Original Article

Artigo Original

Validation of the Voice Handicap Index: 10 (VHI-10) to the Brazilian Portuguese

Validação do Índice de Desvantagem Vocal: 10 (IDV-10) para o português brasileiro

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Keywords

Dysphonia
Validation studies
Quality of life
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ABSTRACT

Purpose: To validate the *Voice Handicap Index – 10* (VHI-10) into Brazilian Portuguese and to check its psychometric measures. **Methods:** The validation was performed following the guidelines suggested by the Scientific Advisory Committee of the Medical Outcomes Trust. A hundred ten individuals participated, 60 with vocal complaint, 6 males and 54 females, with age ranging from 21 to 82 years; and 50 without vocal complaint, 6 males and 44 females, age ranging from 18 to 87 years. The procedures performed were a voice self-assessment and the VHI-10. For the self-assessment, the individuals evaluated their vocal quality by means of a five-point scale: excellent, very good, good, fair and poor. The VHI-10 was administered twice to 30 of the 60 individuals with vocal complaint to determine the test-retest reproducibility. For checking the sensitivity, the VHI-10 was administered to 21 patients that underwent voice rehabilitation. **Results:** The validity was determined by comparing the total score with the self-assessment results. Individuals that classified their voice as poor had a total score of 28.2 (standard deviation=8). Internal consistence was determined with high values of coefficient ($p<0.001$). Results showed a high level of reproducibility ($p=0.0114$). Sensitivity was demonstrated with a significant difference between pre and post-rehabilitation results ($p<0.005$). **Conclusion:** The VHI-10 is an instrument validated into Brazilian Portuguese, with psychometric measures of validity, reliability and sensibility proven and can be applied to individuals with voice problems.

Descritores

Disfonia
Estudos de validação
Qualidade de vida
Autoavalliação
Questionários

RESUMO

Objetivos: Realizar a validação do *Voice Handicap Index 10* para o português brasileiro e verificar suas propriedades psicométricas. **Métodos:** A validação seguiu as diretrizes do *Scientific Advisory Committee of the Medical Outcomes Trust*. Participaram 110 indivíduos, dos quais 60 tinham queixa vocal, sendo 6 do sexo masculino e 54 do sexo feminino, com idade de 21 a 82 anos; e 50 sem queixa vocal, entre eles 6 do sexo masculino e 44 do sexo feminino, com idade entre 18 e 87 anos. Os procedimentos realizados foram autoavaliação vocal e administração do Índice de Desvantagem Vocal – 10 (IDV-10). Na autoavaliação, os indivíduos avaliaram sua qualidade vocal em uma escala de cinco pontos: excelente, muito boa, boa, razoável ou ruim. O protocolo foi aplicado 2 vezes em 30 dos 60 indivíduos com queixa vocal, para determinação da reprodutibilidade teste-reteste. Já para a verificação da sensibilidade, o protocolo foi administrado em 21 pacientes submetidos à terapia fonoaudiológica. **Resultados:** A validade do instrumento foi determinada pela comparação do escore total com os dados de autoavaliação. Os indivíduos que classificaram sua voz como ruim tiveram escore total de 28,2 (desvio-padrão – DP=8). A consistência interna do IDV-10 foi determinada com valores de coeficiente estatisticamente elevados ($p<0,001$). Os resultados mostraram alto nível de reprodutibilidade ($p=0,114$). A sensibilidade foi demonstrada com diferença estatisticamente significante entre resultados pré e pós-tratamento ($p<0,005$). **Conclusão:** O IDV-10 é um protocolo validado para o português brasileiro, com propriedades psicométricas de validade, confiabilidade e sensibilidade comprovadas para o emprego em indivíduos com problemas de voz.

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INTRODUCTION

The self-assessment about how much can a voice problem affect the quality of life provides important data for the diagnosis of voice quality, which behavior should be adopted in the intervention process, and the result of a treatment provided to patients with dysphonia[1].

At first, generic health questionnaires were used with this purpose, but given a lack of specificity, they could not measure specific patient characteristics[2,3]. Accordingly, researchers have developed disease-specific instruments to handle the problems involved in assessing the impact of dysphonia on the life of affected individuals[2,3], which became clinically and scientifically popular[4]. Given the need for standardization, the Scientific Advisory Committee of Medical Outcomes Trust recommended appropriate criteria to be met in the process of testing these tools and their usability in other languages[5].

Therefore, self-assessment instruments should be submitted to a process of translation as well as language and cultural adaptation, and its psychometric properties should be proven so they can be used in other languages as well[5]. In Brazil, some instruments that were used to assess the impact of a voice problem have been subjected to go through this structured process[6-8]. One of them is the Voice Handicap Index (VHI)[9]; the instrument provides a questionnaire that contains 30 questions; even though the instrument is considered too long and has some questions considered redundant for clinical use, it is widely used throughout the world[7]. A shorter version of VHI-10[10] was developed, maintaining the 10 most clinically relevant questions. Even though VHI was validated in Brazilian Portuguese[8], its shorter version is yet to be validated.

Therefore, the objective of this study is to perform the validation of the shorter version of VHI, the VHI-10 (Appendix 1), and present its measurement properties to be used for assessing patients with voice-related complaints and living in Brazil.

METHODS

The study was approved by the Institutional Ethics Committee (Number: 2816/08), and the demonstration of psychometric properties was carried out in accordance with the guidelines proposed by an international committee (Scientific Advisory Committee of Medical Outcomes Trust)[5].

Since VHI-10 is a shorter version of VHI, it did not have to go through the process of translation and language and cultural adaptation, nor has its cultural equivalence been assessed.

The instrument produces a total single score arrived at by a summation of scores allocated to different responses to items/questions that range from 0 to 40 points, with 0 indicating no disadvantage and 40 indicating maximum disadvantage. Each item is answered using a 5-point scale, with 0 indicating *never* and 4 *always*.

The instrument was administered to 110 participants, 60 of them with voice-related complaints (6 male and 54 female, mean age: 46.9 years) and assisted at the Head and Neck Outpatient clinic of Santa Casa de Misericórdia in Santo Amaro and 50 participants without voice-related complaints (6 male and 44 female, mean age: 43.4 years), but with ophthalmological complaints, and assisted at the Ophthalmological clinic at the same institution. Participants also performed a self-assessment voice test, using a 5-point scale, with the following anchors: excellent, very good, good, reasonable, or bad.

The validity of the instrument was determined by the correlation of the total score of VHI-10 and the self-assessment, in both groups, by means of Spearman's correlation analysis. To ensure test-retest reliability and reproducibility, the Wilcoxon signed-rank test was used, wherein the protocol was applied twice for 30 out of the 60 patients with voice-related complaints in an interval of 2 to 14 days. As for reliability analysis, the Cronbach's alpha statistical test was applied. The sensitivity evaluation was also conducted by using the Wilcoxon signed-rank test, using the pre- and post-therapy protocol in 21 out of the 60 patients with voice-related complaints, who were submitted to eight sessions of speech–language therapy conducted by the same professional. Significance level was 5% (0.50).

RESULTS

Validity was determined by comparing the total score with vocal self-assessment (Table 1), demonstrating the statistical difference in the five self-assessment categories. Participants who classified their voice as *bad* had the highest total score, whereas those who classified it as *excellent* had the lowest score.

The reliability of the protocol was determined by increased internal consistency and reproducibility, which showed an acceptable level at the test-retest phase (Table 2).

Table 1. Total score of the group with voice-related complaints (n=60) and the group without voice-related complaints (n=50), acccording to the vocal self-assessment to calculate the validity of the protocol

Groups and scores	Vocal self-assessment						p-value
	Excellent voice	Very good voice	Good voice	Reasonable voice	Bad voice	Total	
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	
With voice-related complaint							
Total	0±0	0±0	9.2±3	18.4±6	28.2±8	20.6±8.6	
							< 0.001
Without voice-related complaint							
Total	2.8±3	2±1	1.1±1	2±0	0±0	1.6±2	

Caption: SD = standard deviation

Table 2. Test and retest escores, before and after speech therapy, and alfa coefficient value for the reliability and sensibility calculations of IDV-10 protocol

Total score	Mean±Standard Deviation	p-value
Reproducibility		
Test	21.9±11.2	<0.114
Retest	19.9±8.3	
Sensitivity		<0.001
Pre-therapy	19.5±7.6	
Post-therapy	6.0±5.2	

Cronbach's alpha coefficient: 0.872 (p<0.001).

The sensitivity of the protocol was demonstrated with post-therapy total score values that were statistically inferior to those of the initial assessment (Table 2).

DISCUSSION

The development and validation of protocols focusing on quality of life are seen to be gaining importance in the field of health care, mainly because they include the assessment of patient's perception as a stage in the sequence of assessment tests, and in turn, bringing data that objective tests are not able to provide. The measurement properties of VHI-10 have been validated in other languages as well[11-13], which has rendered the tool essential to better understanding the impact of dysphonia in several life areas.

The validity of the Brazilian version was demonstrated by the strong relationship between self-assessment of voice and the total VHI-10 score as well as the significant difference between groups with and without vocal complaints (Table 1), which is in agreement with that reported in the original study[10] as well as in its Chinese[11] and Spanish versions[13].

The results of the Brazilian version point out to an increased internal consistency (Table 2), which was also observed in the original study[11] as well as in its Chinese[11], Hebrew[12], and Spanish versions[13]. This fact, combined with the results of test-retest measure, prove the reliability of this instrument as well as other validations in Brazilian Portuguese[6-8].

VHI-10 presents reduced and occasional values in the population without voice-related complaints[2,14], thus proving to be a disease-specific instrument, more sensitive to certain changes in general population that generic questionnaires are able to measure, for example, the protocols developed to analyze the impact of a voice problem on singing[15]. The instrument is also capable of showing improvements in the treatment efficacy, by revealing the changes that occur on account of the therapy program initiated (Table 2).

The validation of a protocol developed in other languages is essential to achieve savings in financial resources needed for the research and, at the same time, to validate the clinical practice. The protocols used for assessing the impact of dysphonia improve the assistance provided to patients. Therefore, the validation of the Brazilian Portuguese version of VHI-10 will enable its use as a fast and reliable instrument in clinical settings.

CONCLUSION

VHI-10 is a protocol validated in Brazilian Portuguese and has adequate psychometric properties of validity, reliability, and sensitivity to promote its use for assessing individuals with voice-related problems.

**TC was responsible for data collection and formatting as well as the writing of the manuscript; GO was in charge of the project, study design, and general orientation as to the stages of execution, supervision of data collection, collaboration with data analysis, and elaboration of the manuscript; MB was responsible for the project and study design, general orientation as to the stages of execution and collaboration with data analysis, and elaboration of the manuscript.*

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Appendix 1. Voice Handicap Index 10 (VHI-10)

We are looking to better understand how a voice-related problem can interfere with daily activities. We present a list of possible problems related to voice. Please answer all questions based on how your voice has been in the past two weeks. There are no wrong or right answers.
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

1.	My voice makes it difficult for people to hear me.	0	1	2	3	4
2.	People have difficulty understanding me in a noisy room.	0	1	2	3	4
3.	People ask, “What’s wrong with your voice?”	0	1	2	3	4
4.	I feel as though I have to strain to produce voice.	0	1	2	3	4
5.	My voice difficulties restrict personal and social life.	0	1	2	3	4
6.	The clarity of my voice is unpredictable.	0	1	2	3	4
7.	I feel left out of conversations because of my voice.	0	1	2	3	4
8.	My voice problem causes me to lose income.	0	1	2	3	4
9.	My voice problem upsets me.	0	1	2	3	4
10.	My voice makes me feel handicapped.	0	1	2	3	4
Total = _____ Points						