# Voice Handicap Index – A Comparison of Clinician's Ratings and Self Ratings by Individuals with Dysphonia

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## Abstract

*Voice Handicap Index (VHI) is one of the measures of self perception of voice problem. It is a short self report questionnaire which is useful in routine clinical situations for assessing the progress of the disorder and the influence of interventions. Although various studies are done on self ratings by individuals with dysphonia (IWD) on VHI, there is a scarcity of studies on comparison of ratings by clinicians and self ratings by IWD. To compare the ratings between the VHI report of the IWD and that obtained by the clinician for the same patient. 13 IWD ranging in age from 18 to 57 years and 13 normal individuals matched on age and gender were chosen as the subjects. VHI was administered for both the groups and results were analyzed by the researcher. The SLP assessed the voice aspect in a separate assessment. VHI was also administered on the control group. Data was analyzed using Mann-Whitney 'U' test, Pearson's correlation procedure and Wilecoxon Signed Ranks Test. The mean scores were higher in experimental group than those obtained by the control group in all the three sections of the VHI questionnaire. Mann Whitney U test showed high correlation between the scores obtained by the IWD and the clinician. There was no significant difference between the two groups on Wilecoxon Signed Ranks Test. Pearson's correlation procedure showed that there is a high correlation between the VHI scores of the IWD and the scores of the clinician. These results suggest that clinicians are also reliable respondents in assessing the voice handicap in IWD. It may be concluded that the client's perception of severity of voice disorder will enable the examiner to give treatment to IWD and to know the treatment efficacy by obtaining the clinician's opinion on the VHI for individuals with voice disorders.*

***Key Words: Voice Handicap Index, Dysphonia***

Voice Handicap Index (VHI) is one of the measures of self perception of voice problem. It is a short self-report questionnaire which is useful in routine clinical situations for assessing the progress of the disorder and the effectiveness of intervention. There are other instruments such as Voice Symptom Scale (VOISS) [Deary, Wilson, Carding & Makenzile, 2003], the Voice Related Quality of Life measure (VRQOL) [Murry, Medrado, Hogilegan & Aviv, 2004]. Among quality of life measures, VHI is widely accepted and used for research as well as for clinical application. Agency of Health care research and quality in 2002 acknowledged VHI as reliable and valid diagnostic tool (Cited in Amir et.al, 2006).

Voice Handicap Index was developed and validated by Jacobson, Johnson, Grgnalski, Silbergleit and Benninger in 1997. The purpose for developing VHI was to device a method for quantifying voice treatment outcomes with particular emphasis on the patient's physical, emotional and functional changes that occur with treatment. Initial version of VHI had 85 items and from this it was reduced to 30 items and this was known as VHI -30. Although there are various versions of VHI, the one popularly used is VHI-30.

VHI-30 is a question and answer tool, containing 2 appendices. (Appendix A and Appendix B). Appendix A comprises of three domains that are emotional (E), physical (P) and functional (F). It is composed of 30 questions or statements. Appendix B is a Life Stressor scale which consists of 43 items regarding changes in life situations within the last year. Each item on the Life Stressor scale is given a weighted score as per the test protocol. Scores below 150 indicate one in three chances of serious health changes and the score of 300 or more indicates that a person is at high risk for serious health changes. During the administration of VHI (VHI-30, see

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Appendix-A for details of VHI), the individual has to read each question or comment and indicate how frequently that statement applies to individual situations. Responses are scored from 0 to 4 for each question. On completion of the voice handicap index, the scores can be tabulated for total score. A VHI score 0 to 30 represents low scores indicating that there is a minimal amount of handicap associated with the voice disorder. A score of 31 to 60 denotes a moderate amount of handicap due to voice problem. A VHI score from 60 to 120 represents significant and serious amount of handicap due to voice problem and are often seen in patient with new onset vocal fold paralysis or severe vocal fold scarring. (Jacobson, Johnson, Grgnalski, Silbergleit & Benninger, 1997).

Voice handicap index has been used in different populations as a subjective measure to find the emotional, physical and functional handicap present in each individual and various groups. The results of the study done by Rosen and Murry, (2000) indicated that singers scored significantly lower on VHI compared to the non-singers. A study on VHI of laryngectomees with tracheoesophageal speech showed that, in comparison to normals, control group and the functional voice disorders, the VHI demonstrates significantly higher voice handicap for laryngectomees in each scale. A significant difference between laryngectomees and patient with organic voice disorder was detected on the functional scale (Schuster, Lohscheller, Hoppe, Kummer, Eysholdt & Rosanowski, 2004).

A study by Olival and Matias, (2005) on vocal impact on quality of life of elderly women concluded that the vocal condition may significantly interfere with quality of life in women aged over 60. Results of the study on quality of life issues, functional outcomes and VHI in partial laryngectomee patients for early glottic cancer were done to gather information about the quality of life issues. Functional outcomes and voice problems facing early glottic cancer patients treated with the surgical techniques showed that there was no significant difference between the three groups. All the participants expressed the view that their new voices have similar functional, physical and emotional impact on their life (Kandogan & Sanal, 2005). Results on Voice handicap in patients with organic and functional dysphonia using German version of VHI showed significant difference between pathological group and the control group (Weigelt, Krischke, Klotz, Hoppe, Kollner, Egsholdt & Rosanowski, 2004). The prevalence of voice complaints, risk factors and the impact of voice problems in female student teachers could be successfully evaluated with this tool (Thomas, Dejong, Cremers & Kooijman, 2006).

Rosen, Murry, Zinn, Zullo, Sonbolian (2000) reported, Voice handicap index as a useful instrument to monitor the treatment efficacy for voice disorder. VHI is also qualified as a diagnostic tool for German speaking countries (Nawaka, Wiseman & Gonnerman, 2003). VHI is reported to be a valuable tool for assessment of speakers with as well as without laryngeal pathologies. (Amir et.al, 2006). However, very few Indian studies have looked into this aspect of voice disorder. Sovani, Keer and Sanghi (2007), conducted a study on correlation of VHI scores with client's perception of severity in males and females with voice disorder and results showed moderate correlation in males and females showed poor correlation. A study by Kuniyil (2007) aimed at developing the VHI in Malayalam language and also to assess the reliability and validity of the same version. The results of this study indicated that the adapted Malayalam version is as reliable and valid as the original version and it is also a useful tool to evaluate the differences among the voice disordered groups and between the voice disordered and the control group.

VHI is a valuable tool to identify emotional, physical and functional problems present in voice disordered population. As the voice disordered populations are vulnerable to get emotional, physical and functional problems, it is important to administer VHI on this population. However, very few studies have been done on these aspects in India and as there could be cultural variation in perception of quality of life, such studies are necessary. Studies comparing VHI ratings by clinician and self rating by the patients are conspicuous by their absence. If there is a good correlation between the two, then clinicians could also be used as valid respondents to provide information on effect of voice problem on an individual. This study also aimed to recheck the validity of the voice handicap index between the control and dysphonic group.

## Method

In this study, 13 subjects with dysphonia and 13 normal individuals matched on age and gender served as the subjects. Based on self reports and subjective perception, voice problem in controls was ruled out. Among clients with dysphonia, 7 were males and 6 females ranging age from 18 to 57 years. VHI was administered on 13 clients with dysphonia cases who had undergone voice therapy for around three months (3 subjects had puberphonia, 7 subjects had hoarseness in the voice, one subject had highly strained voice with

high pitch and breathiness, one subject had harshness in the voice and one had mild breathiness). The clinician's opinion on VHI for the same clients with dysphonia cases was taken. VHI was also administered on the control group. Later comparison of the VHI scores between the control group and the clients with dysphonia was done. Also, comparison between the VHI scores of clients with dysphonia and the scores of the clinician for the particular patients were made.

To analyze the obtained data, non-parametric statistical procedure was used. In order to compare the scores between the control group and the dysphonic group, Mann Whitney 'U' test was used. To compare the scores between the dysphonic group and the clinicians, Wilecoxon Signed Ranks Test was carried out. Pearson's correlation procedure was used to find out the correlation between the dysphonic and the control group scores.

## Results and Discussion

Individual mean of all the three sections in each group were compared. The mean corresponds to moderate problem as reported by Amir et al. (2006). The mean scores were higher in dysphonic group than those obtained by the control group in all the three sections of the VHI questionnaire suggesting that it helps in differentiating normals from the voice disordered group. As our subjects comprised mainly of hyperfunctional voice disorders, the amount of voice handicap correlated with the cause of voice condition. Another reason could be that these reports are post therapy which could have led to the lower scores in various domains. Similar results were obtained in the study done by Guimaraces & Abberton (2003); Kuniyil (2007).

| Groups | Mean | | |
|---|---|---|---|
| | Physical (Part- A) | Functional (Part-B) | Emotional (Part-C) |
| Control group | 2.07 | 1.38 | 0.92 |
| Dysphonic group | 16.07 | 21.3 | 17.15 |
| Clinician's view | 15.46 | 18.46 | 14.23 |

**Table 1:** Individual mean of all the three groups on three different sections of VHI.

Dysphonic group showed more problems in emotional domain rather than the physical and functional domains. It could be because the questions in part-c of the VHI deals only regarding the effects of voice on the emotions of the individuals with dysphonia, whereas part-a and part-b of the VHI deal regarding the physical and functional aspects of the voice problem. The mean scores obtained by the clinician group were similar to the scores obtained by the dysphonic group. This suggests that the clinician scoring the clients with dysphonia is as accurate as the clients with dysphonia rating their voice problem themselves.

| | Range | Mean | S.D. | Z |
|---|---|---|---|---|
| Control group | 0-13 | 4.3846 | 4.292 | 4.342* |
| Dysphonic Group | 15-98 | 54.3846 | 29.04 | |

* = Significant at 0.05 level

**Table 2:** Results of Mann Whitney "U" test for control and dysphonic group.

| Groups | Range | Mean | S.D. | Z |
|---|---|---|---|---|
| Dysphonic View | 15-98 | 54.3846 | 29.04 | 0.769 NS |
| Clinician's View | 27-86 | 48.00 | 16.69331 | |

NS= Not significant

**Table 3:** Results of Mann Whitney "U" for Dysphonic and Clinician Views.

Mann Whitney 'U' test was carried out to compare the scores between the control group and the dysphonic group which showed that there is a very highly significant difference between them. Studies done by Amir et.al, 2006; Guimaraces and Abberton, 2003; Kuniyil, 2007; showed similar results. To compare the scores between the dysphonic group and the clinician group, Wilecoxon Signed Ranks Test was carried out. The results of the test showed that there is no significant difference between the two groups. Correlation of the scores between the two groups was checked using Pearson's correlation procedure which showed that there is a high correlation between the VHI scores of clients with dysphonia and the scores of the clinician for this particular group of subjects. These results suggest that clinicians are also reliable respondents for voice problems in subjects. Thus, it would be of clinical interest to see if other people related to voice disordered individuals could also provide such information. The comparison was carried out according to the questions of each section of the VHI between the clinician's opinion and the client's opinion. There were deviances between the clinician's and client's opinion for few questions such as "My voice difficulties restrict personal and social life" "I am ashamed of my voice problem", "My voice problem upsets me". This could be because of the deviation in the perception of the problem by clinician and the client. This would suggest that counseling should be carried out on those aspects.

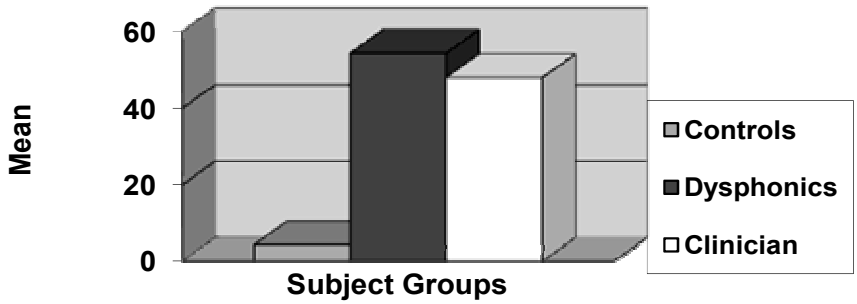


**Figure 1:** Results of Mann-Whitney "U" test for all the 3 groups.

Present study showed that the mean of the scores on VHI for the control group is less compared to the mean score of the dysphonic group and the high correlation of the scores between dysphonic group and the clinician group suggests that the voice handicap index is sensitive to the voice related changes. Higher scores in group with voice disorders suggest that VHI is a valid tool. Correlation between client and the clinician shows, even clinician rated VHI could give valuable information and could be used clinically.

## Conclusions

From the results of the present study conclude that the voice handicap index can also be used to differentiate clients with dysphonia and the control group. It should be differentiated to understand how individuals with dysphonia perform differently from normal and on VHI. Client's perception of severity of voice disorder will help the examiner to give treatment to the client and improve him/her as a person rather than a person with a voice disorder. This VHI questionnaire helps to know the treatment efficacy by obtaining the clinician's opinion on the VHI for the voice disordered population. Future studies can be carried out on larger population in order to generalize the results. Other individuals close to the individuals with voice disorders, such as family members and friends could also be evaluated for their responses. Results from these studies would suggest the probable areas of counseling for that set of respondents.

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## Appendix

### VOICE HANDICAP INDEX

*Instructions:* These are statements that many people have used to describe their voices and the effects of their voices on their lives. Circle the response that indicates how frequently you have the same experience.

0=Never 1=Almost Never 2=Sometimes 3=Almost always 4=Always

**Part 1-F**

1. My voice makes it difficult for people to hear me.

   0 1 2 3 4

2. People have difficulty in understanding me in a noisy room.

   0 1 2 3 4

3. My family has difficulty in hearing me when I call them through out the house.

   0 1 2 3 4

4. I use the phone less often than I would like to.

   0 1 2 3 4

5. I tend to avoid groups of people because of my voice.

   0 1 2 3 4

6. I speak with friends, neighbors and relatives less often because of my voice.

   0 1 2 3 4

7. People ask me to repeat myself when speaking face to face.

   0 1 2 3 4

8. My voice difficulties restrict personal and social life.

   0 1 2 3 4

9. I feel left out of conversations because of my voice.

   0 1 2 3 4

10. My voice problem causes me to loose income.

    0 1 2 3 4

**Part-2-P**

1. I run out of air when I talk.

   0 1 2 3 4

2. The sound of my voice varies throughout the day.

   0 1 2 3 4

3. People ask, “What is wrong with your voice?”

   0 1 2 3

4. My voice sounds creaky and dry.

   0 1 2 3 4

5. I feel I have to strain to produce voice.

   0 1 2 3 4

6. The clarity of my voice is unpredictable.

   0 1 2 3 4

7. I try to change my voice to sound different.

   0 1 2 3 4

8. I use great deal of effort to speak.

   0 1 2 3 4

9. My voice sounds worse in the evening.

   0 1 2 3 4

10. My voice gives out on me in the middle of speaking.

    0 1 2 3 4

**Part 3- E**

1. I am tense when talking to others because of my voice.

0 1 2 3 4

2. People seem irritated with my voice.

   0 1 2 3 4

3. I feel that other people do not understand my voice problem.

   0 1 2 3 4

4. My voice problem upsets me.

   0 1 2 3 4

5. I am less outgoing because of my voice problem.

   0 1 2 3 4

6. My voice makes me feel handicapped.

   0 1 2 3 4

7. I feel annoyed when people ask me to repeat.

   0 1 2 3 4

8. I feel embarrassed when people ask me to repeat.

   0 1 2 3 4

9. My voice makes me feel incompetent.

   0 1 2 3 4

10. I am ashamed of my voice problem.

    0 1 2 3 4

## Acknowledgements

We thank Dr. M. R. Shetty, Secretary, Dr. M.V. Shetty Trust, Mangalore, for permitting us to carry out the study in the Institution. We thank Dr.T.A.Subba Rao, Principal, Dr. M.V. Shetty College of Speech and Hearing, Mangalore, for supporting and guiding us. Thanks to all our subjects for participating in this study.