

## Translation and validation of voice handicap Index-10 in Urdu. A validation study from a tertiary care hospital of Pakistan

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### Abstract

**Objective:** To evaluate the validity of Urdu translated version of voice handicap index-10 to be used for assessing patients with voice-related complaints.

**Method:** The case control validation study was carried out at the Otolaryngology Head & Neck Surgery unit of Aga Khan University Hospital, Karachi, from August 2015 to January 2016. Group A had patients with voice-related disorders, while Group B had healthy controls. English version of voice handicap index-10 was translated into Urdu. Prospective instrument validation was performed. SPSS 19 was used for data analysis.

**Results:** There were 100 participants with 50(50%) in each of the two groups. The mean age of Group A was 52±15.33 years and for Group B it was 46.48+/-16.96 years. Significant difference was seen in the mean scores of Group A and Group B ( $p < 0.001$ ). Internal consistency was demonstrated by Cronbach's alpha of 0.961 and significant correlation was found between voice handicap index-10 total score and patient's self-related dysphonic severity ( $p < 0.001$ ).

**Conclusion:** The Urdu version of voice handicap index-10 was found to be a valid and reliable tool and can be used for subjective voice assessment of individuals who understand Urdu.

**Keywords:** Voice handicap index-10, Voice disorders, Dysphonia, Validation, Urdu version, Quality of life. (JPMA 68: 904; 2018)

### Introduction

There has been much advancement in the diagnostic and treatment modalities in the field of laryngology. Majority of the diagnostic methods assess voice only objectively. None of these assessments reflects the 'true' suffering of the patients or the level of handicap that a patient has as a result of voice disorder.<sup>1</sup> The World Health Organisation (WHO) describes handicap as a social, economic or environmental disadvantage resulting from a disability or impairment. The term disability refers to inability to perform daily tasks.<sup>2</sup>

In order to assess the level of handicap due to voice disorder faced by patients, a few instruments have been developed in the past, and one of them is voice handicap index (VHI).<sup>3</sup> It is a patient-based self-assessment tool and is considered to be the most relevant, patient-friendly and versatile tool available at present to assess voice-related quality of life.<sup>4</sup>

The VHI has been acknowledged as a valid and reliable diagnostic tool by the Agency of Healthcare Research and Quality in 2002.<sup>5</sup> Later, this tool was converted into an abbreviated shorter version<sup>6</sup> which consisted of a total 10 questions and was named VHI-10. It is accepted as a

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powerful representation of the original index and provides clinicians and voice researchers a valuable outcome measure for voice disorders.<sup>6</sup> Normative value of VHI-10 was later reported and a score of more than 11 is taken as abnormal.<sup>7</sup>

The VHI-10 instrument is in English; its usage in the non-English population has prompted translation into many different languages worldwide, including Brazilian, Portuguese,<sup>8</sup> Spanish,<sup>9</sup> Hindi,<sup>10</sup> Malayalam,<sup>11</sup> Italian<sup>12</sup> and many other languages. However, there is no translation available in Urdu, a language which is widely and commonly spoken in Pakistan, India and other parts of the world. The current study was planned to evaluate the validity of Urdu version of VHI-10 to be used for assessing patients with voice-related complaints.

### Subjects and Methods

The case control validation study was carried out at the Otolaryngology Head & Neck Surgery unit of Aga Khan University Hospital, Karachi, from August 2015 to January 2016.

After approval was obtained from the institutional ethics review committee, the sample size was calculated on the basis of literature<sup>8-12</sup> keeping the confidence interval (CI) as 95%, power as 80, and the ratio between two groups of

cases and controls as 1 with means difference of  $1.7 \pm 3$ .

Patients coming to the clinic were approached for enrolment using non-probability consecutive sampling. Patients aged <18 years and those who were not familiar with Urdu language were excluded.

The sample was divided into two equal groups. Group A had patients with voice-related disorders and Group B had unrelated presentations.

After obtaining permission for translation and validation of VHI-10 from the author of original VHI-10,<sup>13</sup> the translation was designed using WHO multi-step protocol for translation of instruments focussing on cross-cultural and conceptual adaptation, rather than on linguistic or literal equivalence.<sup>14</sup> English version of VHI-10 was translated into Urdu and was discussed between the co-authors and bilingual colleagues to ensure correctness and to remove ambiguity, if any. It was then back-translated into English to identify inaccuracies. After multiple deliberations, the final Urdu version of VHI-10 was designed (Table-1).

Written informed consent was taken from the participants and they were asked to fill the translated Urdu version of VHI-10 questionnaire or in case they could not read, they were asked to provide answers to the questions asked by the principal investigator. They were also asked to self-assess the severity of dysphonia on a 4-point scale with 0 as normal, 1 as mild, 2 as moderate and 3 as severe.

Half of the cases with voice-related disorders were asked to fill the questionnaire again after an interval of 7 to 14 days before undergoing any treatment to assess the test retest reliability index. On follow-up, patients filled the questionnaire four to six weeks after undergoing treatment for dysphonia to analyse VHI-10 pre- and post-treatment.

SPSS 19 was used to analyse data.

Pearson's correlation was used to analyse the test

retest reliability of Urdu version of VHI-10 comparing the initial scores with the one obtained 7 to 14 days later prior to undergoing any treatment. The internal consistency i.e., the reliability of Urdu VHI-10, was determined by using Cronbach's alpha coefficient, with score of 0 indicating that the tool is not reliable and score of 1 indicating that the tool is perfectly reliable. To calculate item/total correlation Pearson's correlation was used. Construct validity of Urdu VHI-10 was determined by correlating patient's self-perceived dysphonia and VHI-10 total scores by using Pearson's correlation test. To analyse pre- and post-treatment VHI-10 scores, paired samples t-test was used.

## Results

There were 100 participants with 50(50%) in each of the two groups. The mean age of Group A was  $52 \pm 15.33$  years and for Group B it was  $46.48 \pm 16.96$  years. In Group A, there were 41(82%) males and 9(18%) were females. Group B had 39(78%) males and 11(22%) were females. There was no significant difference between the groups in terms of gender and age (Table-2). In Group A, there were 7(14%) cases of vocal cord paralysis, 21(42%) cases of carcinoma larynx and 22(44%) cases of vocal cord nodules.

From among the patients in Group A, 23(46%) completed the questionnaire on two occasions separated by an

**Table-1:** Urdu translation of Voice Handicap Index - 10 extracted from original English version.<sup>6</sup>

	Never		Always		
	0	1	2	3	4
1. My voice makes it difficult for people to hear me. میری آواز کی وجہ سے لوگ مجھے سن نہیں پاتے	0	1	2	3	4
2. People have difficulty understanding me in a noisy room. ایسے کمرے میں جہاں شور ہو رہا ہو لوگوں کو میری بات سمجھنے میں دشواری ہوتی ہے۔	0	1	2	3	4
3. My voice difficulties restrict personal and social life. آواز کے مسائل کی وجہ سے میری ذاتی اور سماجی زندگی محدود ہو گئی ہے۔	0	1	2	3	4
4. I feel left out of conversations because of my voice. مجھے لگتا ہے کہ میں اپنی آواز کی وجہ سے گفتگو میں شامل نہیں ہو پاتا۔	0	1	2	3	4
5. My voice problem causes me to lose income. آواز کی وجہ سے میری آمدنی متاثر ہو رہی ہے۔	0	1	2	3	4
6. I feel as though I have to strain to produce voice. مجھے لگتا ہے کہ آواز نکالنے کے لیے مجھے گلے پر دباؤ ڈالنا پڑتا ہے۔	0	1	2	3	4
7. The clarity of my voice is unpredictable. میں یقین سے نہیں کہہ سکتا کہ میری آواز کب واضح ہوگی۔	0	1	2	3	4
8. My voice problem upsets me. میں اپنی آواز کی وجہ سے پریشان ہوں۔	0	1	2	3	4
9. My voice makes me feel handicapped. آواز کی وجہ سے میں خود کو معذور محسوس کرتا ہوں۔	0	1	2	3	4
10. People ask "What's wrong with your voice?" لوگ مجھ سے پوچھتے ہیں کہ "آپ کی آواز کے ساتھ کیا مسئلہ ہے؟"	0	1	2	3	4

**Table-2:** Baseline Demographic variables.

Variables	Group A (n=50)	Group B(n=50)	p- value
Mean age in years	52±15.3	46.48±16.9	0.31
<b>Gender</b>			
Male	41(82%)	39(78%)	0.32
Female	9(18%)	11(22%)	

**Table-3:** Item/Total VHI correlation and measurement of Reliability of Voice handicap index-10 (VHI-10) in Urdu using Pearson's correlation coefficient.

Item	Item/Total Correlation
Q1	0.941**
Q2	0.946**
Q3	0.856**
Q4	0.884**
Q5	0.508**
Q6	0.953**
Q7	0.892**
Q8	0.942**
Q9	0.748**
Q10	0.927**
Cronbach's $\alpha$	0.961

\*\* Correlation is significant at 0.01 level (2-tailed).

**Table-4:** Mean VHI -10 scores (pre-operative) of Group A and B.

Group	n	Mean (SD)	p-value
A	50	22.94(5.7)	<0.001
B	50	0.12 (0.38)	

VHI-10: Voice handicap index-10

N: Number of participants

SD: Standard deviation.

interval of 7 to 14 days without undergoing any treatment for dysphonia. Urdu VHI-10 showed high test retest reliability ( $r=0.87$ ;  $p<0.001$ ).

Cronbach's alpha coefficient indicated that the Urdu version was a highly reliable tool ( $\alpha=0.96$ ). All individual items revealed high correlations (Table-3).

Significant difference was seen in the mean VHI-10 scores of the two groups ( $p<0.001$ ) (Table-4). Significant correlation was found between VHI-10 total score and patient's self-related dysphonic severity ( $r=0.984$ ;  $p<.001$ ), indicating that Urdu VHI-10 was a valid tool.

From among the patients in Group A, 22(44%) filled the questionnaire on follow-up 4 to 6 weeks after the treatment. The mean postoperative score of VHI-10 was  $11.91\pm10.54$ , which was significantly lower ( $p<0.001$ ) than the pre-operative mean score of  $24.23\pm4.90$ .

## Discussion

Impairment in normal voice production can cause significant disability in an individual. Clinicians dealing with voice disorders should be able to accurately gauge handicap and the true level of suffering by the patients. VHI-10 is an excellent subjective tool that helps clinicians to better understand the impact of dysphonia.<sup>6</sup> Different properties of VHI-10 have been validated in other languages,<sup>8-12</sup> and the current study was planned to develop an Urdu version of VHI-10. The validity of Urdu version was demonstrated by strong relationship between patient's self-perceived dysphonia score and VHI-10 score as well as the significant difference between mean scores of patients with dysphonia and controls. This is in line with the original<sup>6</sup> as well as in its Brazilian<sup>8</sup> and Spanish versions.<sup>9</sup>

In the present study, the reliability of Urdu version of VHI-10 was determined using Cronbach's alpha coefficient which demonstrated  $\alpha=0.96$ , thereby proving that Urdu VHI-10 is a reliable questionnaire. Further, a strong correlation was observed between the individual items and the total VHI-10 scores. These results are similar to other studies.<sup>8-12</sup>

The test retest reliability of the Urdu version of the VHI-10 was tested by correlating the results of the questionnaires filled twice, after an interval of 7 to 14 days by 23 of the patients selected randomly. Strong correlation was seen, making it a reliable tool. Further, 22 patients filled the questionnaire pre- and post-operatively and significant difference was seen in the mean scores of these patients, with higher scores pre-operatively and lower scores after treatment. It has been proven that subjective and objective parameters improve after microphone-surgery for early cancer, vocal cord nodules and polyps.<sup>15,16</sup>

The results of the current study suggest that Urdu version of VHI-10 is a valid and reliable tool that can be used to assess the level of handicap and severity of voice problems in Urdu-speaking population. Thus, it is going to help the clinicians understand how significantly voice problem is affecting their patients. The strengths of the study is that it is the first to translate and validate VHI-10 in Urdu. We followed WHO guidelines for translation and adaptation of instruments.<sup>14</sup> However, limitation of our study is that it's a single-centre validation. Further multi-centre and population-based studies are needed where Urdu version of VHI-10 is used to assess patients with voice-related disorders.

## Conclusion

The translated Urdu version of VHI-10 was found to be a valid and reliable tool and it could be used to assess the

quality of voice in Urdu-speaking population. It can help clinicians to better understand patients' perception of their voice disorder so they can act accordingly, and not merely on the basis of objective findings.

**Disclaimer:** The study was first presented as Oral Presentation at the ENT and Head & Neck Conference, December, 2016, in Peshawar, Pakistan. Subsequently, it was also presented as a poster at the Post Graduate Medical Education Conference, 2016, at Aga Khan University, Karachi, Pakistan.

**Conflict of Interest:** None.

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