Original Article

https://doi.org/10.1590/2317-6431-2025-3033en

Audiology Communication Research
ISSN 2317-6431

Vocal deviation, signs and symptoms, laryngological diagnosis, and their association with self-perception of voice

Desvio vocal, sinais e sintomas, diagnóstico laringológico e sua associação com a autopercepção da voz

Izamara Araújo[1], *Marcia Simões-Zenari*[1], *Maura Neves*[2], *Fábio Jacob*[2], *Katia Nemr*[1]

ABSTRACT

Purpose: To investigate the association between self-perception of vocal quality and the degree of vocal deviation, signs and symptoms, and laryngological diagnosis. **Methods:** Cross-sectional, observational, and descriptive study. The sample consisted of 100 individuals of both sexes, with an average age of 38.9 years, users of a university hospital. The General Dysphonia Risk Screening Protocol was applied, which includes a Visual Analog Scale (VAS) for self-assessment of vocal quality. Voices were recorded and a laryngological examination was performed. **Results:** The average VAS score was 4.13 (mild deviation). From the clinical analysis, it was observed that there was a higher frequency of mild dysphonia and benign laryngeal lesions. Approximately one third presented laryngeal exam without alterations. Self-perception of vocal deviation was associated with signs and symptoms of hoarseness, deep voice and sore throat. **Conclusion:** The association of self-perception of vocal quality with some vocal signs and symptoms and the lack of association with vocal deviation and the type of laryngeal lesion indicates many particularities in the way each patient perceives his/her alteration, and it is necessary that this perception be expanded for better therapeutic success.

Keywords: Voice; Voice Quality; Visual analog scale; Self-concept; Dysphonia

RESUMO

Objetivo: Investigar a associação entre a autopercepção da qualidade vocal e o grau de desvio vocal, sinais e sintomas e diagnóstico laringológico. **Métodos:** Estudo transversal, observacional e descritivo. A amostra foi composta por 100 indivíduos de ambos os gêneros, com média de 38 anos e 10 meses de idade, usuários de um hospital universitário. Foi aplicado o Protocolo de Rastreio de Risco de Disfonia - Geral, que contempla uma Escala Analógica Visual para autoavaliação da qualidade vocal. Foram gravadas as vozes e realizado exame laringológico. **Resultados:** A pontuação média na escala foi 4,13 (desvio leve). A partir da análise clínica observou-se maior frequência de disfonia leve e lesões laríngeas benignas. Cerca de um terço da amostra apresentou exame laríngeo sem alterações. A autopercepção do desvio vocal se associou aos sinais e sintomas de rouquidão, voz grave e dor na garganta. **Conclusão:** A associação da autopercepção da qualidade vocal com alguns sinais e sintomas vocais e a não associação com o desvio vocal e com o tipo de lesão laríngea indica muitas particularidades na maneira como cada paciente percebe sua alteração, sendo necessário que essa percepção seja ampliada para melhor sucesso terapêutico.

Palavras-chave: Voz; Qualidade da voz; Escala visual analógica; Autopercepção; Disfonia

Study carried out at Universidade de São Paulo – USP – São Paulo (SP), Brasil.

[1]Curso de Fonoaudiologia, Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional, Faculdade de Medicina – FM, Universidade de São Paulo – USP – São Paulo (SP), Brasil.

[2]Hospital Universitário – HU, Universidade de São Paulo – USP – São Paulo (SP), Brasil.

Conflict of interests: No.

Authors' contribution: IA was responsible for data collection and organization, participated in the analysis, and wrote the draft of the manuscript; MSZ participated in the study design, data analysis, and manuscript review; MN and FJ were the physicians responsible for the examinations and diagnosis of dysphonia and the final review of the manuscript; KN was responsible for the study design and supervision and the final review of the manuscript.

Data availability:

Research data is not available.

Funding: Fundação de Amparo à Pesquisa do Estado de São Paulo – FAPESP, process number: 2019/14356-8.

Corresponding author: Marcia Simões-Zenari. E-mail: marciasz@usp.br

Received: February 13, 2025; **Accepted:** June 06, 2025

Editor-in-Chief: Maria Cecília Martinelli Iório.

Associate Editor: Leonardo Wanderley Lopes.

INTRODUCTION

Voice assessment involves multiple parameters and procedures. The patient's self-perception of dysphonia is widely used and should be valued as an essential element to interpret the case and define the intervention[1-3]. The way each person perceives their health problems affects how they will interpret the symptoms, the severity of the condition, and the prognosis. It is a fundamental measure in the control of chronic diseases regarding both self-care and adherence to treatment[4].

Knowing the factors that interfere with the person's perception regarding the presence and severity of the disease can help health professionals clarify subjective aspects, better understand needs, and provide individualized care, making the intervention more assertive[5].

Voice clinics have increasingly considered the patient's self-perception, to the extent that any assessment that does not include the person's impressions of their voice and the damage associated with possible voice disorders is currently considered incomplete[2,6]. However, the patient's perception does not always correspond to the clinical speech-language-hearing analysis, imaging tests, and acoustic analysis[7,8]. Studies have found a weak positive correlation between both assessments[6] and different factors associated with dysphonia when diagnosed by the clinician or self-reported by the patient[7].

These differences can be explained by the fact that vocal self-perception varies according to the individual's personal, social, and cultural characteristics, and is developed throughout life. It is influenced by sensory, auditory, and emotional factors and is also related to specific occupational characteristics. These elements ensure each person has a unique self-perception of voice[6]. This would explain why some patients with mild voice changes often report a huge impact on their lives, while others, with more severe cases of dysphonia, may have a much smaller impact[2].

Furthermore, lay people may use terms that differ from the technical-scientific language of the area to describe a healthy voice as "normal", a rough voice as "hoarse", and a breathy voice as "tired"[9]. This information should be considered in clinical-patient communication to help understand the patient's condition.

A study with teachers with mild to moderate voice disorders showed that those who self-assessed their voice as "good" did not seek speech-language-hearing therapy, even though they had voice disorders, while those who assessed their voice as "average" sought speech therapy[10]. In addition to self-perception being related to seeking treatment, adherence to speech therapy and discharge from therapy are also strongly influenced by the individual's perception of the problem. People who did not understand the severity of their voice disorder did not adhere to the therapeutic process, even when an otorhinolaryngologist indicated the need for speech therapy[11].

Since it is a subjective measure, it is extremely important to use reliable methods to analyze voice self-perception. A recent Brazilian study[12] used different protocols for this purpose in teachers without laryngeal changes, all validated for Brazilian Portuguese, such as the Voice Activity and Participation Profile (VAPP), which assesses the impact of the voice in different areas of the person's life with 28 questions, including the self-perception of the intensity of the vocal problem; Voice-Related Quality-of-Life (V-RQOL), whose 10 items assess the impact of the voice on quality of life; Voice Handicap Index (VHI), with 30 items to measure the perceived handicap of individuals with voice problems; Voice Symptom Scale (VoiSS), with 30 questions that allow individuals to describe the vocal symptoms and how they affect their quality of life; Vocal Tract Discomfort Scale (VTDS), which identifies the sensory perception of discomfort in the vocal tract through the quantitative analysis of eight symptoms.

Although widely used in voice clinics, these scales allow the analysis of patients' self-perception of vocal signs and symptoms and the impact of voice and dysphonia on their lives. This study used the visual analog scale (VAS), a tool widely used in health for various purposes[13], for a more direct, quicker, and easier-to-understand assessment of patients' perception of their vocal quality. It assesses people's health perception through a simple and objective question and indicates how they perceive their health at that moment in their life[5]. The VAS can be used either alone or in combination with other instruments. It allows for concise measurement, can be adapted to different health contexts and populations, and has good validity and reliability, making it a relevant tool for self-assessment of health status[13].

However, regardless of how voice self-perception is measured, medical history surveys and screening protocols must always include it since the individual may not mention this perception spontaneously and clearly[6].

Hence, it is necessary to understand which vocal signs and symptoms are associated with self-perception of voice quality: Do people who perceive their voice as hoarse attribute a greater degree of change to their voice? What about those with a sore throat or who feel their voice is failing? It is equally relevant to question whether the degree of dysphonia is associated with this self-perception: Is the more altered the voice from a clinical point of view, the greater the degree of change attributed by the patient? It also had to be verified whether the type of voice disorder interferes with their perception: Do people with a certain type of laryngeal lesion identify their voice as more altered?

Given the importance of patient self-perception as an essential component of assessment in the voice clinic, its impact on the search for treatment, adherence and discharge from speech therapy; and given the lack of research on which factors are related to this perception, this study aimed to investigate the association between self-perception of vocal quality and the degree of vocal deviation, vocal signs and symptoms, and laryngological diagnosis in adults.

METHODS

Study type

This descriptive, observational, cross-sectional study was approved by the institution's Ethics Committee for Analysis of Research Projects (CAAE 87344318.0.0000.0065), with the consent of the co-participating institution. All participants signed an informed consent form.

Participants

The inclusion criteria were people aged 18 or older, either affiliated with the higher education institution where the research

was conducted and with access to the institution's university hospital, or patients who used the services of that hospital for living in the area it covers. The exclusion criteria were cognitive disorders or other difficulties that compromised completion of the questionnaire and/or performance of the laryngological examination, and being under speech-language-hearing voice treatment.

The sample consisted of 100 individuals, 60 women and 40 men, aged 18 to 80 years (mean = 38 years and 10 months, median = 38 years), regardless of having voice complaints.

Procedures

Protocols

The study applied the General Dysphonia Risk Screening Protocol (G-DRSP), which collects voice information[14]. It also selected data from the VAS and self-reported vocal signs and symptoms from the G-DRSP.

The VAS allows the participant to demonstrate, on a 10-centimeter line, the point that best quantifies the change in their vocal quality, based on the following instruction: "Indicate how much your voice has changed in the last week, considering 0 as no change and 10 as maximum change". The indicated point is measured with a millimeter ruler, indicating the score to classify the degree of vocal change through the correspondence between the VAS and the numerical scale: grade 0 (0-35.5 mm), related to normal variability of vocal quality; grade 1 (35.6-50.5 mm), mild vocal deviation; grade 2 (50.6-90.5 mm), moderate deviation; and grade 3 (90.6-100 mm), extreme deviation[15].

Regarding vocal signs and symptoms, each of the 26 items is scored according to occurrence: 0 points = it never occurs, 1 point = it occurs sometimes/monthly, 2 points = it occurs almost always/weekly, and 3 points = it occurs daily/always. The items are distributed into four categories: laryngeal sensations, vocal complaints, oral sensations, and dysphagia sensations. This study selected the most frequent signs and symptoms in the sample, those occurring in 50% or more.

Voice recording

The participants' voice samples were recorded a few minutes before the laryngeal examination, using the tasks predefined in the Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V), translated into Brazilian Portuguese[16]. Voices were collected using an iPad® (MP2F2BZ/A, iOS 10.3.3), Shure Motiv® application developed by Shure®, at 44,100 Hz, mono sound, in WAV format, with a unidirectional microphone attached, model MOTIV MV88® (Shure, United States), positioned 15 cm from the participant's mouth, at a 45° angle. This measurement was adopted because it presented better quality after tests with the microphone in different positions and distances[17].

The recording was performed in the same environment, with noise below 50 dB, controlled by the SoundMeter application (Digital SoundMeter). The CAPE-V tasks[16] were recorded: sustained vowel /a/ and /é/, reading the sentences, "Erica tomou suco de pera e amora" ("Erica drank pear and blackberry juice"); "Sônia sabe sambar sozinha" ("Sônia knows how to samba alone"); "Olha lá o avião azul" ("Look at the blue plane"); "Agora é hora de acabar" ("Now it's time to finish"); "Minha mãe namorou um anjo" ("My mother dated an angel"); and "Papai trouxe pipoca quente" ("Daddy brought hot popcorn"), in addition to spontaneous speech from the question, "Talk about something you like to do".

Laryngological examination

The otorhinolaryngologists participating in the study performed videolaryngostroboscopy immediately after the voice recording, at the institution's university hospital where the research was conducted. All examinations were recorded on video and attached to each participant's digital folder, together with their report. The research team previously defined the criteria evaluated in the examination, which supported the analysis of the laryngeal image and the diagnosis.

Data analysis

Voice analysis

Two experienced speech-language pathologists, who had been working in the field for more than 5 years, performed the auditory-perceptual evaluation of voice independently. Each one received a digital folder with the voices of all anonymized individuals and a spreadsheet to fill out with the analysis of CAPE-V aspects. This study only considered the overall severity of vocal deviation (OS).

The interrater and intrarater reliability analysis was based on the random and blind repetition of the voices of 20 individuals in the sample. It calculated the intraclass correlation coefficient (ICC), using the two-way model with fixed effects based on the absolute agreement of single measures. The interrater reliability index was 0.520 (moderate reliability). Then, the mean between the OS values attributed by both raters was calculated from their individual analysis, generating the final OS value.

The following cutoffs, defined in a Brazilian study[15], were used to classify the severity of vocal deviation: no vocal deviation - values between 0 and 35.5; mild vocal deviation - from 35.5 to 50.5; moderate vocal deviation - from 50.5 to 90.5; and extreme vocal deviation - above 90.5.

Categorization of laryngeal examination results

Laryngeal diagnoses were classified into four groups: G1 – examinations without changes; G2 – benign lesions in the vocal folds; G3 – glottal gap without organic cause; G4 – signs of gastroesophageal reflux (GER).

Statistical analysis

Multiple linear regression models were constructed with the VAS score as the dependent variable, since the scale represents the self-perception of vocal deviation, to verify the association between the participants' vocal self-perception and the degree of vocal changes, vocal signs and symptoms, and type of laryngeal lesion. All models had multicollinearity indices within acceptable limits (individual Variance Inflation Factor - VIF ≤ 2.954 and tolerance index ≥ 0.339 for all variables, with mean VIF = 1.966). The regression coefficients had their confidence intervals and significance calculated using the bias-corrected and accelerated bootstrap technique based on 2,000 resamples.

Statistical significance was set at 5% ($p \leq 0.05$), using the SPSS Statistics software, version 27.0 (IBM Corp., Armonk, NY, USA).

RESULTS

Sample characterization

The mean VAS score was 4.13, compatible with self-perception of mild dysphonia[15]. The participants' scores ranged from 0 to 10, evidencing the heterogeneity of the sample, with people who did not perceive any change and people who perceived their voice as completely altered.

The OS results indicated that most participants had mild dysphonia. However, the scale scores ranged from 22.50 to 67.00 – i.e., from absence of deviation to moderate deviation, according to the classification used[15] (Table 1).

The 17 vocal signs and symptoms that occurred above 50%, as well as their frequency, are described in Table 2.

Only 29% of participants did not present abnormal laryngological examination results. Lesions classified as G2, G3, and G4 were found in 35%, 17%, and 11% of the 71 abnormal exams, respectively. Furthermore, 23% of the laryngeal changes were G2 together with G4, and 14% were G3 with G4.

Investigation of the association between vocal self-perception and overall vocal deviation, vocal signs and symptoms, and laryngological changes

Regarding the effect of each independent variable on the VAS scores, which quantifies vocal self-perception, only vocal signs and symptoms had some association (Table 3). Hoarseness, deep voice, and sore throat had a statistically significant effect on the VAS score, being responsible, respectively, for 9.8%, 5.0%, and 10.5% of the total variance – i.e., the greater frequency of these signs and symptoms influenced worse vocal self-perception values.

DISCUSSION

It is relevant to analyze the patient's self-perception in the speech-language-hearing voice clinic for a better understanding of the condition and for more assertive therapeutic planning. Hence, this study investigated some factors that could be associated with this variable.

Table 1. Characterization of the sample in relation to the Visual Analogue Scale score and overall severity of vocal deviation

	Mean	SD	Median	Min.	Max.
VAS score (vocal self-perception)	4.13	2.80	4.00	0.00	10.00
Overall severity of vocal deviation	36.72	7.15	36.75	22.50	67.00

Subtitle: VAS = Visual Analog Scale; SD = Standard deviation; Min. = Minimum; Max. = Maximum

Table 2. Characterization of the sample in relation to the frequency of vocal signs and symptoms occurring more than 50%

Symptom	Never		Monthly/ sometimes		Weekly/ almost always		Daily/ always	
	n	%	n	%	n	%	n	%
Vocal fatigue	23	23.00	51	51.00	19	19.00	7	7.00
Itchy throat	27	27.00	39	39.00	31	31.00	3	3.00
Raspy throat	24	24.00	45	45.00	24	24.00	7	7.00
Dry throat	13	13.00	30	30.00	35	35.00	22	22.00
Throat clearing	11	11.00	41	41.00	23	23.00	25	25.00
Cheek biting	28	28.00	39	39.00	23	23.00	10	10.00
Tiredness after meals	41	41.00	19	19.00	21	21.00	19	19.00
Hoarseness	29	29.00	39	39.00	22	22.00	10	10.00
Voice failures/breaks	25	25.00	39	39.00	30	30.00	6	6.00
Difficulty controlling vocal intensity	37	37.00	33	33.00	16	16.00	14	14.00
Sore throat	22	22.00	55	55.00	20	20.00	3	3.00
Shortness of breath	44	44.00	28	28.00	18	18.00	10	10.00
Choking	39	39.00	44	44.00	13	13.00	4	4.00
Need to cough to clear the throat	19	19.00	34	34.00	28	28.00	19	19.00
Sensation of a foreign body in the larynx	43	43.00	39	39.00	11	11.00	7	7.00
Weak voice	45	45.00	34	34.00	14	14.00	7	7.00
Deep voice	48	48.00	29	29.00	13	13.00	10	10.00

Subtitle: n = Sample number; % = Percentage

Table 3. Regression coefficients of independent variables for the Visual Analog Scale score

Independent variable	b	95% CI	β	95% CI	p-value	R^2
Overall severity	0.01	-0.09 – 0.10	0.017	-0.22 – 0.27	0.878	0.000
Vocal fatigue	0.67	-0.37 – 1.74	0.200	-0.11 – 0.52	0.150	0.028
Itchy throat	-0.23	-1.13 – 0.63	-0.070	-0.34 – 0.19	0.613	0.003
Raspy throat	0.48	-0.32 – 1.33	0.149	-0.10 – 0.41	0.193	0.021
Dry throat	0.51	-0.27 – 1.36	0.175	-0.09 – 0.47	0.198	0.020
Throat clearing	-0.21	-0.97 – 0.72	-0.073	-0.34 – 0.25	0.557	0.005
Cheek biting	-0.37	-0.99 – 0.27	-0.124	-0.34 – 0.09	0.226	0.018
Tiredness after meals	0.23	-0.38 – 0.77	0.098	-0.16 – 0.32	0.357	0.011
Hoarseness	1.02	0.39 – 1.52	0.347	0.13 –0.51	0.005*	0.098
Voice failures/breaks	-0.10	-1.09 – 1.06	-0.031	-0.34 – 0.33	0.837	0.001
Difficulty controlling vocal intensity	0.25	-0.30 – 0.82	0.095	-0.11 – 0.31	0.429	0.008
Sore throat	-1.12	-1.91 – -0.25	-0.294	-0.50 – -0.06	0.006*	0.105
Shortness of breath	0.16	-0.69 – 0.74	0.059	-0.25 – 0.27	0.666	0.002
Choking	0.09	-0.69 – 0.96	0.027	-0.20 – 0.28	0.783	0.001
Need to cough	-0.03	-0.60 – 0.42	-0.009	-0.21 – 0.15	0.949	0.000
Sensation of a foreign body in the larynx	-0.05	-0.69 – 0.54	-0.017	-0.22 – 0.17	0.875	0.000
Weak voice	-0.09	-0.98 – 0.85	-0.030	-0.32 – 0.28	0.832	0.001
Deep voice	0.72	-0.04 – 1.30	0.256	-0.02 – 0.46	0.049*	0.050
G2	-0.11	-1.57 – 1.31	-0.017	-0.24 – 0.20	0.884	0.000
G3	-0.59	-2.18 – 1.32	-0.069	-0.25 – 0.15	0.446	0.007
G4	0.69	-1.32 – 2.81	0.067	-0.13 – 0.27	0.458	0.007
G2/G4	0.60	-0.91 – 1.94	0.078	-0.12 – 0.26	0.471	0.006
G4/G3	0.02	-2.06 – 2.02	0.002	-0.22 –0.22	0.991	0.000

*Statistically significant value at 5% ($p \leq 0.05$)

Subtitle: b = non-standardized coefficient; CI = confidence interval; β = standardized coefficient; R^2 = coefficient of determination (percentage of the variance of the dependent variable explained by the independent variable)

The VAS values (mean of 4.13) were close to those observed in another study[12] (mean of 3.77), in which participants reported a high number of vocal signs and symptoms. In two studies, the means represent self-reported mild vocal changes[12,15].

The same was true for the OS attributed by the judges (36.72), since their mean also represents mild dysphonia[12]. It is believed that the integration between auditory, acoustic, laryngeal, and self-perception information is more evident in patients with more severe vocal deviations[2].

Voice production, perception, and self-monitoring involve auditory feedback, somatosensory cues, and the feedforward system (or prediction system, responsible for anticipating and correcting deviations). People may naturally have greater ease in perceiving voice changes through sensory pathways than through auditory pathways. While the auditory pathway focuses only on sound, the sensory pathway encompasses tactile perception and other stimuli, such as tension in the phonation muscles, vibration in the chest, and respiratory movements. Both auditory and sensory perception can improve with training, helping improve the feedforward system[18]. Thus, people without any training may have greater difficulty, particularly auditory, in perceiving vocal deviations, especially when they are mild changes, as most of the ones presented in this study.

A study analyzed the relationship between self-assessment of the impact of voice disorders and deviations in vocal quality assessed by speech-language-hearing pathologists. It indicated that the professional auditory-perceptual evaluation is not a direct predictor of self-assessed vocal impact in a population with mild to moderate vocal changes[19]. In the present study, the severity of vocal deviation assessed by speech-language-hearing pathologists was not associated with the participants' vocal self-perception, although mild deviations were more present in both. These data reinforce that these are different perspectives, from the clinician and the individual who needs speech therapy for the voice; hence, both assessments are necessary and complementary. The clinical assessment provides correct planning of the intervention, and vocal self-perception is what leads and links the patient to treatment in most cases[10,11].

Regarding the vocal signs and symptoms most frequently occurring in this population, the following stand out: throat clearing, the need to cough to clear the throat, dry throat, sore throat, and vocal fatigue. This is similar to what was found in a recent integrative literature review[3].

Clearing the throat is a widely cited symptom whose function is the same as that of coughing – i.e., to abruptly eliminate secretions from the throat[20]. These two symptoms may also be associated with factors such as poor hydration, exposure to smoke/smoking habits, among others (which future studies will analyze), besides GER, a diagnosis present in some of the study participants.

Vocal fatigue is often associated with several other symptoms, such as dry throat and sore throat (which also had a high prevalence in the sample), in addition to increased sensation of effort, laryngeal discomfort, neck and shoulder tension, and loss of flexibility and vocal projection[12].

A study that investigated the relationship between vocal signs and symptoms and speech-language-hearing therapy found that the greatest demand for treatment was made by individuals who better perceived having vocal fatigue, with more vocal symptoms, and with worse vocal self-assessment[10].

Furthermore, only about one-third of the participants in the present study had normal laryngological examination results. The highest frequency among those who presented alterations was of benign lesions. No association was found between the

type of lesion and vocal self-perception. Patients with benign vocal fold lesions and GER-related voice disorders present more vocal signs and symptoms than those without laryngeal lesions[2]. In addition, each lesion type, size, characteristic, and location can lead to different vocal changes[21], perceived individually by the patients.

On the other hand, some vocal signs and symptoms (hoarseness, deep voice, and sore throat) were associated with the self-perception of greater vocal deviation, as verified in another study[19].

Hoarseness is the most common sign reported by people with benign laryngeal lesions. This can be explained by the fact that nodules, polyps, cysts, and edema interfere with the normal vibration of the vocal folds, changing voice quality[2,3,21]. These lesions increase mass, reducing the fundamental frequency of vocal fold vibration, resulting in a noticeably deeper voice. Other very common signs and symptoms, such as vocal fatigue, throat clearing, and dry throat, may seem less worrisome to the population; therefore, they were not associated with self-perception of vocal deviation. In a survey of the most common signs and symptoms in the general population, hoarseness was the most cited, and, according to the participants' opinion, it would be associated with intense voice use and the most worrisome respiratory conditions[22]. Another study found an association between self-perception of vocal deviation, hoarseness, and respiratory problems[7].

A study with 50 individuals unfamiliar with the technical-scientific speech-language-hearing terminology showed that the population understands a lower and rougher vocal pattern as hoarseness[9]. Furthermore, a lower and rough voice may be associated with mass lesions of the vocal folds, such as nodules, edemas, cysts, and polyps[21], and GER. In this sample, these lesions were present in 41% of the participants, allocated to group G2, and individuals with mixed lesions, which explains the relevance of these signs.

Lastly, regarding sore throat and its association with vocal self-perception, it is worth remembering that this symptom can result from infections in the tonsils, pharynx, or larynx, and be associated with diseases such as rheumatic fever, thyroid nodules, and even laryngeal cancer[23]. Thus, the physiological changes that these diseases cause in the head and neck region also lead to changes in vocal quality. Besides feeling pain, the person may notice that their voice is worse. In fact, vocal symptoms have been related to musculoskeletal pain, especially in the regions proximal to the larynx, so that the greater the frequency of pain, the greater the presence of other vocal symptoms. This may be associated with dysphonia[24] and a worse self-perception of voice.

The reasons that determine whether a person perceives their voice as more positive or more negative may vary between vocal and expressive attributes, personal characteristics, social or external validation, and even emotional aspects[4,25]. Moreover, it may be related to different aspects of the speaking and singing voice[25].

The data from this study reinforce the importance of considering vocal perception in clinical evaluations, regardless of age and occupational voice use.

As observed in another study on vocal self-perception, there was also no direct relationship between vocal self-assessment, type of laryngeal lesion, and the severity of vocal deviation, reinforcing that these are complementary pieces of information in the diagnosis of patients with dysphonia[2].

One limitation of this study was that many participants had mild dysphonia, few had moderate dysphonia, and none had extreme dysphonia, making it difficult to analyze the association between VAS and the severity of vocal deviation. The continuation of the study aims to balance this distribution better to verify whether the results are confirmed. Another point was that participants did not undergo audiometry, although hearing is one of the ways of voice self-perception. On the other hand, none of the participants reported hearing problems or difficulties in the G-DRSP.

There is much to be discovered about this topic. Future research by the authors of this study aims to expand the sample and the analysis of vocal self-perception, collecting other variables, and considering other factors, such as age, sex, presence/absence of vocal complaints, profession, occupational voice use, lifestyle, and so forth. The analysis of self-perception by VAS will also be considered in association with other protocols validated in Brazil[12].

As clinical implications, these data help formulate intervention strategies that value vocal self-perception as an essential component in speech-language-hearing assessments for diagnosis, screening, and therapeutic monitoring, since it can reflect the severity of symptoms and the impact on the daily lives of individuals. Additionally, vocal self-perception, worked on throughout speech therapy, can favor self-knowledge and self-monitoring of the voice, helping achieve maximum vocal performance and well-being provided by the therapeutic process.

CONCLUSION

Among the overall severity of dysphonia, laryngeal diagnosis, and vocal signs and symptoms, only the latter were associated with self-perception of vocal deviation in the study sample. Higher VAS scores were associated with hoarseness, deep voice, and sore throat, indicating the relevance of these aspects and the need for patients to better understand their condition to identify other factors that may be relevant in their therapeutic process.

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