Perceived dysphonia by the clinician’s and patient’s viewpoint

ABSTRACT

Purpose: To verify the relationship between the clinician’s vocal evaluation and vocal self-assessment and voice-related quality of life. Methods: Participants were 96 individuals: 48 with vocal complaints and voice deviation (VCG), mean age of 51 years, with diagnosis and indication of voice therapy; and 48 with no vocal complaints and healthy voices (NVCG), mean age of 46 years. All participants answered the Voice-Related Quality of Life (V-RQOL) questionnaire, performed a vocal self-assessment and were submitted to auditory-perceptual analysis of voice. Results: Mean V-RQOL scores were different between groups for all domains. Self-assessment results also showed differences between groups, which was not the case in the auditory-perceptual analysis of sustained vowel and connected speech, showing that the patient’s perception was worse than the clinician’s. There was correlation between the V-RQOL domains (Socio-emotional and Physical: 76.8%; Socio-emotional and Total: 90.8%; Physical and Total: 95.8%), as well as between the Socio-emotional (-52.9%), Physical (-43.1%) and Total (-52.2%) domains and the self-assessment. However, no correlation was found between auditory-perceptual analysis and self-assessment measures, except for a weak correlation between vocal self-assessment and auditory-perceptual analysis of the sustained vowel (33.3%). Conclusion: The clinician’s perception does correspond to the individual’s self-perception of his/her vocal quality and the impact of a voice deviation on his/her quality of life, but not directly. The individual’s perception about his/her vocal quality and voice-related quality of life complements the clinician’s perception regarding the overall degree of the voice deviation.

RESUMO

Objetivo: Verificar a relação entre a avaliação do fonoaudiólogo e a autoavaliação vocal e o impacto da disfonia na qualidade de vida do paciente. Métodos: Participaram 96 indivíduos, 48 com queixa e alteração vocal (GQ), média de idade de 51 anos, com diagnóstico e indicação de fonoterapia, e 48 sem queixa vocal e voz saudável (GSQ), média de idade de 46 anos. Todos responderam ao protocolo Qualidade de Vida em Voz (QVV), realizaram autoavaliação e foram submetidos à avaliação perceptivo-auditiva da voz. Resultados: Os escores médios do QVV dos grupos foram diferentes para todos os domínios. A autoavaliação mostrou valores bem distintos para os grupos, diferentemente dos obtidos na perceptivo-auditiva da vogal sustentada e da fala encadeada, mostrando que a percepção do paciente foi pior que a do clínico. Observou-se correlação entre os domínios do protocolo QVV (Sócio-emocional e Físico: 76,8%; Sócio-emocional e Total: 90,8%; Físico e Total: 95,8%), assim como entre os domínios Sócio-emocional (-52,9%), físico (-43,1%) e total (-52,2%) com a autoavaliação. Entretanto, não se observou correlação entre a análise perceptivo-auditiva e as medidas de autoavaliação, com exceção de uma baixa correlação entre autoavaliação vocal e a análise perceptivo-auditiva da vogal sustentada (33,3%). Conclusão: A percepção do clínico corresponde à percepção que o indivíduo tem da sua qualidade vocal e do impacto da alteração de voz na sua qualidade de vida, contudo não de forma direta. A percepção do indivíduo sobre a própria voz e sobre o impacto da disfonia na sua qualidade de vida complementa a percepção do clínico quanto ao grau geral desta alteração.

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INTRODUCTION

Voice evaluation is traditionally focused on the clinician’s perception, which makes the auditory-perceptual analysis the most important assessment tool in voice therapy\(^{(1,3)}\). This assessment is essential to the clinical practice when complemented by other voice evaluation modalities, since it guides the diagnosis and management of the case in order to guarantee an adequate treatment planning. Because it is based on the clinician’s perception, the auditory-perceptual analysis is considered a subjective assessment with variable reliability; it can be influenced by previous training, by the experience, perception skills and personal preferences of the evaluator, by the speech task, among other factors\(^{(1,2,4-6)}\)

It is important to emphasize that the subjectivity of perceptual analysis is not enough reason for this analysis not be used, because, since voice is a fundamentally perceptual phenomenon\(^{(2)}\) in response to an acoustic stimulus\(^{(7)}\), it is logical that the auditory-perceptual analysis is the best candidate to evaluate such phenomenon\(^{(2)}\). Other aspects that influence the popularity of this assessment in clinical settings are: low cost, short time of application, comfort to the patient, and few prerequisites of technical knowledge and skills. In addition to its wide clinical use, the auditory-perceptual analysis is very used in voice research\(^{(1,2)}\).

Due to the fact that the auditory-perceptual analysis is criticized for its subjectivity, objective measures have been announced as a better alternative. However, despite the decades of research that explored those measures, no ideal objective assessment has been established yet. Thus, the auditory-perceptual analysis will always be valuable, regardless of the technological advance. When acoustic methods fail, the perceptual analysis can be relied on\(^{(9)}\).

Subjectivity in the health area is not limited only to the assessment focused on the clinician’s perception, but also on the patients’ perception about their health status. The World Health Organization (WHO) has broadened the concept of health including aspects of quality of life in the definition of physical, mental and social well-being\(^{(8)}\). Hence, in clinical practice, data obtained through auditory-perceptual and acoustic analyses are not enough to measure the real dimension of a voice disorder, since they do not provide information about the patient’s perception regarding the limitations faced on daily activities\(^{(11)}\). Self-assessment must be valued\(^{(1,10)}\) and taken into consideration as fundamental part of the voice evaluation\(^{(12,13)}\).

In clinical practice, specifically in the voice area, some self-assessment protocols investigate the impact of a voice disorder on the individual’s quality of life\(^{(9,11,14-16)}\). It is worth highlighting that the patient’s perception of this impact depends on individual, social, cultural and professional characteristics, and hence it is not always related to the severity or prognosis of the voice deviation\(^{(1,17,18)}\).

A research\(^{(7)}\) compared the vocal quality deviation according to the clinician’s and the patient’s perception. The authors concluded that both the clinician and the patient mostly assess and experience dysphonia in a different way. While the patient’s perception reflects social and emotional effects of the voice problem\(^{(17,19)}\), clinicians perform a specific evaluation, based on their experiences and internal references, considering only the vocal deviation. The study also concludes that the use of assessment instruments focusing both clinician and patient are fundamental in clinical practice\(^{(2,17)}\).

Even though there are instruments that help and complement the voice practice, there are still few researches\(^{(14,20)}\) that correlate clinician’s and patient’s perception regarding the severity of vocal deviation. Therefore, the purpose of this research was to verify the relationship between the speech-language pathologist’s evaluation and the patient’s vocal self-assessment, as well as the impact of dysphonia on his/her quality of life.

METHODS

The research project was approved by the Research Ethics Committee of the Centro de Estudos da Voz (CEV), under number 0216/08. All participants signed the Free and Informed Consent.

Participants were 96 adults with ages between 25 and 81 years, 76 women and 20 men, who were distributed into two groups: with vocal complaints and deviation (VCG), and without vocal complaints and with healthy voices (NVCG). The VCG comprised 48 individuals (38 women and 10 men) with ages between 31 and 76 years (mean of 51 years), who sought for help at an Otorhinolaryngology outpatient clinic, being diagnosed with dysphonia and referred to voice therapy. The medical diagnosis was not an inclusion criteria for this research, that is, individuals were included on the VCG due to the reported vocal complaint and the voice deviation observed by the speech-language pathologist at the time of evaluation. Data collection of this group (VCG) was conducted after the otorhinolaryngologist’s referral to voice therapy, during vocal assessment. Therefore, none of the individuals had been submitted to previous voice therapy. Moreover, none of them presented any other communication disorder (inclusion criteria).

The NVCG comprised 48 individuals (38 women and 10 men) with ages between 25 and 81 years (mean of 46 years), selected and assessed at the same institution, at the Ophthalmology outpatient clinic, due to complaints of reduced visual acuity. In addition, accompanying persons and personal contacts also participated in this research. This group was composed by individuals with no voice complaints who did not present vocal quality deviation (observed by the first author) during data collection.

The procedures performed were: self-assessment of vocal quality, administration of the Voice-Related Quality of Life (V-RQOL) protocol, and auditory-perceptual analysis of the overall voice deviation (performed by a speech-language pathologist with experience in voice). For the vocal self-assessment, individuals were asked to evaluate what they thought of their own voices on a five-point scale, selecting one of the following options: 1. excellent, 2. very good, 3. good, 4. fair, and 5. poor.

In order to evaluate the impact of their voice problem on their quality of life, subjects answered the V-RQOL protocol\(^{(7)}\), validated into Brazilian Portuguese by Gasparini and Behlau\(^{(11)}\).
This questionnaire has ten items, including six in the physical domain and four in the social-emotional domain. The items are straightforward and the time of administration is short. The questionnaire produces three scores: physical, social-emotional and total. The results vary from 0 to 100, and the higher the score the worse the quality of life(7,9,17).

For the auditory-perceptual analysis (APA), voice samples were registered in a portable computer (HP Pavilion dv6000) using the SoundForge 4.5 software. The recordings were registered with a head-mounted microphone (Bright®) at a set distance of five centimeters from the mouth, in a quiet room. The following voice tasks were collected: sustained vowel /e/ (as in «bed»), and number counting from 1 to 20, both in habitual pitch and loudness, selected by the participant. The perceptual analysis was performed by a speech-language pathologist with experience in voice, who presented an acceptable reliability (sustained vowel: p=0.655; numbers: p=0.317), as analyzed by the Wilcoxon test (with 5% significance level). The judge/evaluator was blind to the studied population, and was asked to judge the overall voice deviation (overall impact) according to a five-point scale one that included the following options: 1. excellent, 2. very good, 3. good, 4. fair, and 5. poor. Two analyses were performed: one for the sustained vowel and one for the numbers.

Two separate analyses were performed: one for the sustained vowel, and one for the counting of numbers. Voice samples were presented by loud speakers, in a quiet room.

Data were statistically analyzed using the Mann-Whitney test for groups comparison (VCG and NVCG). The Spearman correlation test was used to measure the degree of correlation between all the variables: between V-RQOL domains, between self-assessment and V-RQOL domains, between perceptual analysis (sustained vowel and numbers) and V-RQOL domains and self-assessment.

### RESULTS

In the comparison between groups (VCG and NVCG), it is observed that both analysis using instruments focused on the patient presented significant difference (p<0.001 for all items). On the other hand, when the groups were compared according to the clinician’s analysis, only the sustained vowel task presented significant difference (p=0.006). The mean V-RQOL scores were lower for the VCG (Table 1).

Statistical analysis showed correlation between some of the variables studied (Table 2). When the V-RQOL scores were compared, there were positive correlations between physical and social-emotional scores (76.8%, p<0.001), between total and social-emotional scores (90.8%, p<0.001), and between total and physical scores (95.8%, p<0.001). Moreover, there was negative correlation between vocal self-assessment and all V-RQOL scores (-52.9%, p<0.001; -43.1%, p=0.002; -51.2%, p<0.001). No correlations were found between auditory-perceptual analyses (sustained vowel and numbers) and the

| Table 1. V-RQOL, vocal self-assessment and perceptual analysis scores according to the groups with and without vocal complaints |
|-------------------------------------------------|----------------|----------------|----------------|----------------|
| Variables                                       | Group with vocal complaint | Group without vocal complaint | p-value |
| Mean   | SD    | Mean   | SD    |       |
| V-RQOL |
| Social-emotional score                         | 70.7            | 28.9   | 98.8   | 3.8    | <0.001* |
| Physical score                                 | 65.2            | 21.9   | 98.0   | 4.9    | <0.001* |
| Total score                                     | 67.6            | 23.3   | 98.3   | 3.4    | <0.001* |
| Self-assessment                                 | 4.23            | 0.81   | 2.92   | 0.87   | <0.001* |
| Perceptual analysis - Vowel /e/                 | 1.83            | 1.02   | 1.31   | 0.66   | 0.006*  |
| Perceptual analysis - Numbers                   | 1.31            | 0.97   | 0.98   | 0.64   | 0.111   |

Intra-rater reliability: sustained vowel p=0.655; numbers p=0.317

* Significant values (p<0.05) – Mann-Whitney test

**Note:** SD = standard deviation

| Table 2. Correlations between the studied variables for the group with vocal complaints |
|-----------------------------------------------|----------------------------|----------------|----------------|----------------|
| Variables                                    | Social-emotional domain   | Physical domain | Total score    | Self-assessment |
| Physical domain                              | 76.8%                     | -              | -              | -              |
|                                               | <0.001*                   | -              | -              | -              |
| Total score                                  | 90.8%                     | 95.8%          | -              | -              |
|                                               | <0.001*                   | <0.001*        | -              | -              |
| Self-assessment                              | -52.9%                    | -43.1%         | -51.2%         | -              |
|                                               | <0.001*                   | 0.002*         | <0.001*        | -              |
| Perceptual analysis - Vowel                  | -9.6%                     | -13.7%         | -13.2%         | 33.3%          |
|                                               | -25.9%                    | -28.3%         | -26.4%         | 25.9%          |
| Perceptual analysis - Numbers                | -25.9%                    | -28.3%         | -26.4%         | 25.9%          |

*Significant values (p<0.05) – Spearman Correlation
V-RQOL domains, as well as between the perceptual analysis of number counting and the self-assessment. It is important to emphasize that the correlation found between the perceptual analysis of the sustained vowel and the vocal self-assessment was very weak.

**DISCUSSION**

Auditory-perceptual analysis is usually used in the clinical routine of Speech-Language Pathology, specifically in the voice area, and despite the advances in other types of assessment, such as acoustic analysis, there are no evidences that it is going to be discarded [2]. Perceptual analysis is frequently considered gold standard for the classification of voice disorders, and it is used by experienced clinicians along with other complementary assessment tools [1,2]. This analysis is part of a set of tests used in vocal assessment, which must comprise both subjective and objective data, including the individual’s perspective about the impact of the voice problem on his/her quality of life. Easily administered self-assessment questionnaires are used in order to assess the individual’s perspective of the impact of a voice problem, such as the Voice-Related Quality of Life (V-RQOL) protocol [9,11]. This instrument was selected to be used in this research because it is short and easily answered [21].

The patient’s participation during vocal assessment is of vital importance, because he/she is the only one that can provide information that are crucial for the diagnosis and the management of the case [22], such as all the perceptions about what is it like to live with a voice problem. The set of information obtained by the clinician [23] and the patient’s perception can contribute for a broader analysis of the dimension of the problem and, possibly, direct the management more carefully.

Hence, this study investigated the possible relationship between the individual’s perception of his/her own voice and the impact of dysphonia in his/her quality of life and the auditory-perceptual analysis of the overall voice deviation performed by the clinician. The hypothesis of this research was that there would be a correlation between these two modalities of assessment, however clinical evaluation would not be able to completely measure the degree of functional, social and emotional deviation produced by the voice disorder. We were able to identify that there is indeed a correlation between the perceptions of the clinician and the patient (Table 2), but it is not strong nor straightforward. While the dysphonic individual has strong nor straightforward. While the dysphonic individual has a greater impact on the aspects related to the functional use of his/her voice, he/she will somehow have a negative effect on emotional aspects too [10]. The same occurs with the vocal self-assessment, indicating that the worse the individual’s perception of his/her voice deviation, the worse the influence of this disorder on all dimensions of his/her quality of life, previously mentioned [10,15,17,19]. Some studies support this statement [13,17], reporting that individuals with dysphonia have an overall impact on their quality of life, and not specifically over a certain domain [22].

When the relationship among the studied variables is analyzed, a positive correlation was found among all the V-RQOL scores. The vocal self-assessment also correlates with the V-RQOL scores. These findings suggest that individuals with voice deviation present a negative effect on any social-emotional and/or physical aspects of their lives [20]. Hence, the worse the score of a V-RQOL domain, the worse the other V-RQOL scores, indicating that when an individual perceives a greater impact on the aspects related to the functional use of his/her voice, he/she will somehow have a negative effect on emotional aspects too [10]. The same occurs with the vocal self-assessment, indicating that the worse the individual’s perception of his/her voice deviation, the worse the influence of this disorder on all dimensions of his/her quality of life, previously mentioned [10,15,17,19]. Some studies support this statement [13,17], reporting that individuals with dysphonia have an overall impact on their quality of life, and not specifically over a certain domain [22].

When we studied the relationship between patient’s and clinician’s evaluations, the correlation was not as direct and strong as the one found between self-assessment and V-RQOL.
scores. This lack of correlation was probably found because the impact produced by dysphonia may not be measured only by the voice sound\(^{(22)}\). The weak correlation between the auditory-perceptual analysis and self-assessment indicates that the speech-language pathologist, even technically experienced, may not be able to estimate accurately the impact that the voice deviation produces to the patient\(^{(10,17)}\). One should remind that when assessing his/her own voice, the individual perceives several dimensions: the sound of the voice, the effort used during speech, the fatigue associated to voice production, personal, professional and social limitations\(^{(25)}\) imposed by the voice problem, well-being alterations, voice changes according to age\(^{(26)}\), among others. Therefore, the judgment is based on auditory, sensorial, psychological, and physical references, etc. On the other hand, clinicians base their judgment only on the sound stimuli, and do not have access to the other dimensions\(^{(2)}\).

Similar findings were also found in an American study\(^{(17)}\), that evaluated the reliability of methods based on the clinicians’ perception, comparing them to the methods based on the patients’ perception of his/her vocal quality. The research analyzed 103 perceptual assessments. When the authors correlated the patients’ perception data obtained with the V-RQOL and the IPVI (Iowa Patient’s Voice Index), they found that the weak correlation may be explained by the fact that the patient’s perception varies widely according to his/her expectations. The results also showed a weak correlation between clinician’s and patients’ evaluations (total V-RQOL score). This finding supports the fact that clinical evaluation considers specific vocal deviations, while patient’s perception considers social and emotional effects caused by the vocal problem. Thus, the authors concluded that, in clinical practice, it is necessary to use assessment instruments centered on both clinicians and patients\(^{(17)}\).

There are no perfect strategies of auditory-perceptual evaluation\(^{(2)}\), since there will always be error and confusion factors in the analyses. Therefore, possible interference factors must be considered. However, despite this fact, there is no evidence that this type of analysis is going to lose its importance in the future. The use of specific protocols that include perceptual parameters frequently used in clinical practice is also recommended, with the aim to reduce the potential differences between judges. Nevertheless, the patient’s self-assessment must be valued in clinical routine.

Hence, it is important for clinical practice to gather information from both perspectives (clinician’s and patient’s) during voice assessment, using specific instruments, in order to accurately and reliably measure the severity of the problem and to contribute to the direction of intervention and therapeutic planning.

**CONCLUSION**

The clinician’s perception does correspond to the individual’s self-perception of his/her vocal quality and the impact of the voice deviation on their quality of life, but not directly. The individual’s perception about his/her vocal quality and voice-related quality of life complements the clinician’s perception about the overall degree of voice deviation.

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