

Cross-Cultural Adaptation, Validation, and Cutoff Values of the Brazilian Version of the Voice Symptom Scale—VoiSS

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Summary: Objectives. The present study sought to determine the validity, reliability, and responsiveness of the Brazilian Portuguese Voice Symptom Scale (VoiSS) and also identify characteristics of efficacy and cutoff values that discriminate dysphonic from vocally healthy individuals.

Study Design. Cross-sectional, nonrandomized, prospective study with controls.

Methods. Thirty hundred subjects (160 with dysphonia and 140 without dysphonia) completed the Brazilian version of the VoiSS as well as a vocal self-assessment scale using a five-point rating system (excellent, very good, good, fair, and poor).

Results. The Brazilian version of VoiSS, referred to as the *Escala de Sintomas Vocais (ESV)*, was valid, reliable, and responsive. A score of 16 was determined to be highly sensitive (100%) and specific (100%) for individuals with dysphonia.

Conclusions. The Brazilian version of VoiSS or *ESV* demonstrated a high degree of validity, reliability, and responsiveness with regard to differentiating aberrant vocal function and was valuable as an instrument to quantify the response to treatment in patients with dysphonia. The cutoff value that discriminates individuals with dysphonia from vocally healthy subjects was 16.

Key Words: Dysphonia—Validation studies—Questionnaires—Quality of life—Voice—Voice disorders.

INTRODUCTION

The World Health Organization defines health as a complete state of physical, mental, and social well-being and not simply the absence of disease. This definition focuses on the individual's well-being.¹ The concept of health has been expanded recently to include quality of life (QOL). QOL is defined as an individual's perception of his/her position in life accounting for cultural context and values as they relate to his/her objectives, expectations, standards, and interests.¹ This broad definition permits for an examination of how QOL may be affected by multiple variables—physical health, psychological status, independence level, social relations, and personal beliefs, as well as relevant characteristics of his/her environment. Therefore, the assessment of QOL must be individual-focused, and the main instruments or examining the consequences of health disorders are self-rating questionnaires. These tools quantify the perception of the individual regarding the impact of a condition on his/her personal, social, professional, and financial relations.¹

Dysphonia is defined as any difficulty or deviation of voice production impacting the individual's QOL. Because dysphonia does not offer imminent risk of death, treatment is typically

optional. Dysphonia is also a multidimensional phenomenon and its evaluation must include the chief complaint, history of present illness, otolaryngologic examination, and vocal perceptual and acoustic analysis.^{2,3}

The American Academy of Otolaryngology–Head and Neck Surgery Foundation recently published a clinical practice guideline for patients with hoarseness (dysphonia), in which dysphonia was defined as a deviation in vocal quality, pitch, loudness, and/or vocal effort affecting communication or producing a negative impact on voice-related QOL. This impact was defined as a reduction of the self-perceived physical, emotional, social, or economic status of the individual due to a voice problem. This definition highlights the fact that a voice problem affects people in both diverse and specific ways,^{4,5} thereby reinforcing the concept of QOL and confirming that self-rating questionnaires that measure and quantify patient perception of the impact of dysphonia as imperative.^{2,6} In that regard, over the past 15 years, self-assessment questionnaires have taken diverse conceptual approaches; QOL, vocal handicap, activity limitation and participation restrictions, vocal endurance, or vocal symptoms have been developed and validated throughout the world.^{6–12} With this increased popularity, the objective remains the acquisition of valuable information and measures regarding the impression of the individual regarding the impact of his/her voice problem. This information complements findings obtained from traditional methods of clinical voice evaluation.

Despite the undeniable contribution of these questionnaires as an evaluation tool to provide distinctive information about an individual's voice problem, the process of instrument development has been criticized recently.¹³ Many of these questionnaires were created before the publication of the guidelines recommended by the Scientific Advisory Committee of Medical Outcomes Trust,¹⁴ which justifies, at least partially, some

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of the flaws in currently used instruments. The most critical flaws in the instruments are typically differentiated into the following three categories: (1) insufficient development of the conceptual model because none of the current QOL instruments include voice as essential component of their development; (2) lack of field tests using large number of individuals; and (3) lack of robust psychometric validation.¹³ During the last decade, studies have highlighted the importance of analyzing vocal symptoms as a means to quantify dysphonia. Therefore, the combination of these two concepts in a single instrument is ideal.^{12,15–18} Thus, to evaluate an individual with dysphonia, it is indispensable to investigate the presence of vocal symptoms and their impact on voice use during routine and work activities. Many vocal self-rating questionnaires have been developed only based on clinical information and concepts or even simply by combining general QOL aspects with vocal symptoms.¹¹ Accordingly, the objectives of the present research were as follows:

1. To validate the Voice Symptom Scale (VoiSS) into Brazilian Portuguese, acquiring a culturally adapted version and measures of validity, reliability, and responsiveness to the language in question;
2. To identify the characteristics of efficiency and a cutoff value for the total score that discriminates dysphonic from vocally healthy individuals.

METHODS

The current project was approved by the Research Ethics Committee of the Universidade Federal de Sao Paulo–UNIFESP number 1946/10. All participants signed the Informed Consent granting their permission to participate and disclose this research and its results.

Population

A total of 300 participants were assigned into two groups: a group with dysphonia and a group without dysphonia. The group with dysphonia included 160 individuals with vocal complaints (vocal quality, endurance, and/or discomfort), of which 104 were females and 56 were males. The age range for the dysphonic cohort was 18–88 years with a mean of 43.02. All participants in this group had an otolaryngologic diagnosis of dysphonia. The group without dysphonia included 140 individuals, of which 91 were females and 49 were males. The age range for these controls was 15–80 years with a mean of 42.27. None of the individuals from this group had vocal complaints and/or a diagnosis of dysphonia. The individuals from the latter group had the same demographic characteristics as the individuals from the group with dysphonia. Of the 160 participants with dysphonia, 86 answered the questionnaire twice (test and retest). In addition, 18 individuals with dysphonia were referred to and completed a course of voice therapy and 56 completed the questionnaire once. The questionnaire was administered only once to the 140 individuals without dysphonia.

Validation process

Translation and quantification of the psychometric properties were conducted according to the criteria recommended by the Scientific Advisory Committee of Medical Outcomes Trust.¹⁴

Translation and linguistic and cultural adaptation. The VoiSS (Appendix 1) was initially translated into Portuguese by two bilingual Speech-Language Pathologists who were aware of the purpose of this research. The translators were instructed to perform a conceptual translation avoiding the literal meaning of words and sentences. These translations were compared with each other by both the translators and the investigators. In the case of a disparity between versions, changes were carried out by consensus producing a single initial translation. Also, in this stage, this initial translation was converted back into English by a Brazilian Speech-Language Pathologist who was not involved in the research. This converted version was then compared with the original instrument, and discrepancies were analyzed and discussed by a pool of five Speech Pathologists specializing in voice with proficiency in English. Similar to the previous stage, changes were made by consensus. A final version was then developed and termed the *Escala de Sintomas Vocais (ESV)*. The final version was administered to a group of 15 patients with vocal complaints that were randomly selected from the Interdisciplinary Department of Laryngology and Voice at UNIFESP. These individuals did not take part in the sample use for scale validation. A “not applicable” alternative was added to each of the items of the scale to enable the identification of questions that were either not appropriate or misunderstood; these items would then be considered for omission or revision. Each item was rated from 0 to 4 according to a frequency response scale: never, occasionally, some of the time, most of the time, and always. The VoiSS has three subscales: impairment (15 items: 1, 2, 4, 5, 6, 8, 9, 14, 16, 17, 20, 23, 24, 25, and 27), emotional response (eight items: 10, 13, 15, 18, 21, 28, 29, and 30), and physical symptoms (seven items: 3, 7, 11, 12, 19, 22, and 26). The subscales and total scores are calculated by the sum of subscales. The maximum score for the impairment subscale is 60 points, for the emotional scale is 32 points, and for the physical symptoms is 28 points. The maximum total score is 120 and the higher the score, the greater the perception of the overall voice deviation related to limitations, emotional reactions, and reported physical symptoms related to voice.

Validity. To determine validity, the scores of the scale were compared with external clinical criterion. In this study, the external clinical criterion was a self-assessment of vocal quality. The individuals rated their voices as excellent, very good, good, fair, and poor. For this analysis, the self-assessment items were grouped into excellent voice (excellent and very good) and good voice and poor voice (fair and poor) as has been described previously in other Brazilian Portuguese validation studies.^{3,19}

Reliability. The Cronbach alpha correlation coefficient was used to determine internal consistency of the VoiSS. For the test-retest reproducibility, the questionnaire was administered twice to 86 patients with vocal complaints, within an interval

of 2–14 days. Typically, this is the most effective interval for re-test because it is likely short enough that minimal changes may be observed but long enough so patients do not recall previous responses.^{3,9} Reproducibility was determined by comparing the means of the repeated tests via paired Student *t* tests. In this particular test, reproducibility is demonstrated by values that are higher than the significance value.

Responsiveness. To quantify responsiveness, the five points of the VoiSS rating scale (never, occasionally, some of the time, most of the time, and always) were grouped into two categories: “absence” and “presence.” The results of this grouping were compared between the two participant groups. For the analysis of VoiSS responsiveness regarding treatment outcome, pre- and post-voice therapy scores and the results of the perceptual analysis were compared using the paired Student *t* test. Responsiveness to treatment was tested in 18 patients with vocal complaints, otolaryngologic diagnosis of dysphonia, and indication for voice therapy. Patients were submitted to eight individual therapy sessions, on a weekly basis conducted by the same clinician. Voice samples to determine habitual pitch and loudness with a head-mounted microphone with a straight response curve (Karsect HT-2; Karsect, Brazil) attached to a digital soundboard (Andrea PureAudio USB, Andrea Electronics, Bohemia, NY) were obtained. The microphone was placed at a 5 cm distance and 45° angle from the individual’s mouth. Voice samples were recorded and edited using the Sound Forge software version 4.2 (Sonic Foundry, Inc, Madison, WI). Perceptual analysis was performed by a Speech Pathologist specializing in voice with high intrajudged reliability (>90%). Recordings of the vowel /E/ as in “bed” were collected before and after treatment for each of the 18 subjects. Samples were presented in pairs to the listener who was not aware of which sample was collected pre- and posttreatment. The judge listened to each patient’s voice recordings in pairs using headphones. Ratings of the overall degree of voice

deviation were performed via a 100-mm visual analog scale. The eighth therapy session did not necessarily correspond to completion of therapy.

Efficiency and cutoff value

The cutoff value was determined based on the sensitivity and specificity indicators used in the screening programs and protocols. One method to determine the clinical usefulness of an instrument, based on its sensitivity and specificity, is the “receiver operating characteristic” (ROC) curve. The ROC curve represents the relationship between the sensitivity and specificity of a test. It is a simple analytical test used to determine the real cutoff value of an instrument.^{20,21}

For all statistical analyses, SPSS v16 (SPSS, Inc, Chicago, IL) and Minitab 15 (Minitab, Inc, State College, PA) softwares were used. The significance level was set at 5% (0.05).

RESULTS

Validation process

Translation and linguistic and cultural adaptation. There were no limitations in the process of translation, back-translation, and development of the final version of the Brazilian Portuguese VoiSS. In the cultural adaptation, a single question (number 2: Do you have problems singing?) was considered “not applicable” by only one individual who was a lawyer and did not use his voice for any type of singing. Therefore, the final translated and culturally adapted Brazilian Portuguese version was obtained with no changes or deletions to any questions.²²

Validity. The VoiSS impairment, emotional response, physical symptoms, and total scores are presented in Table 1. For the impairment and total scores of both groups, the differences between the groups were significant. This result confirms that the poorer vocal self-assessment, the higher the VoiSS scores.

TABLE 1.
Mean VoiSS Total Scores of the Group With Dysphonia (N = 160) and Without Dysphonia (N = 140) According to the Vocal Self-Assessment

Groups and Scores	Vocal Self-Assessment									P Value
	Excellent/Very Good			Good			Fair/Poor			
	Mean	SD	N	Mean	SD	N	Mean	SD	N	
With dysphonia										
Impairment	9	—	1	22.51	7.06	43	33.12	10.64	116	<0.001*
Emotional	1	—	1	4.23	3.54	43	10.63	8.14	116	<0.001*
Physical symptoms	11	—	1	10.09	3.65	43	10.59	5.49	116	0.852
Total	21	—	1	36.84	10.02	43	54.34	18.99	116	<0.001*
Without dysphonia										
Impairment	3.33	2.38	101	4.92	2.41	39	0	0	0	<0.001*
Emotional	0.31	0.70	101	0.36	0.67	39	0	0	0	0.691
Physical symptoms	2.84	1.70	101	3.49	1.92	39	0	0	0	0.054
Total	6.48	3.05	101	8.77	3.17	39	0	0	0	<0.001*

Notes: Analysis of variance test.

* Significant values ($P \leq 0.05$).

TABLE 2.
VoiSS Internal Consistency for the Impairment, Emotional, Physical Subscales, and Total Scores

Scores	Cronbach Alpha Coefficient	P Value
Impairment	0.950	<0.001*
Emotional	0.810	<0.001*
Physical symptoms	0.913	<0.001*
Total	0.960	<0.001*

Notes: Cronbach Alpha Coefficient.

* Significant values ($P \leq 0.05$).

In addition, the group with dysphonia had more individuals rating that their voices were poor, whereas the group without dysphonia had more individuals reported that their voice was excellent. The VoiSS discriminated the two groups very well, when compared with the vocal self-assessment; individuals with dysphonia had worse scores.

Reliability. VoiSS reliability is presented in Tables 2 and 3. Internal consistency of the questionnaire was determined with high Cronbach alpha correlation coefficients (Table 2). All coefficients were statistically significant ($P < 0.001$). The Cronbach alpha correlation coefficient for the impairment subscale was 0.950, for the emotional subscale was 0.810, for the physical symptoms subscale was 0.913; and the total score was 0.960. Test-retest comparison (Table 3) confirmed good reproducibility (impairment subscale 0.265, emotional subscale 0.481, physical symptoms subscale 0.585, and total score 0.905).

Responsiveness. VoiSS responsiveness is presented in Table 4. All the VoiSS scores (impairment, emotional, physical symptoms, and total) and the perceptual analysis of the overall voice deviation significantly improved (P values varying from <0.001 to 0.008). The Brazilian version of VoiSS (Appendix 2), entitled *ESV*, was shown to be valid, reliable, and responsive for

TABLE 3.
VoiSS Subscales and Total Scores for the Test-Retest Reproducibility (N = 86)

Scores	Mean	SD	Minimum	Maximum	P Value
Impairment					
Test	27.2	10.3	9	56	0.265
Retest	27.4	10.5	8	57	
Emotional					
Test	7	6.2	0	31	0.481
Retest	6.9	6.0	0	30	
Physical symptoms					
Test	10.1	4.4	1	24	0.585
Retest	10	4.4	0	24	
Total					
Test	44.3	16	18	99	0.905
Retest	44.3	16	18	101	

Notes: Paired t Student test.

the self-rating of voice and vocal symptoms and their response to treatment.

Efficiency and cutoff value

After the completion of the validation steps, the total scores of the groups with and without dysphonia were compared. The groups were significantly different (Table 5). Hence, the samples could be submitted to ROC curve analysis, which allowed for the determination of a cutoff value to discriminate the groups. To identify the cutoff value for the VoiSS total score, the highest values of sensitivity and specificity were considered. They were concomitantly combined with the highest values of efficiency and product (Table 6).

Accordingly, it can be stated that the area below the ROC curve is 1.000, with values of sensibility and specificity of 1.000 (Figure 1). Individuals with dysphonia had total scores that are equal to or higher than 16 points and the vocally healthy individuals had scores lower than 16 points.

DISCUSSION

The development and validation of instruments to measure the QOL has become an important focus of various fields within health care. During the last decades, several treatment outcome and QOL instruments specific to voice have been developed^{7-11,23,24} and validated into Brazilian Portuguese.^{3,19,25-27}

Although there is usually a good correlation among the self-assessment questionnaires, each one has a slightly different focus. This diversity allows clinicians the option to select an instrument they consider most adequate and suitable to a specific case (quality, handicap, performance, and symptom). Because each instrument assesses voice deviation based on a different perspective, the several self-rating questionnaires validated in Brazil provide the clinician with a range of options that will depend on the individual, his/her profession, disorder, or even on his/her personality, and available time for administration.

The vast majority of QOL instruments related to the voice were developed in English. These instruments can only be used in other languages if they are submitted to rigorous validation taking into account both the linguistic differences as well as cultural diversity. A simple translation of the instrument is not appropriate¹⁴ as each country has its particular culture, with specific habits, behaviors, and beliefs that are reflected by the self-rating instrument questions.³

The choice of validating the VoiSS into Brazilian Portuguese was based on the fact that this questionnaire not only assesses the presence of vocal symptoms but also measures the impact produced by the voice disorder, providing essential complementary information to the voice evaluation. Essentially, the VoiSS provides unique information among the many instruments, and furthermore, the VoiSS was developed appropriately and its favorable psychometric properties have proven well documented.^{11,15,28}

The validation of VoiSS into Brazilian Portuguese followed the criteria suggested by the Scientific Advisory Committee of Medical Outcomes Trust.¹⁴ For this study, four main steps were conducted: translation and linguistic and cultural adaptation, construct validity, reliability, and responsiveness. During

TABLE 4.
VoiSS Subscales and Total Scores and Mean Values of the Perceptual Analysis Pre- and Post-Voice Therapy (N = 18)

Scores	Mean	SD	Minimum	Maximum	P Value
Impairment					
Pre-voice therapy	26.6	10.7	12	46	<0.001*
Post-voice therapy	13.5	8.5	0	35	
Emotional					
Pre-voice therapy	4.8	6.3	0	24	0.008*
Post-voice therapy	2.5	4.4	0	19	
Physical symptoms					
Pre-voice therapy	10.3	4.1	3	20	<0.001*
Post-voice therapy	6.1	4.7	1	19	
Total					
Pre-voice therapy	41.8	16.5	18	78	<0.001*
Post-voice therapy	22.1	15.2	2	67	
Perceptual analysis					
Pre-voice therapy	58.1	10.0	40	75	<0.001*
Post-voice therapy	40.9	10.0	28	56	

Notes: Paired *t* Student test.

* Significant values ($P \leq 0.05$).

the process of translation and linguistic and cultural adaptation of the VoiSS, which involved the stages of translation and cultural equivalency, no items were deemed inappropriate warranting exclusion or alteration. This finding confirms that although the original VoiSS questionnaire assesses different domains, it does not contain questions closely related to ethnical and/or cultural aspects that were interpreted differently by the British population, to which it was originally proposed, and by the Brazilian population. Thus, a translated and culturally adapted VoiSS version was obtained²² warranting further validation.^{3,14}

Validity refers to the degree to which an instrument truly measures the variable that it is intended to measure.²⁹ In the pre-

sent study, the validity of the VoiSS was demonstrated by the comparison of the voice self-assessment and the VoiSS scores. The total scores of both groups showed a relationship with the self-assessment; worse self-ratings were associated with increased VoiSS scores. In other words, the poorer an individual perceives his/her voice, the greater the impact of the voice deviation on his/her QOL.^{3,30,31}

The reliability of a questionnaire is defined by the consistency or stability of a given measure (ie, the degree to which an instrument is free from random errors).^{14,29} Classical approaches that examine the reliability of instruments include assessing internal consistency and reproducibility (test-retest or interobserver).¹⁴ The internal consistency demands a single

TABLE 5.
Mean VoiSS Subscales and Total Scores for the Groups With and Without Dysphonia

Scores and Groups	N	Mean	SD	Minimum	Maximum	Significance (P)
Impairment						
With dysphonia	160	30.12	10.96	9.00	58.00	<0.001*
Without dysphonia	140	3.77	2.48	0.00	11.00	
Total	300	17.82	15.49	0.00	58.00	
Emotional						
With dysphonia	160	8.85	7.73	0.00	32.00	<0.001*
Without dysphonia	140	0.32	0.69	0.00	4.00	
Total	300	4.87	7.08	0.00	32.00	
Physical symptoms						
With dysphonia	160	10.46	5.03	0.00	26.00	<0.001*
Without dysphonia	140	3.02	1.78	0.00	9.00	
Total	300	6.99	5.36	0.00	26.00	
Total						
With dysphonia	160	49.43	18.78	18.00	110.00	<0.001*
Without dysphonia	140	7.11	3.24	0.00	14.00	
Total	300	29.68	25.29	0.00	110.00	

Notes: Mann-Whitney test.

* Significant values ($P \leq 0.05$).

TABLE 6.
Coordinates of the ROC Curve for the Cutoff Value of the VoiSS Total Score

Cutoff Value	Sensitivity	Specificity	Efficiency	Product
-1.000	1.000	0.000	0.500	0.000
0.500	1.000	0.014	0.507	0.014
1.500	1.000	0.029	0.515	0.029
2.500	1.000	0.086	0.543	0.086
3.500	1.000	0.157	0.579	0.157
4.500	1.000	0.229	0.615	0.229
5.500	1.000	0.321	0.661	0.321
6.500	1.000	0.407	0.704	0.407
7.500	1.000	0.564	0.782	0.564
8.500	1.000	0.679	0.840	0.679
9.500	1.000	0.736	0.868	0.736
10.500	1.000	0.829	0.915	0.829
11.500	1.000	0.900	0.950	0.900
12.500	1.000	0.950	0.975	0.950
13.500	1.000	0.986	0.993	0.986
16.000	1.000	1.000	1.000	1.000
18.500	0.988	1.000	0.994	0.988
19.500	0.981	1.000	0.991	0.981
20.500	0.975	1.000	0.988	0.975
...
111.000	0.000	1.000	0.500	0.000

Notes: Receiver operating characteristic curve—ROC curve analysis. In bold: cutoff value.

administration of the questionnaire and the reproducibility requires at least two administrations. In the present study, both steps were performed: internal consistency and test-retest reproducibility. The VoiSS internal consistency was demonstrated by the Cronbach alpha coefficient. The VoiSS presented high indexes for all scores (total = 0.960; impairment = 0.950; emotional = 0.810, and physical symptoms = 0.913; all P values < 0.001). Test-retest reproducibility is defined as the degree to which an instrument produces stable scores over

time among participants that presumably have not changed on the domains being assessed.¹⁴ The interval between the measures is an important factor to be considered since long periods are susceptible to changes such as learning, altered habits, and a progression of the relevant health condition leading to an underestimation of the instrument's stability. However, if the interval is too short, results may be affected by memory; individuals can remember their answers from the first test causing an overestimation of the instrument's stability.²⁹ Typically, the most effective test-retest interval is 2–14 days.^{3,9,14} Reproducibility is demonstrated by values higher than the significance level adopted. In the comparison of the VoiSS test and retest scores, the mean differences for all scores were not statistically significant (impairment: $P = 0.265$; emotional: $P = 0.481$; physical symptoms: $P = 0.585$; and total: $P = 0.905$), showing an excellent questionnaire test-retest reproducibility.

Finally, the responsiveness is defined as the ability of an instrument to identify changes associated with treatment.¹⁴ In the present study, responsiveness was determined in two stages: individual item sensitivity and responsiveness to treatment changes. Regarding the individual item sensitivity, 30 questions were altered according to the groups with and without dysphonia, with significant values for all comparisons ($P < 0.001$ and $P = 0.033$). This result demonstrates that each and every item of the questionnaire is sensitive to the population studied (ie, individuals with dysphonia). Disease-specific questionnaires are indicated to assess individuals with particular complaints than generic tests because they are more sensitive to specific characteristics of the condition assessed.^{32,33} Responsiveness is considered an important component of the longitudinal construct validation process.¹⁴ Regarding the VoiSS responsiveness to voice treatment, the 18 individuals submitted to voice therapy presented with improved vocal quality as demonstrated by the results of pre- and posttreatment perceptual analysis ($P < 0.001$) and by the VoiSS scores (impairment: $P < 0.001$; emotional: $P = 0.008$; physical symptoms: $P < 0.001$; and total: $P < 0.001$). These results highlight the fact that after therapy, the individuals rated less deviation in their vocal quality and lower VoiSS scores. In other words, they perceived less impact on their QOL. Voice therapy aims to treat and rehabilitate individuals by promoting significant changes to his/her vocal quality, perception of his/her voice problem and its limitations, and acoustic parameters of voice and/or laryngeal appearance.^{34–38}

In the present study, the efficiency of the VoiSS as a screening instrument was assessed. This assessment was conducted by identifying a cutoff value that discriminates individuals with dysphonia from vocally healthy individuals. The present study confirmed that the cutoff value of 16 points differentiated the two groups with maximum values of sensitivity (100%) and specificity (100%), which exclude the possibility of false-positive and -negative results. As of now, no studies exploring the VoiSS cutoff values for voice screening have been published. Nevertheless, there are publications of cutoff values for other voice self-assessment instruments, such as the Voice Handicap Index,^{21,39–43} the Screening Index for Voice

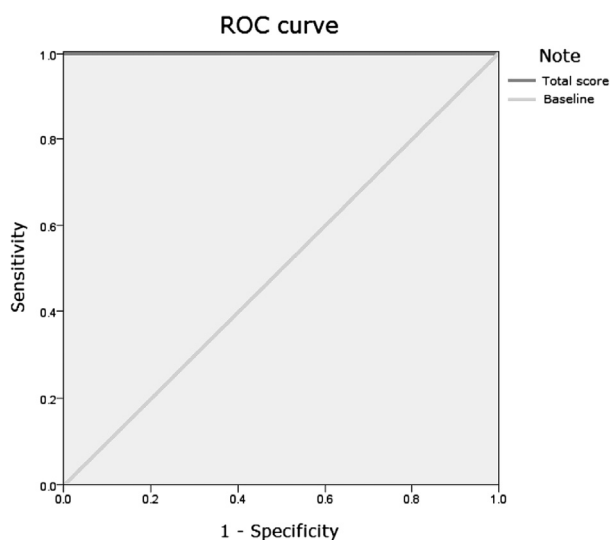


FIGURE 1. ROC curve of the Brazilian version of VoiSS total score.

Disorder,⁴⁴ the Thyroidectomy-Related Voice Questionnaire,⁴⁵ and the Glottal Function Index.^{46,47} Cumulatively, this literature demonstrates the importance of normative values of a self-rating instrument to identify individuals with voice problems or at risk of developing dysphonia.

CONCLUSIONS

The Brazilian version of the VoiSS, entitled the *Escala de Sintomas Vocais (ESV)*, is a valid, reliable, and responsive instrument for the self-assessment of voice and vocal symptoms. A cutoff score of 16 was determined to discriminate individuals with dysphonia from the vocally healthy subjects confirming the use of this instrument as a screening measure for individuals with dysphonia and high-risk populations.

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APPENDIX 1

Original version of the Voice Symptom Scale—
VoiSS¹¹

Voice Symptom Scale—VoiSS

Your Name: _____

Your Date of Birth: ____/____/____

Today's Date: ____/____/____

Please circle one answer for each item. Please do not leave any blank items.

1.	Do you have difficulty attracting attention?	Never	Occasionally	Some of the time	Most of the time	Always
2.	Do you have problems singing?	Never	Occasionally	Some of the time	Most of the time	Always
3.	Is your throat sore?	Never	Occasionally	Some of the time	Most of the time	Always
4.	Is your voice hoarse?	Never	Occasionally	Some of the time	Most of the time	Always
5.	When talking in company do people fail to hear you?	Never	Occasionally	Some of the time	Most of the time	Always
6.	Do you lose your voice?	Never	Occasionally	Some of the time	Most of the time	Always
7.	Do you cough or clean your throat?	Never	Occasionally	Some of the time	Most of the time	Always
8.	Do you have a weak voice?	Never	Occasionally	Some of the time	Most of the time	Always
9.	Do you have problems talking on the telephone?	Never	Occasionally	Some of the time	Most of the time	Always
10.	Do you feel miserable or depressed because of your voice problem?	Never	Occasionally	Some of the time	Most of the time	Always
11.	Does it feel as if there is something stuck in your throat?	Never	Occasionally	Some of the time	Most of the time	Always
12.	Do you have swollen glands?	Never	Occasionally	Some of the time	Most of the time	Always
13.	Are you embarrassed by your voice problem?	Never	Occasionally	Some of the time	Most of the time	Always
14.	Do you find the effort of speaking tiring?	Never	Occasionally	Some of the time	Most of the time	Always
15.	Does your voice problem make you feel stressed and nervous?	Never	Occasionally	Some of the time	Most of the time	Always
16.	Do you have difficulty competing against background noise?	Never	Occasionally	Some of the time	Most of the time	Always
17.	Are you unable to shout or raise your voice?	Never	Occasionally	Some of the time	Most of the time	Always
18.	Does your voice problem put a strain on your family and friends?	Never	Occasionally	Some of the time	Most of the time	Always
19.	Do you have a lot of phlegm in your throat?	Never	Occasionally	Some of the time	Most of the time	Always
20.	Does the sound of your voice vary throughout the day?	Never	Occasionally	Some of the time	Most of the time	Always
21.	Do people seem irritated by your voice?	Never	Occasionally	Some of the time	Most of the time	Always
22.	Do you have a blocked nose?	Never	Occasionally	Some of the time	Most of the time	Always

23.	Do people ask what is wrong with your voice?	Never	Occasionally	Some of the time	Most of the time	Always
24.	Does your voice sound creaky and dry?	Never	Occasionally	Some of the time	Most of the time	Always
25.	Do you feel you have to strain to produce voice?	Never	Occasionally	Some of the time	Most of the time	Always
26.	How often do you get throat infections?	Never	Occasionally	Some of the time	Most of the time	Always
27.	Does your voice "give out" in the middle of speaking?	Never	Occasionally	Some of the time	Most of the time	Always
28.	Does your voice make you feel incompetent?	Never	Occasionally	Some of the time	Most of the time	Always
29.	Are you ashamed of your voice problem?	Never	Occasionally	Some of the time	Most of the time	Always
30.	Do you feel lonely because of your voice problem?	Never	Occasionally	Some of the time	Most of the time	Always

For Office use:

Each item is scored 0–4 on the frequency responses: never, occasionally, some of the time, most of the time, always.

The total VoiSS score: indicates the level of general voice pathology (max 120) = _____.

The subscales are computed by summation of items as follows:

Impairment: 1, 2, 4, 5, 6, 8, 9, 14, 16, 17, 20, 23, 24, 25, 27 (max 60) = _____.

Emotional: 10, 13, 15, 18, 21, 28, 29, 30 (max 32) = _____.

Physical: 3, 7, 11, 12, 19, 22, 26 (max 28) = _____.

APPENDIX 2

Validated version for Brazilian Portuguese of the Voice Symptom Scale—VoiSS,¹¹ entitled *Escala de Sintomas Vocais—ESV*

ESCALA DE SINTOMAS VOCAIS—ESV

Nome completo: _____

Data de nascimento: ____/____/____

Data de hoje: ____/____/____

Por favor, circule uma opção de resposta para cada pergunta. Por favor, não deixe nenhuma resposta em branco.

1.	Você tem dificuldade de chamar a atenção das pessoas?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
2.	Você tem dificuldades para cantar?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
3.	Sua garganta dói?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
4.	Sua voz é rouca?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
5.	Quando você conversa em grupo, as pessoas têm dificuldade para ouvi-lo?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
6.	Você perde a voz?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
7.	Você tosse ou pigarreja?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
8.	Sua voz é fraca/baixa?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
9.	Você tem dificuldades para falar ao telefone?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
10.	Você se sente mal ou deprimido por causa do seu problema de voz?	Nunca	Raramente	Às vezes	Quase sempre	Sempre

11.	Você sente alguma coisa parada na garganta?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
12.	Você tem nódulos inchados (íngua) no pescoço?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
13.	Você se sente constrangido por causa do seu problema de voz?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
14.	Você se cansa para falar?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
15.	Seu problema de voz deixa você estressado ou nervoso?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
16.	Você tem dificuldade para falar em locais barulhentos?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
17.	É difícil falar forte (alto) ou gritar?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
18.	O seu problema de voz incomoda sua família ou amigos?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
19.	Você tem muita secreção ou pigarro na garganta?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
20.	O som da sua voz muda durante o dia?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
21.	As pessoas parecem se irritar com sua voz?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
22.	Você tem o nariz entupido?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
23.	As pessoas perguntam o que você tem na voz?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
24.	Sua voz parece rouca e seca?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
25.	Você tem que fazer força para falar?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
26.	Com que frequência você tem infecções de garganta?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
27.	Sua voz falha no meio das frases?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
28.	Sua voz faz você se sentir incompetente?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
29.	Você tem vergonha do seu problema de voz?	Nunca	Raramente	Às vezes	Quase sempre	Sempre
30.	Você se sente solitário por causa do seu problema de voz?	Nunca	Raramente	Às vezes	Quase sempre	Sempre

Para uso do avaliador.

Cada questão é pontuada de 0 a 4, de acordo com frequência de ocorrência assinalada: nunca, raramente, às vezes, quase sempre, sempre.

Total ESV: indica o nível geral da alteração de voz (máximo 120) = _____.

As subescalas são calculadas pela somatória dos itens, da seguinte forma:

Limitação: 1, 2, 4, 5, 6, 8, 9, 14, 16, 17, 20, 23, 24, 25, 27 (máximo 60) = _____.

Emocional: 10, 13, 15, 18, 21, 28, 29, 30 (máximo 32) = _____.

Físico: 3, 7, 11, 12, 19, 22, 26 (máximo 28) = _____.