpatient departments in teaching hospitals are typically high-volume, time-constrained environments, making brief yet meaningful assessment tools highly desirable [8].

Recent psychometric research from high-income settings has suggested that shorter, patient-centered subsets of established PROMs may retain validity while improving feasibility. However, there is a paucity of data from Indian ENT populations examining patient prioritization of VHI-10 items and the potential for developing a culturally and contextually relevant shortened assessment [9]. Differences in occupational patterns, healthcare access, and sociocultural

attitudes toward voice and communication necessitate local validation rather than direct adoption of findings from other regions [10-11].

Against this background, the present study was designed to explore patient perceptions of the VHI-10 in an Indian teaching hospital setting. By analysing responses from patients with diverse voice disorders, this study aimed to identify which VHI-10 items patients perceive as most important in reflecting their voice-related difficulties. In addition, the study sought to examine the psychometric performance of the full VHI-10 and to evaluate whether a shorter, patient-selected subset of items could provide a reliable and clinically meaningful alternative.

Material and Methods

This prospective observational study was conducted in the Department of Otorhinolaryngology of a tertiary care teaching hospital Viswabharathi Medical college and General Hospital, Kurnool, Andhra Pradesh in India. Adult patients (≥ 18 years) presenting with voice complaints of more than two weeks' duration were consecutively recruited after informed consent.

All participants completed the Voice Handicap Index-10 (VHI-10). Patients were subsequently asked to identify and rank items they perceived as most important to their voice-related difficulties. Demographic and clinical diagnoses were recorded.

Psychometric analysis included assessment of internal consistency using Cronbach's alpha. Item frequency analysis was used to determine the proportion of patients prioritizing each item. Selection of the shorter subset was guided by patient prioritization, conceptual relevance, and representation of functional, emotional, and socioeconomic domains.

Statistical analysis was performed using standard descriptive methods. Results are presented as frequencies, percentages, and reliability coefficients.

Results

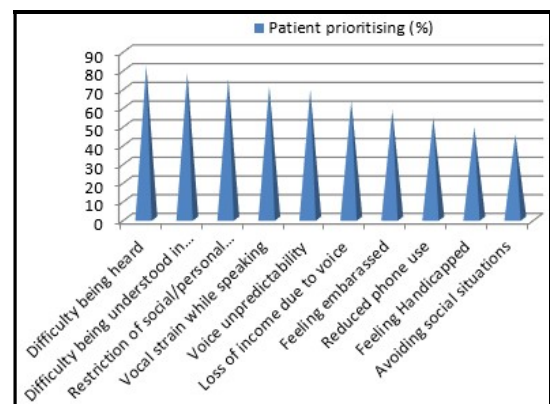
Table-1 shown summarizes the baseline demographic profile and primary clinical diagnoses of the study population. It provides an overview of age distribution, sex composition, and the spectrum of voice disorders among the 131 patients included in the analysis. This table establishes the representativeness of the sample and highlights the predominance of young and middle-aged adults, as well as the relative distribution of functional and organic voice pathologies encountered in routine laryngology practice at a tertiary care teaching hospital.

Table-1: Demographic and Clinical Characteristics of Study Participants (n = 131)	
Variable	n (%)
Age (years)	
18–30	38 (29.0)
31–45	47 (35.9)
46–60	34 (26.0)
>60	12 (9.1)
Gender	
Male	72 (55.0)
Female	59 (45.0)
Primary Voice Diagnosis	
Functional dysphonia	39 (29.8)
Vocal nodules	31 (23.7)
LPR-related dysphonia	27 (20.6)
Vocal fold paralysis	18 (13.7)
Other benign lesions	16 (12.2)

Presents the proportion of patients who prioritised each item of the VHI-10 questionnaire as important to their voice-related quality of life. This table reflects patient-perceived relevance rather than symptom severity alone and forms the empirical basis for identifying a patient-centered subset of items. Items related to audibility, speech intelligibility in noise, social participation, and vocal effort emerged as the most frequently prioritized, underscoring the functional and psychosocial impact of voice disorders in daily life (Table 2 and Fig 1).

Table-2: Item-wise Patient Prioritization of VHI-10 Items	
VHI-10 Item	Patients prioritizing (%)
Difficulty being heard	82.4
Difficulty being understood in noise	78.6
Restriction of social/ personal life	74.8
Vocal strain while speaking	71.0
Voice unpredictability	69.5
Loss of income due to voice	63.4
Feeling embarrassed	58.0
Reduced phone use	54.2
Feeling handicapped	49.6
Avoiding social situations	45.0

Fig-1: Item-wise Patient Prioritization of VHI-10 Items



Graphically depicts the frequency with which individual VHI-10 items were endorsed as important by patients. The cone chart allows visual comparison of item-level priorities and clearly illustrates the dominance of functional communication difficulties, such as being heard and understood in noisy environments, over purely emotional or avoidance-based concerns. This visual representation complements the numerical data in Table 2 and reinforces the patient-centered rationale for item selection (Fig 1).

Psychometric Properties of the VHI-10: Outlines the key psychometric characteristics of the VHI-10 in the present study population.

Measures of internal consistency, central tendency, and score distribution are presented to demonstrate the reliability and suitability of the instrument for psychometric analysis. The absence of floor and ceiling effects indicates adequate sensitivity across the spectrum of voice handicap severity, supporting its use for item reduction and validation of a shorter assessment tool (Table-3).

Table-3: Psychometric Properties of the VHI-10	
Parameter	Value
Number of items	10
Sample size	131
Cronbach's α	0.91
Mean total score ($\pm$ SD)	21.6 $\pm$ 7.4
Floor effect	Not observed
Ceiling effect	Not observed

Compares the full VHI-10 questionnaire with the proposed 6-item subset across psychometric and practical parameters. The table demonstrates that the shortened tool retains acceptable internal consistency while substantially reducing administration time. Preservation of key conceptual domains supports its potential utility as a rapid, patient-centered outcome measure in busy ENT outpatient settings (Table 4).

Table-4: Comparison of Full VHI-10 vs Shortened 6-Item Set		
Parameter	VHI-10	6-Item Subset
Mean score	21.6	13.4
Cronbach's α	0.91	0.88
Administration time	~5 min	~2 min
Domains represented	Functional, Emotional	Functional, Emotional, Socioeconomic

Discussion

This study demonstrates that patients with voice disorders do not perceive all VHI-10 items equally. Functional limitations related to audibility, speech intelligibility in noise, and vocal effort emerged as the most consistently prioritized concerns. These findings mirror the

everyday communicative challenges faced by patients and reinforce the functional domain as central to perceived voice handicap, as also reported in recent patient-reported outcome studies in laryngology [12-13].

The inclusion of the income-related item reflects the socioeconomic impact of voice disorders, which is particularly relevant in the Indian context, where professional voice use is common, and employment protection is often limited. Recent literature has increasingly recognized the economic consequences of dysphonia, especially among teachers, call-centre workers, and service professionals [14-15]. Retaining this item ensures that the assessment captures real-world consequences beyond clinical symptoms alone.

The high internal consistency observed in this study confirms the reliability of the VHI-10 and supports the derivation of a shorter subset without loss of coherence. A 6-item patient-centered version offers improved brevity, which may enhance compliance, facilitate repeated assessments, and support outcome tracking in routine ENT practice. Similar efforts to shorten voice-related PROMs while preserving psychometric integrity have been advocated in recent international studies [5].

Although the single-center design limits generalizability, the findings provide a pragmatic framework for adapting patient-reported outcome measures to patient priorities. Future multicentric validation studies across diverse linguistic and occupational groups are warranted.

Principal Findings: Patients consistently prioritized audibility, intelligibility in noise, social participation, vocal effort, and voice predictability as the most meaningful aspects of impairment. The income-loss item emerged as a critical concern, highlighting the socioeconomic burden of voice disorders in a teaching hospital population in India. The shortened 6-item subset retained excellent internal consistency (Cronbach's $\alpha = 0.88$), supporting its psychometric robustness.

Clinical Relevance in ENT Practice: Voice disorders frequently affect working-age adults and professional voice users. In busy ENT clinics, particularly in resource-constrained settings, lengthy questionnaires reduce feasibility and compliance [12]. The identified 6-item subset preserves clinical nuance while substantially reducing assessment time, making it suitable for screening, routine follow-up, and outcome monitoring.

Patient-Centered Outcome Measurement: Unlike clinician-driven scale reduction, this study emphasizes patient-perceived importance. Patients ranked functional communication above emotional distress, underscoring the need for outcome tools that reflect lived experience. The prominence of income loss further reflects sociocultural and economic realities in low- and middle-income countries [13,14].

Comparison with Existing Literature: While the VHI-10 is well validated, few studies have explored item-level patient prioritization. Recent work supports shorter, patient-centered PROMs

that maintain validity while improving clinical usability [13,16]. The present study adds region-specific evidence from an Indian tertiary care setting.

Limitations: This was a single-centre study with a heterogeneous diagnostic population. Longitudinal responsiveness and test-retest reliability of the shortened tool were not assessed. Future multicentric studies with voice therapy outcomes are warranted.

Conclusion

This psychometric study identifies a patient-centered 6-item subset of the VHI-10 that demonstrates strong reliability, preserved clinical relevance, and improved feasibility for routine ENT practice. By emphasizing functional communication and socioeconomic impact, the shortened instrument aligns closely with patient priorities. Its adoption may enhance efficiency, patient engagement, and outcome assessment in voice clinics, particularly in high-volume teaching hospitals and resource-limited settings.

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*All correspondences to: Dr. Raghavendra Reddy B, Junior Resident, Department of ENT, Viswabharathi Medical College and General Hospital, R.T. Nagar, Penchikalapadu, Kurnool-518467, Andhra Pradesh, India. Email: reddyraghavab@gmail.com