

## Original articles

# Auditory and proprioceptive vocal symptoms in patients with dysphonia pre- and post- group therapy

## *Sintomas vocais auditivos e proprioceptivos pré e pós-terapia de grupo de pacientes com disfonia*

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### ABSTRACT

**Purpose:** to compare auditory, proprioceptive and total symptoms in dysphonia patients pre- and post-group therapy, and associate the number of vocal symptoms with gender, age, professional use of voice, and laryngeal diagnosis variables.

**Methods:** the sample included 27 patients enrolled in therapeutic groups. All had auditory, proprioceptive, and total vocal symptoms from the Vocal Screening Protocol (VSP), pre- and post- group therapy, which consisted of eight meetings, with the first and last being for the implementation of the VSP; in the second to seventh, speech therapy sessions were performed using an eclectic approach.

**Results:** the participants were adults, mostly female, and predominantly with laryngeal diagnoses involving lesions in the membranous portion of the vocal folds. There was a significant reduction in proprioceptive and total vocal symptoms when pre- and post- therapy was compared. The following vocal symptoms were significantly minimized post-therapy: vocal fatigue, dry throat, lumps in the throat, effort and discomfort when speaking. There was a connection between post group therapy (proprioceptive, auditory, and total) vocal symptoms and the female and laryngeal diagnosis involving mass lesions in the membranous portion of the vocal folds variables. There was no connection between post-therapy vocal symptoms and age or professional use of voice.

**Conclusion:** there was a reduction in total and proprioceptive vocal symptoms reported by patients, comparing pre- and post- therapy. There was a connection between females and diagnoses of mass lesions in the membranous portion of the vocal folds and total, proprioceptive, and auditory symptoms post- voice therapy. Age and professional use of voice were not associated with reduced vocal symptoms.

**Keywords:** Voice; Dysphonia; Signs and Symptoms; Speech Therapy; Voice Training; Group Processes

### RESUMO

**Objetivo:** comparar os sintomas auditivos, proprioceptivos e os totais pré e pós-terapia de grupo de pacientes com disfonia, além de associar o número de sintomas vocais às variáveis sexo, faixa etária, uso profissional da voz e diagnóstico laríngeo.

**Métodos:** participaram 27 pacientes inseridos em grupos terapêuticos. Todos responderam aos sintomas vocais auditivos, proprioceptivos e totais do Protocolo de Triagem Vocal (PTV) pré e pós-terapia de grupo, que constou de oito encontros, sendo o primeiro e último para aplicação do PTV; do segundo ao sétimo foram realizadas sessões terapêuticas fonoaudiológicas de abordagem eclética.

**Resultados:** os participantes eram adultos, maioria do sexo feminino e diagnóstico laríngeo predominante de lesão na porção membranosa das pregas vocais. Pôde-se perceber que houve redução significativa dos sintomas vocais proprioceptivos e totais quando se comparou pré e pós-terapia. Minimizaram significativamente pós-terapia os sintomas vocais: fadiga vocal, garganta seca, bolo na garganta, esforço e desconforto ao falar. Houve associação entre sintomas vocais (proprioceptivos, auditivos e totais) pós-terapia de grupo com as variáveis sexo feminino e diagnóstico laríngeo lesão de massa na porção membranosa das pregas vocais. Não houve associação dos sintomas vocais pós-terapia com faixa etária e nem uso profissional da voz.

**Conclusão:** houve redução dos sintomas vocais totais e proprioceptivos relatados pelos pacientes ao comparar o pré e o pós-terapia. Houve associação entre sexo feminino e diagnóstico de lesão de massa na porção membranosa das pregas vocais com sintomas totais, proprioceptivos e auditivos pós-terapia de voz. A faixa etária e o uso profissional da voz não foram associados à redução dos sintomas vocais.

**Descritores:** Voz; Disfonia; Sinais e Sintomas; Fonoterapia; Treinamento de Voz; Processos Grupais

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## INTRODUCTION

Quality of voice is considered to be one of an individual's most complete attributes, which can reveal information about physical, psychological, and social parameters. Difficulties in producing vocal emissions are known as dysphonia, which occurs when voice is not produced naturally<sup>1-3</sup>. These take the form of vocal symptoms, defined as being complaints related to the voice, which may be described and reported by individuals themselves, and can derive from various factors such as allergic disorders, harmful habits, smoke, and alcohol, among others.

Vocal symptoms can be classified as auditory and proprioceptive<sup>4</sup>. Proprioceptive symptoms are related to patient kinesthesia: that is, they are those that the patient reports feeling, such as burning, tightness, dryness, an itch and lump in the throat, a sore, sensitive or irritated throat<sup>5</sup>, and a tickle, among others, while auditory symptoms refer to what can be heard and perceived by patients themselves, such as hoarseness, a weak voice, shakiness, and difficulty in reaching high notes, among others.

There are a number of ways of measuring vocal symptoms. One of these is to use instruments such as the Voice Symptoms Scale (VoiSS), which provides information regarding functionality, emotional impact, and physical symptoms that a problem with the voice can cause in the life of an individual<sup>6</sup>. Another instrument that measures vocal symptoms is the Vocal Tract Discomfort Scale (VTDS), a tool used to quantify the intensity and frequency of discomfort in an individual's vocal tract; that is, it exclusively investigates sensorial symptoms<sup>5,7</sup>. Another instrument is found in the literature, which is the List of Vocal Signs and Symptoms (LVSS), containing fourteen symptoms, which are mentioned by individuals indicating whether they have presented one of them in the past, whether they present any at the time of implementation, how often they occur, and whether they relate the symptoms with their working day<sup>8,9</sup>.

Of these three instruments described in the literature for investigating vocal symptoms, the VoiSS<sup>6</sup> and VTDS<sup>5</sup> are validated, especially the first, which is highly specific and sensitive in differentiating dysphonic patients from vocally healthy ones. Nevertheless, it does not provide precise information about the dichotomy between auditory and proprioceptive vocal symptoms. Knowing the number and nature of symptoms can guide therapeutic planning, and thus favor adherence to speech

therapy, as well as significantly reducing the vocal complaint.

Studies provide scientific evidence that speech therapy is the treatment of choice for dysphonia, particularly those related with vocal behavior<sup>5,10,11</sup>. The most traditional form of speech therapy is individual, generally with an eclectic approach involving direct strategies, focused on phonation, and indirect strategies, involving orientation regarding vocal education, breathing techniques, and relaxation, among others<sup>12,13</sup>.

Speech therapy can also be carried out in groups, initially proposed with the aim of reducing waiting times and meeting all of the demand more quickly. However, this motivation is being overtaken and substituted by a broader view in which group therapy aims to provide individuals with an exchange of experiences, self-perception, self-knowledge, inclusion, and the creation of ties with other participants, in order to encourage more motivation in these individuals to regularly participate in the group, thus favoring therapy efficiency<sup>14</sup>.

Group therapy in the area of the voice can be considered as a means of facilitating the exchange of experiences between individuals, who often identify with each other's problems because they have similar alterations or pathologies<sup>15</sup>. It is known that there is a need to take part in a group, which can be a relevant point for motivating subjects to regularly participate in therapy, considering that ties are created between participants in each meeting, thus improving adherence to treatment<sup>16</sup>. Various studies regarding group voice therapy have been developed and present satisfactory results<sup>10,17,18</sup>, which makes it a viable alternative for treating dysphonia. Knowing the benefits of treatment is important in order to obtain success in the therapeutic process<sup>19</sup>.

Within this perspective, some guiding questions for the study could be laid out: Is group therapy effective as a rehabilitation resource for patients with dysphonia? Can group speech therapy influence in reducing the number of vocal symptoms in patients with dysphonia?

In light of this, the aim of this study is to compare auditory, proprioceptive, and total vocal symptoms in patients with dysphonia, pre- and post- group therapy, and to associate the number of vocal symptoms to the gender, age, professional use of voice, and laryngeal diagnosis variables.

## METHODS

This study is explanatory, field, quantitative, and interventionist in character. It occurred between May

2013 and December 2014. It belongs to a larger project, "Group therapy vs individual therapy: randomized clinical trial for patients with voice disorders", funded by the National Council for Scientific and Technological Development (CNPq). This was evaluated and approved by the Committee for Ethics in Research (CEP) from the Center for Health Sciences at the Federal University of Paraíba, via protocol nº 383,061/2013.

The study was initiated after the patients read and signed an informed consent form, elaborated in accordance with Resolution no. 466/12 of the National Commission for Ethics in Research (CONEP).

### Study population and sample

The study population consisted of 62 patients of both sexes and aged between 18 and 50, evaluated at the Integrated Laboratory for Voice Studies (ILVS), at a clinical school of Phonoaudiology at a higher education institution in Paraíba, with otorhinolaryngological and phonoaudiological dysphonia diagnoses, and who were submitted to voice therapy in groups.

Of these, 15 people gave up treatment, leaving 47 patients, of which 27 met the eligibility criteria, such as: having dysphonia detected based on a perceptive-auditory evaluation by a speech therapist and an otorhinolaryngological report, not having previously

undergone speech therapy for voice disorders, so that it was possible to attribute the results solely to the group therapy; not having more than two absences and/or not giving up treatment; not presenting any comorbidity that affected cognition and/or communication, preventing them from meeting the protocol during evaluation.

All of the patients provided laryngeal reports issued by an otorhinolaryngological doctor and handed them in before starting any phonoaudiological intervention. The laryngeal diagnosis was divided into five categories for this study: absence of laryngeal lesion, glottic fissure without organic or neurological cause, lesion in the membranous portion of the vocal folds (nodules, polyps, and cysts), voice disorder as a side effect of gastroesophageal reflux<sup>20</sup>, and undefined laryngeal diagnosis.

The other eligibility criteria were addressed by the Vocal Screening Protocol (VSP)<sup>21</sup>, described below.

Thus, 27 patients with dysphonia participated in this study, with an average age of 45.2 ( $\pm 13.5$ ), and who were submitted to group therapy. It was observed that most of the patients submitted to group therapy were female (81.5%; n=22) and were not voice professionals (63.0%; n=17). Most of the patients presented lesions in the membranous portion of the vocal fold (37.0%; n=10) (Table 1).

**Table 1.** Distribution of gender, professional use of voice, and laryngeal diagnosis variables for patients submitted to group therapy

Variable	n	Percentage (%)
<b>Gender</b>		
Female	22	81.5
Male	5	18.5
<b>Professional use of voice</b>		
No	17	63.0
Yes	10	37.0
<b>Laryngeal diagnosis</b>		
Lesion in the membranous portion of the vocal fold	10	37.0
Undefined laryngeal diagnosis	06	22.2
Voice disorder as a side effect of GER-	05	18.5
Glottic fissure without organic or neurological cause	02	7.4
Absence of laryngeal lesion	01	3.7

**Key:** GER= Gastroesophageal reflux

The participants in the study went to the clinical school of Phonoaudiology out of spontaneous demand and were allocated into therapeutic groups in accordance with their availability and the period in which they sought treatment. All in all, six groups were formed over the reference period, each composed of approximately six individuals, without controlling for gender, age, and whether or not they were voice professionals.

## Materials

The VSP was used (Annex 1)<sup>21</sup>, elaborated at the ILVS, to collect data pre- and post- group therapy.

The VSP is composed of objective and subjective questions and addresses patient characteristics in four parts: 1) personal and professional data on the individual; 2) vocal complaints, history of dysphonia, and laryngeal diagnosis; 3) auditory and proprioceptive vocal symptoms; and 4) risk factors for the voice, divided into: personal, organizational, and environmental. In this study, parts 1, 2, and 3 were considered.

In the part that addresses vocal symptoms, the VSP is composed of 24 symptoms, 12 auditory and 12 proprioceptive, which are mentioned by the patient, and subsequently, a simple summation is carried out, indicating the total symptoms reported. A mark is given for the presence or absence of vocal symptoms and a calculation is made using simple summation. The higher the result, the greater the symptomatology of the dysphonia presented by the patient.

This protocol was selected as an instrument for this study because it is the only one that divides the nature of symptoms; that is, it presents a dichotomy between auditory and proprioceptive vocal symptoms. There is thus the possibility of investigating them separately and perceiving whether there was any difference in the monitoring of the phonoaudiological intervention in relation to the vocal symptoms.

## Procedure for data collection

The group therapy took place over eight meetings, each one lasting approximately 90 minutes and carried out once a week, thus totaling a period of around two months. In the first and eighth meetings, data collection involving the implementation of SPV<sup>21</sup> was carried out.

In the other six intermediary meetings, group speech therapy took place using an eclectic approach<sup>22</sup>, focused on a combination of both indirect and direct

therapy instruments. Indirect instruments were used that involved therapeutic interaction, increased knowledge, pedagogical interventions, and counseling, lasting 60 minutes on average, and direct instruments such as auditory interventions, involving vocal, musculoskeletal, somatossensorial, and respiratory function, lasting 30 minutes on average. The direct therapy involved carrying out exercises using various techniques involving phonation, lasting 30 minutes on average. All of the therapeutic groups followed the same sequence and therapeutic approach described below (Figure 1), in accordance with a taxonomy/terminology recently proposed in the literature<sup>23</sup>.

All of the meetings were coordinated by a speech therapist, along with the participation of undergraduate students of Phonoaudiology trained to collaborate in the progress of the therapy. The students measured the indirect intervention and the speech therapist measured the direct intervention together with the help of the students. All of them often participated in the indirect intervention seated in circles and in the direct intervention standing up. Firstly the speech therapist gave the model for the exercise and carried it out together with the participants, each one within their limitations and maximum phonation time for emitting fricatives (/s/ and /z/), with each exercise lasting 2 minutes. During the intervention the participants were allowed to drink water. Execution difficulties were resolved by the students under the direct supervision of the speech therapist.

## Statistical analysis

A descriptive statistical analysis was carried out, verifying the frequency, average, and standard deviation of the variables studied. Subsequently, an inferential statistical analysis was carried out, using the Student T test for paired data to compare pre- and post- therapy, along with the Chi-squared test for the relationship between the variables studied.

The Wilcoxon statistical test was also used to compare the isolated vocal symptoms pre- and post-group therapy.

The differences were considered significant when they presented  $p \leq 0.05$ . The statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS) software, version 20.0.

Session	Intervention	Instrument
1	Evaluation	Application of the VSP
2	Indirect	<b>Therapeutic Interaction:</b> Presentation dynamic <b>Increase in Knowledge:</b> Anatomophysiology of vocal production, voice in the life cycle
	Direct	<b>Respiratory Intervention:</b> Suitability of the respiratory type Diaphragmatic breathing: Inhale for 4s, hold for 2s, and release for 6s Carry out 10 repetitions; <b>Respiratory Support and Vocal Function:</b> Maximum Phonation Time (MPT) emitting fricatives (/s/ and /z/); Emit three series of 10 repetitions of the /s/ phoneme straight after /z/.
3	Indirect	<b>Pedagogical Intervention; Therapeutic Interaction:</b> Myths and truths about the Voice
	Direct	<b>Respiratory Intervention:</b> Suitability of the respiratory type Diaphragmatic breathing: Inhale for 4s, hold for 2s, and release for 6s Carry out 10 repetitions; <b>Respiratory Support and Vocal Function:</b> Maximum Phonation Time (MPT) emitting fricatives (/s/ and /z/) associated with cervical movements Emit three series of 10 repetitions of the /s/ phoneme straight after /z/. <b>Intervention – Auditory; Vocal function; Musculoskeletal; Somatosensorial; Respiratory:</b> Stretching/relaxation of the cervical region and shoulder girdle. Position head backwards (30s), forwards (30s), to one side (30s) and to the other (20s); technique involving rotation of shoulders forwards (30s) and backwards (30s).
4	Indirect	<b>Advice Intervention; Increased Knowledge:</b> Vocal psychodynamic. Voice and emotion
	Direct	<b>Respiratory Intervention:</b> Suitability of the respiratory type Diaphragmatic breathing: Inhale for 4s, hold for 2s, and release for 6s Carry out 10 repetitions; <b>Respiratory Support and Vocal Function:</b> Maximum Phonation Time (MPT) emitting fricatives (/s/ and /z/) associated with cervical movements Emit three series of 10 repetitions of the /s/ phoneme straight after /z/. <b>Intervention – Auditory; Vocal function; Musculoskeletal; Somatosensorial; Respiratory:</b> Stretching/relaxation of the cervical region and shoulder girdle. Position head backwards (30s), forwards (30s), to one side (30s) and to the other (20s); technique involving rotation of shoulders forwards (30s) and backwards (30s). Technique involving semioccluded vocal tract with high resistance tube. Emit 10 repetitions in normal pitch.
5	Indirect	<b>Pedagogical Intervention:</b> Phonoarticulatory Organs and Pneuphonoarticulatory Coordination
	Direct	<b>Respiratory Intervention:</b> Suitability of the respiratory type Diaphragmatic breathing: Inhale for 4s, hold for 2s, and release for 6s Carry out 10 repetitions; <b>Respiratory Support and Vocal Function:</b> Maximum Phonation Time (MPT) emitting fricatives (/s/ and /z/) associated with cervical movements Emit three series of 10 repetitions of the /s/ phoneme straight after /z/. <b>Intervention – Auditory; Vocal function; Musculoskeletal; Somatosensorial; Respiratory:</b> Stretching/relaxation of the cervical region and shoulder girdle. Position head backwards (30s), forwards (30s), to one side (30s) and to the other (20s); technique involving rotation of shoulders forwards (30s) and backwards (30s). Technique involving semioccluded vocal tract with high resistance tube. Emit 10 repetitions in normal pitch. <b>Musculoskeletal – Orofacial manipulation, Somassensorial:</b> Myofunctional exercises for stomatognathic system structures Lips: pout and then smile, then make quick movements alternating the two (10 repetitions); Circular movement (rotation) of tongue in the passage associated with nasal sound (10 repetitions).

Session	Intervention	Instrument
6	Indirect	<b>Therapeutic Interaction; Increased Knowledge:</b> Laryngeal Illnesses
	Direct	<p><b>Respiratory Intervention:</b> Suitability of the respiratory type Diaphragmatic breathing: Inhale for 4s, hold for 2s, and release for 6s Carry out 10 repetitions;</p> <p><b>Respiratory Support and Vocal Function:</b> Maximum Phonation Time (MPT) emitting fricatives (/s/ and /z/) associated with cervical movements Emit three series of 10 repetitions of the /s/ phoneme straight after /z/.</p> <p><b>Intervention – Auditory; Vocal function; Musculoskeletal; Somatossensorial; Respiratory:</b> Stretching/relaxation of the cervical region and shoulder girdle. Position head backwards (30s), forwards (30s), to one side (30s) and to the other (20s); technique involving rotation of shoulders forwards (30s) and backwards (30s). Technique involving semiocluded vocal tract with high resistance tube. Emit 10 repetitions in normal pitch.</p> <p><b>Musculoskeletal – Orofacial manipulation, Somassensorial:</b> Myofunctional exercises for stomatognathic system structures Lips: pout and then smile, then make quick movements alternating the two (10 repetitions); Circular movement (rotation) of tongue in the passage associated with nasal sound (10 repetitions).</p>
7	Indirect	<b>Advice Intervention; Pedagogical; Therapeutic interaction:</b> Non verbal communication and expression
	Direct	<p><b>Respiratory Intervention:</b> Suitability of the respiratory type Diaphragmatic breathing: Inhale for 4s, hold for 2s, and release for 6s Carry out 10 repetitions;</p> <p><b>Respiratory Support and Vocal Function:</b> Maximum Phonation Time (MPT) emitting fricatives (/s/ and /z/) associated with cervical movements Emit three series of 10 repetitions of the /s/ phoneme straight after /z/.</p> <p><b>Intervention – Auditory; Vocal function; Musculoskeletal; Somatossensorial; Respiratory:</b> Stretching/relaxation of the cervical region and shoulder girdle. Position head backwards (30s), forwards (30s), to one side (30s) and to the other (20s); technique involving rotation of shoulders forward (30s) and backwards (30s). Technique involving semiocluded vocal tract with high resistance tube. Emit 10 repetitions in normal pitch.</p> <p><b>Musculoskeletal – Orofacial manipulation, Somassensorial:</b> Myofunctional exercises for stomatognathic system structures Lips: pout and then smile, then make quick movements alternating the two (10 repetitions); Circular movement (rotation) of tongue in the passage associated with nasal sound (10 repetitions). Overarticulation with cork technique using the days of the week; Carry out five repetitions.</p>
8	Reevaluation	Application of VSP

Key: VSP= Vocal Screening Protocol; s= seconds

**Figure 1.** Description of the activities carried out in accordance with the session

## RESULTS

Table 2 shows data regarding the average total number of vocal symptoms (total NVS) pre- and post-group therapy. A significant statistical difference was observed between the averages of total symptoms ( $p=0.01$ ) and proprioceptive symptoms ( $p=0.04$ ), pre- and post- group therapy.

Table 3 presents the frequency of appearance of isolated vocal symptoms pre- and post- group therapy.

The vocal fatigue, dry throat, lump in throat, and effort and discomfort speaking symptoms reduced significantly in post-therapy.

Table 4 shows the relationship between auditory, proprioceptive, and total vocal symptoms post- group therapy and the gender and laryngeal diagnosis variables. A relationship was perceived between the post-therapy symptoms and the gender and laryngeal diagnosis variables.

**Table 2.** Average, standard deviation, and significance of vocal symptoms in patients pre- and post- group therapy

Variable	Pre-therapy		Post-therapy		p-value
	Average	Standard Deviation	Average	Standard Deviation	
Total NVS	13.63	4.38	11.07	4.88	0.01*
Auditory NVS	6.30	2.52	6.07	2.51	0.64
Proprioceptive NVS	6.37	2.74	5.00	2.98	0.04*

Key: NVS = number of vocal symptoms. Student T Statistical Test for paired data. \*  $p \leq 0.05$ .

**Table 3.** Frequency, percentage and significance of isolated vocal symptoms in patients pre- and post- group therapy

VOCAL SYMPTOM	PRÉ-THERAPY		PÓS-THERAPY		p-value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Fatigue when speaking	21	77.8	14	51.9	0.03*
Dry throat	21	77.8	13	48.1	0.02*
Lump in throat	18	66.7	13	48.1	0.05*
Effort to speak	18	66.7	11	40.7	0.05*
Discomfort when speaking	14	51.9	07	25.9	0.03*

Wilcoxon statistical test. \*  $p \leq 0.05$

**Table 4.** Relationship between post- group therapy vocal symptoms and the gender, laryngeal diagnosis, age, and professional use of voice variables for patients submitted to group therapy

Dependent variable	Independent variables	Significance (p)
Total VS POST	Gender	0.001*
	Laryngeal diagnosis	0.04*
	Age	0.962
	Professional use of voice	0.178
Auditory VS POST	Gender	0.001*
	Laryngeal diagnosis	0.04*
	Age	0.962
	Professional use of voice	0.178
Sensorial VS POST	Gender	0.001*
	Laryngeal diagnosis	0.04*
	Age	0.962
	Professional use of voice	0.178

Key: VS= vocal symptom. Chi-squared statistical test. \*  $p \leq 0.05$

It is important to mention that an association test between post-therapy vocal symptoms and the age and professional use of voice variables was also carried out, however these were not significant; that is, they were not determinant for the post-therapy vocal symptom result.

## DISCUSSION

This paper contributes to studies regarding group therapy, since it indicates that total and proprioceptive vocal symptoms were reduced post- group therapy, as well as verifying that variables such as gender and

laryngeal diagnosis interfere in the minimization of symptoms.

It was observed that a lesion in the membranous portion of the vocal folds, such as nodules, polyps, and cysts, was the most frequent laryngeal diagnosis among the patients in this study. Such lesions derive from unsuitable vocal behavior and the symptoms can range from hoarseness to difficulty breathing<sup>24</sup>.

Vocal nodules are more frequent in patients who present dysphonia, especially in women between 25 and 44 years of age<sup>25</sup>. This is because the female laryngeal configuration contributes to there being a

mid-posterior triangular fissure in the vocal folds<sup>26</sup>. A retrospective study was carried out regarding laryngeal diagnosis in patients who presented voice disorders and sought treatment. It was seen that there was a higher rate of prevalence among females, with 62.4%, compared to males<sup>20</sup>, thus corroborating with this study.

The causes of voice disorders can derive from unsuitable use of the voice or abusive use of the voice<sup>24</sup>. The signs of a compromised larynx can range from hoarseness to breathing difficulties. These are considered sensorial vocal symptoms, caused in many cases by lesions in the vocal folds, such as nodules or cysts. The presence of these lesions results in air escaping during voice production, which causes the individual to need to breathe in during speech<sup>27</sup>.

It was verified in this study that total and proprioceptive symptoms were reduced post- group speech therapy. It is understood that this reduction was due to the therapeutic approach and modality selected; in each meeting, techniques associated with strategies for changing unsuitable vocal behavior were carried out in order to minimize or eliminate symptoms that are manifested in dysphonia.

Proprioceptive vocal symptoms, which the individuals themselves are able to detect, such as pain and the sensation of a foreign body in the throat, and fatigue and pain when speaking and swallowing, among others<sup>1</sup>, can be more easily perceived and were the most reported among the population studied, with the most mentioned being "fatigue when speaking". These symptoms are highly related to incomplete glottic closure, followed or not by lesion mass in the membranous portion<sup>4</sup>, and they were those that reduced most after group therapy, in accordance with the study.

In one study carried out with 210 participants, 149 (70.95%) complained of a "sore throat" being the most frequent symptom. Of the laryngeal diagnoses studied, the most prevalent one among the patients involved lesions in the membranous portion of the vocal folds, with 51.10% (n=55)<sup>28</sup>. Comparing the study in question with this study, it could be perceived that there is similarity regarding the laryngeal diagnosis results and relationship with the proprioceptive symptoms.

According to another study that was carried out<sup>29</sup>, in which the aim was to analyze vocal symptoms and their possible causes in a particular population, it was concluded that the tiredness when speaking/ vocal fatigue variable presented a direct relationship

with stress, which can result from physical and social aspects in the individual, as well as involving emotions. The same result was presented in a study with university students, which related the causes of vocal symptoms to emotional state<sup>19</sup>.

Alterations in the voice caused by discomfort in the vocal tract have been quite widely studied. Muscular tension caused by effort when projecting the voice is caused by physical factors. Vocal effort involves the extrinsic and intrinsic muscles of the larynx, as well as the phonoarticulatory organs, which causes trauma in the vocal folds and discomfort for patients in general. Proper importance is not always given to these symptoms by health professionals, especially doctors, because they only look at visual and phonatorial aspects and do not focus on sensorial symptoms as well, which quite often occur in most patients<sup>6,30</sup>.

The reduction in total post- group therapy vocal symptoms, as well as auditory and proprioceptive symptoms, had a significant relationship with the female gender and laryngeal diagnosis of lesion in the membranous portion of the vocal fold variables. This fact demonstrates that such variables can become determining factors for patients to benefit from the effectiveness of group therapy for the voice.

Women are more liable to develop voice problems due to anatomophysiological questions involving their laryngeal configuration, which results in reduced glottic proportions and the presence of posterior triangular fissures, in relation to males<sup>26</sup>. This is added to more intense and frequent vocal behavior in women, contributing to the appearance of a greater number of vocal symptoms and the installation of dysphonia, which are often determinants in seeking treatment<sup>30,31</sup>.

Group therapy can favor behavioral dysphonias, reducing behaviors and unsuitable motor adjustments for vocal production, and consequently, improving the glottic configuration, which will result in a reduction in symptoms. One study carried out regarding environmental, organizational, and personal vocal risk factors pre- and post- group therapy with dysphonia patients claimed that there was a significant reduction in these factors after group therapy<sup>32</sup>. It is important to highlight that the search for phonoaudiological treatments, especially in group, was due to women, who become more and more participative than men<sup>33</sup>.

As a result of group involvement and regular attendance of sessions, patients come to attach more importance to the voice. This perception regarding incorrect use of the voice results in the need to reduce unsuitable



vocal habits<sup>32</sup>, which may have caused a reduction or absence in the vocal symptoms addressed in this paper.

Group therapy has been quite an effective strategy for treating the voice<sup>34</sup>, since it has given patients the ability for self-perception and for identifying vocal symptoms, as well as strategies for resolving voice problems. Thus, working together and sharing with other people who present the same problem or some other similar one makes patients develop more strategies to confront dysphonias and makes them more active in the rehabilitation process<sup>35</sup>.

## CONCLUSION

There was a significant reduction in total and proprioceptive vocal symptoms when pre- and post-group therapy was compared, which proved the effectiveness of this therapeutic modality in the treatment of dysphonia.

It should be noted that the symptoms of fatigue when speaking, lump in the throat, effort to speak, and discomfort when speaking reduced post- group therapy. It was observed that females and laryngeal diagnoses involving lesions in the membranous portion of the vocal fold are associated with a reduction in vocal symptoms in patients with dysphonia who are submitted to group therapy for the voice. Age and professional use of the voice were not associated with a reduction in vocal symptoms.

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**Annex 1 – Vocal screening protocol (vsp)**

DATE: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Speech therapist: \_\_\_\_\_

**I) Personal Identification**

Name: \_\_\_\_\_ Age: \_\_\_\_\_

D.N.: \_\_\_\_/\_\_\_\_/\_\_\_\_ Place of birth: \_\_\_\_\_ UF: \_\_\_\_\_

Sex: F ( ) M ( ) Marital status: \_\_\_\_\_ Level of education: \_\_\_\_\_

Profession: \_\_\_\_\_ Time in work: \_\_\_\_\_ Working hours: \_\_\_\_\_

Address: \_\_\_\_\_

Contact (telephone / e-mail): \_\_\_\_\_

Referred by: \_\_\_\_\_ Tel.: \_\_\_\_\_

Informant: \_\_\_\_\_ Relationship: \_\_\_\_\_

**II) Complaint and duration****1) Reason for consultation/duration:** \_\_\_\_\_**2) Prior history of dysphonia***How did the voice problem begin (suddenly, gradually)?***3) Vocal symptoms***Auditory*

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> hoarseness                     | <input type="checkbox"/> monotonous voice             | <input type="checkbox"/> instability in the voice  |
| <input type="checkbox"/> voice cracks after time        | <input type="checkbox"/> difficulty with high notes   | <input type="checkbox"/> difficulty with low notes |
| <input type="checkbox"/> difficulty in projecting voice | <input type="checkbox"/> difficulty speaking quietly  | <input type="checkbox"/> voice failure             |
| <input type="checkbox"/> same-day change in voice       | <input type="checkbox"/> presence of air in the voice | <input type="checkbox"/> constant loss of voice    |

*Proprioceptives*

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> fatigue when speaking | <input type="checkbox"/> discomfort when speaking  | <input type="checkbox"/> difficulty speaking |
| <input type="checkbox"/> lump in the throat    | <input type="checkbox"/> dry throat                | <input type="checkbox"/> sore throat         |
| <input type="checkbox"/> tension in the neck   | <input type="checkbox"/> tickle                    | <input type="checkbox"/> unproductive cough  |
| <input type="checkbox"/> formation of mucus    | <input type="checkbox"/> acidic taste in the mouth | <input type="checkbox"/> pain swallowing     |

Do the symptoms reported above worsen at the end of the day/week? ( ) yes ( ) no

**4) Risk factors***a) Organizational*

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Long working day         | <input type="checkbox"/> Accumulation of activities | <input type="checkbox"/> Excessive demands on voice |
| <input type="checkbox"/> High number of listeners | <input type="checkbox"/> Time in job                |   |

*b) Environmental*

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Background noise  | <input type="checkbox"/> Poor acoustics        | <input type="checkbox"/> Inter-speaker distance |
| <input type="checkbox"/> Low air humidity  | <input type="checkbox"/> Pollution             | <input type="checkbox"/> Dust and mould         |
| <input type="checkbox"/> Ergonomic factors | <input type="checkbox"/> Stressful environment | <input type="checkbox"/> Inadequate equipment   |

*c) Personal*

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Smoke                   | <input type="checkbox"/> Drinks            | <input type="checkbox"/> Uses drugs                 |
| <input type="checkbox"/> Talks alot              | <input type="checkbox"/> Talks loudly      | <input type="checkbox"/> Speaks quickly             |
| <input type="checkbox"/> Talks alot on the phone | <input type="checkbox"/> Talks with effort | <input type="checkbox"/> Speaks too high/low        |
| <input type="checkbox"/> Talks over the noise    | <input type="checkbox"/> Talks in public   | <input type="checkbox"/> Imitates (actors, singers) |
| <input type="checkbox"/> Often shouts            | <input type="checkbox"/> Often strains     | <input type="checkbox"/> Sings out of tune          |
| <input type="checkbox"/> Intense social life     | <input type="checkbox"/> Constant cough    | <input type="checkbox"/> Insufficient hydration     |
| <input type="checkbox"/> Self-medication         | <input type="checkbox"/> Inadequate rest   | <input type="checkbox"/> Inadequate diet            |