



Evaluation of Validity of Voice Handicap Index among Indian Population

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ABSTRACT

Introduction: The field of voice disorders has seen numerous advances in diagnostic and therapeutic modalities in the recent past. Unfortunately, none of these assessments reflects the “true” suffering of the patients or the level of handicap that a patient is suffering from as a result of the voice disorder.

Aims and objectives: (1) To compare Voice Handicap Index (VHI) of normal person with VHI of patient with change in voice. (2) To compare VHI of different conditions of change in voice.

Materials and methods: The study is a prospective cohort study with 100 subjects enrolled in the cases or the dysphonic group and 100 patients enrolled as controls. Both the study groups were then asked the VHI questionnaire. The VHI consists of questions on how the voice change has affected the patient's daily routine life and how the functional, physical, and emotional aspect of voice is impaired is checked.

Results: Among gender analysis, females had high VHI scores along with VHI subscales in both dysphonics and control group. Among the vocal cord lesions, the VHI scores and subscores were compared. The mean VHI score was maximum in patients with Reinke's edema, then in case of vocal cord polyp, followed by vocal cord palsy, vocal cord cyst, vocal cord nodules, vocal sulcus, and least was in cases of vocal cord varix.

Conclusion: The VHI questionnaire is a brief, relevant, and valid self-rating questionnaire to add to the routinely used clinicians' assessment battery to contribute to the complex decision-making process (diagnosis, therapy, counseling) and outcome.

Keywords: Dysphonias, Laryngology, Phonosurgery.

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INTRODUCTION

The field of voice disorders has seen numerous advances in diagnostic and therapeutic modalities in the recent

past. However, most of the diagnostic modalities assessing voice disorders measure voice in objective terms. Unfortunately, none of these assessments reflects the “true” suffering of the patients or the level of handicap that a patient is suffering from as a result of the voice disorder. In order to assess the quality of life of the patients suffering from voice disorders and their level of handicap due to the disorder, quite a few instruments have been developed in the past, such as the Voice-Related Quality of Life, the Vocal Performance Questionnaire, the Voice Participation Profile, the Voice Symptom Scale, Dysphonia Severity Index, and the VHI. The most comprehensive of them all is the VHI.¹

AIMS AND OBJECTIVES

- To compare VHI of normal person with VHI of patient with change in voice.
- To compare VHI of different conditions of change in voice.
- To compare the VHI among males and females with and without complaints of voice change.

MATERIALS AND METHODS

The study was a prospective cohort study with 100 subjects enrolled in the cases or the dysphonic group and 100 normal subjects were enrolled as controls. Patients were included in the “dysphonic” group when they presented with a voice complaint on the day of the ear, nose, and throat (ENT) assessment or had a history of permanent/frequent voice problems not related to upper respiratory tract infection (URTI) or allergic situations and for which the ENT surgeon found corroborative evidence. Hundred speakers enrolled as “controls” only if they did not have voice complaints on the day of the ENT assessment or a history of permanent/frequent voice problems not related to URTI or allergic situations and for which the ENT surgeon found corroborative evidence. Selection of patients was random (Table 1).

These groups were matched for age, sex, and professional demands. A detailed history with clinical examination was done. This was followed by indirect laryngoscopy and 70° rigid laryngoscopy.

Vocal cords were observed at rest for position, contours, any tissue loss, or scarring of crico-arytenoid joint.

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Table 1: Cases having different causes of dysphonia, with vocal palsy being the most common

Reinke's edema	5
Vocal nodule	27
Vocal cord cyst	13
Sulcus	7
Palsy	28
Polyp	7
Varix	2
Scarring	1
Hematoma	1
Multiple*	9

*Multiple suggests that there was a combination of diseases present in the same patient

During phonation, the mobility of membranous vocal fold as compared with the arytenoids, glottis closure, and localized absence or reduction in mucosal wave was seen.

Voice examination was done using the GRBAS scale, which is used to make perceptual judgment of voice. It rates Grade, Roughness, Breathiness, Asthenia, and Strain. The rating is made on the current conversational speech or reading passage. For measurement and reporting, a 4-point scale was used:

- 0 = normal or absence of deviance
- 1 = slight deviance
- 2 = moderate deviance
- 3 = severe deviance.

Voice Handicap Index

Both the study groups were then asked the VHI questionnaire. The VHI consists of questions on how the voice change has affected the patient's daily routine life and how the functional, physical, and emotional aspect of voice is impaired is checked. The VHI 30 questionnaire was used. The questionnaire given to the patients was in their native language or the language of choice. For illiterate patients, the questions were read out by the investigator. Patients answered these questions with one of the five options:

1. 0—never
2. 1—almost never
3. 2—sometimes
4. 3—almost always
5. 4—always.

The data were then tabulated separately for the cases and controls in an excel sheet. Descriptive statistics was used to analyze the data and a general linear model repeated measures analysis of variance was carried out with group.

LIMITATIONS

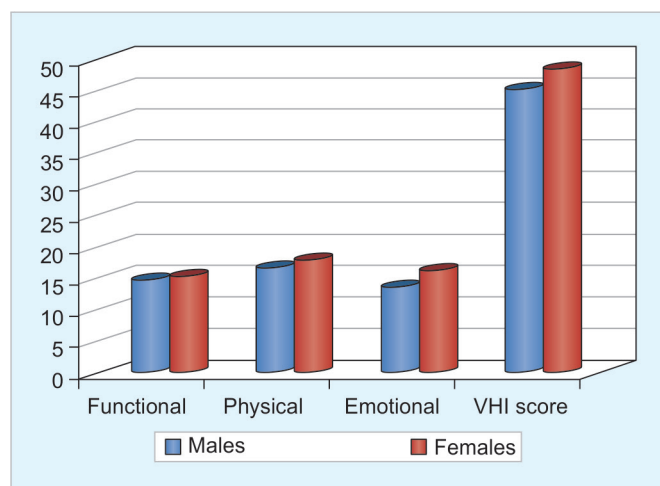
The questionnaire used in languages other than English was not validated.

Following is the VHI and the scale that was being used (Table 2).

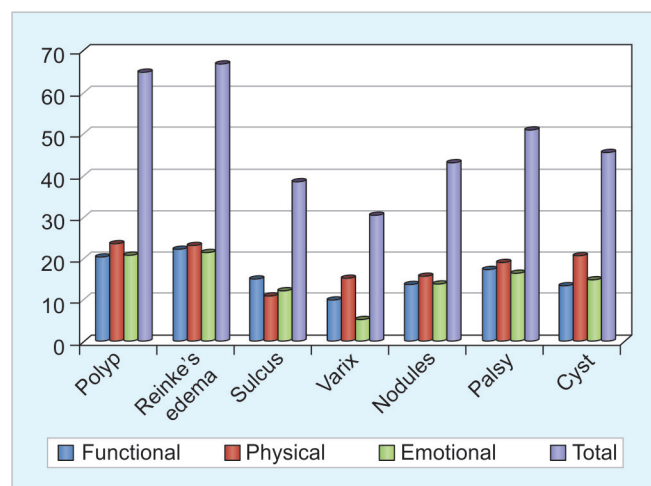
Table 2: Voice handicap index 30

<i>Functional</i>				
1. My voice makes it difficult for people to hear me	1	2	3	4
2. People have difficulty understanding me in a noisy room	1	2	3	4
3. My family has difficulty hearing me when I call them throughout the house	1	2	3	4
4. I use the phone less often than I would like to	1	2	3	4
5. I tend to avoid groups of people because of my voice	1	2	3	4
6. I speak with friends, neighbors, or relatives less often because of my voice	1	2	3	4
7. People ask me to repeat myself when speaking face-to-face	1	2	3	4
8. My voice difficulties restrict personal and social life	1	2	3	4
9. I feel left out of conversations because of my voice	1	2	3	4
10. My voice problem causes me to lose income	1	2	3	4
<i>Physical</i>				
1. I run out of air when I talk	1	2	3	4
2. The sound of my voice varies throughout the day	1	2	3	4
3. People ask, "What's wrong with your voice?"	1	2	3	4
4. My voice sounds creaky and dry	1	2	3	4
5. I feel as though I have to strain to produce voice	1	2	3	4
6. The clarity of my voice is unpredictable	1	2	3	4
7. I try to change my voice to sound different	1	2	3	4
8. I use a great deal of effort to speak	1	2	3	4
9. My voice is worse in the evening	1	2	3	4
10. My voice "gives out" on me in the middle of speaking	1	2	3	4
<i>Emotional</i>				
1. I am tense when talking to others because of my voice	1	2	3	4
2. People seem irritated with my voice	1	2	3	4
3. I find other people do not understand my voice problem	1	2	3	4
4. My voice problem upsets me	1	2	3	4
5. I am less outgoing because of my voice problem	1	2	3	4
6. My voice makes me feel handicapped	1	2	3	4
7. I feel annoyed when people ask me to repeat	1	2	3	4
8. I feel embarrassed when people ask me to repeat	1	2	3	4
9. My voice makes me feel incompetent	1	2	3	4
10. I am ashamed of my voice problem	1	2	3	4





Graph 1: Comparison of VHI in males and females



Graph 2: Comparison of VHI in different diseases

Table 3: Comparison of VHI in cases and controls

	Cases	Controls
VHI	47	2.01
Functional	15.24	0.73
Physical	17.63	0.67
Emotional	15.19	0.61

RESULTS

The mean age in the dysphonic group was 36.4 years and in the control group was 34.7 years. In case of gender analysis, the number of females in dysphonic group was 57 and males were 43. In case of control group, males were 48 and females were 52. Gender analysis in both the groups was comparable but not statistically significant.

Among the gender analysis, females had high VHI scores along with VHI subscales in both dysphonic and control group (Graph 1).

The total VHI score as well as the functional, physical, and emotional aspects of the voice were all higher in cases than in controls (Table 3).

Among the vocal cord lesions, the VHI scores and subscores were compared. The mean VHI score was maximum in patients with Reinke's edema, then in case of vocal cord polyp, followed by vocal cord palsy, vocal cord cyst, vocal cord nodules, vocal sulcus, and least was in cases of vocal cord varix (Graph 2).

The functional subscale score was highest in cases of Reinke's edema. The physical score was highest in cases of the vocal cord polyp and the emotional subscale was highest in cases of Reinke's edema.

DISCUSSION

From our study, it is clear that VHI is significantly elevated in dysphonic individuals and they suffer from number of functional and emotional problems. The most affected are patients with Reinke's edema. No significant

effect of age or gender was found, although females showed higher psychosocial voice impact score. Within the subscales (functional, emotional, and physical), there was no significant difference between the emotional and functional subscores for the dysphonics, but the physical subscale score was significantly high.

A handicap, as described by the World Health Organization, is a social, economic, or environmental disadvantage resulting from an impairment or disability. The term disability refers to a restriction or inability to perform a daily task.

Voice is an indispensable tool in an individual's life and the loss of which may result in functional, psychological, and financial implications.² Thus, any test that does not measure the effect of a disease on the patient's quality of life does not provide a comprehensive picture and should be deemed as inadequate.^{3,4} The handicap associated with a voice disorder cannot be efficiently measured with the conventional objective tests like endoscopy, stroboscopy, and objective acoustic measurements. A comprehensive test would measure things like whether a hawker is able to carry out his job or a teacher is able to teach his/her pupils.^{5,6} The VHI is one such parameter.^{7,8} Introduced first by Jacobson et al,⁹ it quantifies the functional, physical, and emotional aspect of the voice. The functional subscale includes statements that describe the effect of a person's voice on daily activities. The emotional subscale indicates the patient's affective responses to the voice disorder. The items in the physical subscale are statements that relate to either the patient's perception of laryngeal discomfort or the voice output characteristics, such as too low or too high a pitch. Each subscale was found to be significantly different if it differed by eight points, whereas the total VHI score was found to be significantly different if it varied by 18 points. Thus, a shift in the total score of 18 points or greater is required to be certain that a change is caused by intervention and not

by the unexplained variability inherent in such tests. The advantage that the VHI holds over other voice-analyzing methods is that it capitulates how the dysphonia has affected a person's well-being and his daily life.⁸ The VHI can be used to track the disease progress and the effect of treatment on the same. It can be used as an endpoint to decide the efficacy of a new treatment protocol.¹⁰

Thus, we believe that VHI should be inculcated in every diagnostic and therapeutic protocol for efficient and complete management.

CONCLUSION

The results from this study seem to show that the patients with voice complaints scored significantly higher, which indicates more problems than matched individual without voice complaints. Females had a higher VHI score in the normal as well as diseased group as compared with males. Among the dysphonic group, patients with Reinke's edema were seen to have the maximum effect of the voice change on their lives and scored the maximum on the VHI scale. Thus the VHI questionnaire is a brief, relevant, and valid self-rating questionnaire to add to the routinely used clinicians' assessment battery to contribute to the complex decision-making process (diagnosis, therapy, and counseling) and outcome.

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