http://dx.doi.org/10.1590/S2317-64312014000200014

Effects of two interventions in teachers with voice complaints

Efeitos de duas intervenções em professores com queixas vocais

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ABSTRACT

Purpose: Compare the effects of manual perilaryngeal massage and traditional vocal training in professors with voice complaints. **Methods:** Forty-two professors were randomized into two groups: perilaryngeal manual massage (G1) or vocal training (G2). They were assessed for self-perceived vocal and pain evaluation, vocal symptoms reports, cervical muscle tension evaluation, perceptual-auditory and acoustic voice analyses. **Results:** No difference was found between the groups regarding age, gender, and teaching experience. The most commonly reported vocal symptoms were throat dryness and hoarseness. Both groups had an improvement in vocal symptoms. No difference was found among the interventions regarding the partial and total scores in the vocal self-assessment questionnaire and acoustic analysis. G1 had an intragroup difference for vocal self-perception and for the acoustic parameter glottal noise energy, while G2 had intragroup differences for scores of effects on daily communication, effects on emotion, limitation in activities, total score, shimmer, and glottal noise energy. In G1, an intragroup difference was found for self-perceived pain, while cervical tension and the slight dysphonia level improved, which increased the percentage of subjects with a regular level. In G2, the result of vocal perceptual-auditory analysis remained stable after the intervention and no difference was found when assessing tension. **Conclusion:** Both interventions improved the subjects' well-being and vocal quality. The speech therapist should choose which intervention to use by considering the professors' complaints and vocal requirements.

Keywords: Voice; Faculty; Voice quality; Voice training; Voice disorders

RESUMO

Objetivo: Comparar os efeitos da massagem manual perilaríngea e do treinamento vocal tradicional em professores com queixas vocais. **Métodos:** Quarenta e dois professores universitários foram selecionados aleatoriamente para um dos dois grupos: grupo de massagem manual perilaríngea (G1), ou grupo de treinamento vocal (G2). Avaliações realizadas: autoavaliação vocal e da dor, relato de sintoma vocal, avaliação da tensão da musculatura cervical, análises perceptivo-auditiva e acústica da voz. **Resultados:** Não houve diferença entre os grupos para idade, gênero e tempo de magistério. Os sintomas vocais mais referidos foram sensação de secura na garganta e rouquidão. Nos dois grupos houve redução dos sintomas vocais. Não houve diferença entre as intervenções, quanto aos escores parciais e total do questionário de autoavaliação vocal e à análise acústica. O G1 apresentou diferença intragrupo para autopercepção vocal e parâmetro acústico "energia de ruído glótico". O G2, para os escores "efeitos na comunicação diária", "efeitos na emoção", "limitação das atividades", escore total, parâmetros *shimmer* e "energia de ruído glótico". O G1 apresentou diferença intragrupo para autopercepção da dor e houve redução da tensão cervical e do grau discreto de disfonia, aumentando a porcentagem de sujeitos com grau normal. O G2 manteve o resultado da análise perceptivo-auditiva da voz, após a intervenção, e não apresentou diferença na avaliação da tensão. **Conclusão:** As duas intervenções contribuíram para melhorar o bem-estar e a qualidade vocal dos participantes, cabendo ao profissional fonoaudiólogo decidir qual utilizará, observando as queixas e a demanda vocal do professor.

Descritores: Voz; Docentes; Qualidade da voz; Treinamento da voz; Distúrbios da voz

Study carried out in the Post-Graduate Program in Rehabilitation Sciences, Universidade Federal de Ciências da Saúde de Porto Alegre – UFCSPA, Porto Alegre (RS), Brazil, with a scholarship granted by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).
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Conflicts of interests: No
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Received on: 10/19/2013; **Accepted on:** 2/3/2014

INTRODUCTION

Modern society increasingly requires oral communication for many professionals. Professors are the voice workers most vulnerable to developing voice changes[1,2], which may impact their professional activities in several ways. This holds true in researches portraying Americans[3], Swiss[4], and Spanish[5] professors.

An epidemiologic research has shown the prevalence of vocal issues among professors. 63% of them reported having had vocal issues at some point of their careers, while 30% noticed that their voices limited their work activities. Another 16.7% reported that, in the future, they will need to change jobs due to vocal issues[6].

Speech therapists have been researching and using manual therapies in their practices aiming to reduce the vocal discomfort caused by exhaustion and postural tension. Finland[7], Belgium[8], the United Kingdom[9], and the United States[10] have researched the subject. Nevertheless, further research is still needed. Thus, ergonomic assessments and physical therapies are considered the basis of the intervention for this type of musculoskeletal discomfort[11].

Massage methods have been applied to improve vocal production and reduce laryngeal muscle tension, which is usually related to the increase in activity of the laryngeal extrinsic musculature. These methods are mainly employed as the primary treatment of patients with dysphonia caused by musculoskeletal tension associated to vocal hyperfunction[8,9,11,12].

Different descriptors or denominations, however, reflect the diversity in manual methods employed in research and clinical practice[9]. There is still little evidence of the use of massage methods in professionals who use their voices intensely. A study carried out with singers by Young[13] showed that manual massage may be effective in reducing vocal fatigue.

The vocal training consists of countless approaches, some impacting vocal quality as a whole – the so-called universal techniques –, while others favor specific laryngeal changes – the specific approaches[14]. The exercises used in vocal training improve blood flow and breathing, which allows muscle contraction and elasticity to increase[15].

A study that combined vibrating sound, nasal sound, and over-articulation techniques reported an immediate improvement in vocal quality and in laryngeal configuration in women with no vocal complaints[16]. Hence, it is believed that vocal training leads to an easier and softer voice use since vocal fatigue and inadequate use are avoided and the patients become better prepared to perform the vocally demanding activity[17].

With that in mind, the present research aimed to compare the effects of manual perilaryngeal massage and traditional vocal training in professors with v complaints.

METHODS

Subjects

This randomized parallel prospective clinical trial was carried out with 42 professors from the Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA). The following inclusion criteria were considered to select the subjects: working as a professor for 40 weekly hours, having complains related to professional voice use, and signing the term of free and informed consent. Subjects with hearing loss or who were undergoing vocal disorder or vocal improvement treatments were excluded.

The sample calculations were performed using the software PEPI (Programs for Epidemiologists) version 4.0 based on another study[7] so that a minimum difference of ten points was detected between the groups in the voice self-perception questionnaire. The standard deviation was also of ten points. The sample size, with 10% added to account for possible losses, should be 25 patients per group. The significance level and statistical power were set at 5% and 90%, respectively.

The subjects were randomly assigned to the manual perilaryngeal massage group (G1) or to the traditional vocal training group (G2) through the software Random Sequence Generator. G2 was considered the control group since it used a regular intervention, i.e., one already used as vocal therapy. The present study was approved by the Research Ethics Committee of the Universidade Federal de Ciências da Saúde de Porto Alegre under protocol 075/05.

Vocal interventions

Eight weekly 30-minute meetings were held, of which six consisted of vocal intervention. The number of sessions was based on studies that performed vocal interventions in teachers[7,18,19]. The first and last sessions were used to assess vocal quality and cervical tension and to apply the vocal self-assessment and vocal symptom protocol.

Three volunteer monitors – master's degree candidates of the Graduate Program in Rehabilitation Sciences of UFCSPA – participated in the voice workshops after being trained during five two-hour meetings. The therapists were oriented to only explain to the subjects how the exercises would be performed. The vocal interventions took place in a silent environment in the university's voice laboratory. The vocal assessments and interventions were carried out between March and June, 2012.

Perilaryngeal manual massage (G1)

The intervention was carried out by massaging the scapular waist using touch movements, pressing, and stretching of the muscle fibers for approximately ten minutes. Next, the facial muscles were massaged for two minutes using a vibrating

massager in order to reduce the tension in that region. The vocalization of the nasal sound /m/ was used so as to dissipate the energy of the vocal tract.

The larynx finger manipulation was used in the direct intervention on the laryngeal muscles following a protocol devised by the therapists. At first, a downward finger movement was performed, from the chin to the sternum. A circular movement of the thyroid membrane followed, along with vowel vocalization (/ɑ:/, /e/, w/i:/, /ɒ/, /u:/) associated to the nasal sound /m/. After that, the lateral larynx displacement technique was applied and, finally, the frontal pressure on the larynx with the vocalization of the aforementioned vowels and nasal sound. The combination of perilaryngeal manual massage techniques and vocalization aimed to relax the muscles and project the voice, besides verifying how effective the technique is during laryngeal manipulation. This technique was applied for approximately 20 minutes.

The subjects were instructed to report any discomfort during laryngeal manipulation. However, there were no complaints or negative results during the exercises.

Vocal training (G2)

The vocal training program approached methods of emission-facilitating sounds and also sounds that use spoken voice sequences. Vibrant sound and nasal sound techniques were chosen for the emission of facilitating sounds. The vibrating sound technique was performed in sustained emission associated to the vowels /ɑ:/, /e/, /i:/, /ɒ/, /u:/. The subjects who could not vibrate their tongues were instructed to vibrate their lips. The nasal sound used a sustained emission associated to clicking the tongue.

In the speech method, the over-articulation and chewing techniques were used. The subjects were inquired about changes in temporomandibular joint (TMJ) before this technique was applied, but no symptoms were reported. The over-articulation technique was employed by using a small cork between the teeth while the subjects had to emit syllables as clearly as possible. The chewing technique was associated to the production of automatic sequences such as days of the week and months of the year. The vocal techniques were used at most seven times.

Evaluation tools

All vocal evaluations were carried out in a soundproof room in order to keep noises from interfering with the voice recordings. Initially, a questionnaire was applied to characterize the sample, identify the vocal sensations/symptoms, and investigate the number of voice symptoms in the subjects both prior to and after the interventions through a manual count.

The subjects answered the 28 items of the Vocal Activity and Participation Profile (VAPP) protocol[20], which assess the perception of a voice issue regarding the limitation in activities and restriction in participation based on the concept of the International Classification of Functioning, Disability, and Health (ICF) of the World Health Organization (WHO). The protocol contains five sections: self-assessment of vocal issue severity, effects on work, effects on daily communication, effects on social communication, and effects on expressing emotions. The tool uses a 10 cm analog visual scale (AVS) ranging from "regular" to "intense" in the first question and from "never" to "always" in the others. The maximum score for a question is 10 and the maximum total score is 280, which reflects the greatest negative impact of a vocal issue. Two additional scores were calculated: The Activity Limitation Score, by adding up the scores of the ten even-numbered questions of the aspects "work," "daily communication," and "social communication" (questions 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20), and the Participation Restriction Score, by adding up the scores of the ten odd-numbered questions of those same aspects (questions 3, 5, 7, 9, 11, 13, 15, 17, 19, and 21).

For the voice analysis, the emission of the sustained vowel /e/ and an automatic speech sequence (count from 1 to 20) in regular voice were recorded. A Panasonic RR-US450 digital recorder coupled to a Shure SM58LC microphone placed at a sharp angle 10 cm away from the speaker's mouth was used.

The acoustic parameters glottal noise energy (GNE), shimmer, and jitter, obtained through the voice assessment module of the software Dr. Speech Science version 3.0 (Tiger DRS) using a Dell® Latitude D610 equipped with a Pentium M 740 processor were considered in this research.

The general (G) degree of the Japanese GRBASI scale, which reflects the global voice impact in a four-point scale was used. This scale identifies the degree of the deviation, with 0 meaning regular or absent, 1 meaning light, 2 meaning moderate, and 3 meaning severe. The digital recordings of the sustained vowel /e/ and the automatic speech sequence were played back with earphones and analyzed by two speech therapists specialized in voice. 20% of the samples were repeated for the intra-evaluator agreement analysis. The evaluators had over 75% reliability, calculated through the kappa statistical test.

The AVS was used to identify the perception of pain intensity. The subjects were inquired about their pain levels, being 0 a total absence of pain and 10 the maximum bearable level of pain. A physical exam was also carried out by touching the cervical musculature (scalene and trapezius muscles) to look for "muscle knots" in which the therapist's finger pressure immediately caused pain (either localized or widespread), thus indicating a tension point (trigger point). The examination was performed by a physiotherapist so as to potentialize the integration between speech therapy and physiotherapy and provide a broader insight of the individual from the interaction between healthcare professionals and the

interweaving of different knowledges and practices in a multi- and interdisciplinary team.

In the last meeting, the VAPP was reapplied along with the questionnaire to identify the vocal sensations/symptoms so as to analyze the amount of voice symptoms reported. The subjects were inquired about their voices after the vocal intervention ("the symptoms decreased," "the symptoms remained," "no more voice symptoms present") and the sustained vowel /e/ and the count from 1 to 20 were recorded for the acoustic and perceptual-auditory analyses.

After the results were analyzed, each professor received feedback on their pre- and post-intervention vocal evaluations.

Study outcomes

The vocal self-assessment (VAPP questionnaire) and the vocal perceptual-auditory analysis were considered the primary outcomes. The vocal acoustic analysis, the voice symptoms after the intervention, and the tension assessment were considered secondary outcomes.

Statistical analysis

Data normality was verified through the Shapiro-Wilk test, which indicated that the data distribution did not represent a Gaussian curve. Therefore, the data were expressed as median, minimum, and maximum, while the tests used for intragroup and intergroup comparison were Wilcoxon's T-test and Mann-Whitney's U-test, respectively. All analyses used the software SPSS version 19.0 at a 5% significance level ($p \leq 0.05$).

RESULTS

Study flowchart

The flowchart with the subjects from each group, the number of randomized subjects, and those who received treatment, along with the losses and exclusions after randomization and reasons are presented in Figure 1.

Group characterization

The Mann-Whitney U test result showed no difference between G1 and G2 regarding the variables of age, gender, and teaching experience, indicating that the groups were similarly characterized (Table 1).

Voice symptoms self-report

Both in G1 and G2, the most commonly reported voice symptoms were throat dryness and hoarseness prior to (66.6%, 40.4%, respectively) and after the vocal interventions (30.9%, 14.2%, respectively) (Table 2).

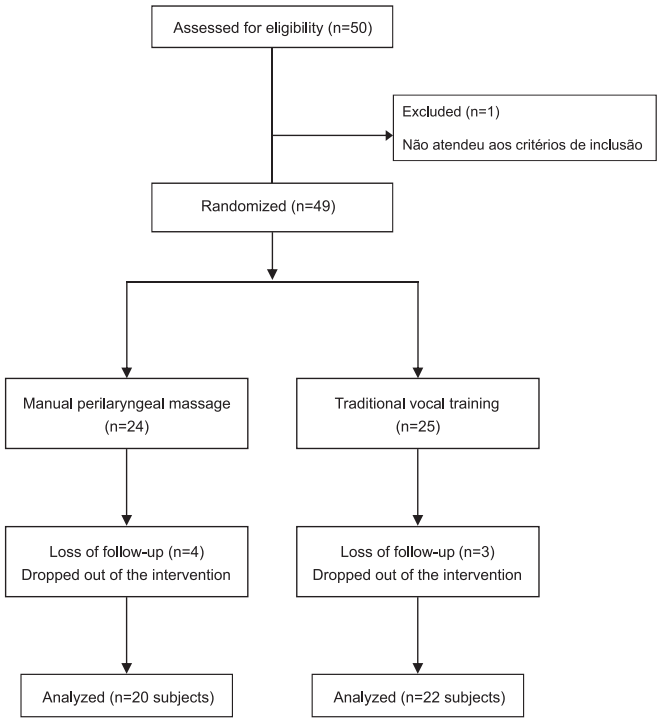


Figure 1. Study flowchart

Table 1. Subjects' demographic characteristics

Variables	G1 (n=20)	G2 (n=22)	p-value
Age (years)	38 (29-51)	38.5 (26-59)	0.850
Gender			
Female	20 (100%)	16 (72.73%)	
Male	0 (0%)	6 (27.27%)	
Teaching experience (years)	12 (1-21)	8 (1-31)	0.306

Mann-Whitney U test ($p \leq 0.05$)
Values expressed as median (minimum-maximum) and absolute and relative frequencies
Note: G1 = manual perilaryngeal massage; G2 = traditional vocal training

Vocal activity and participation profile protocol (VAPP)

Mann-Whitney U test showed no difference between the groups after the vocal intervention both in the partial and total VAPP scores. In the intragroup comparison pre- and post-intervention, G2 has a difference in partial VAPP scores related to the effects on daily communication (p=0.006), effects on emotion (p=0.007), activity limitation (p=0.036), and total score (p=0.003). In G1, a difference was found only in the partial vocal self-perception score (p=0.013) (Table 3).

Self-perception of voice symptoms after intervention and amount of voice symptoms

When inquired about their voices regarding voice symptoms

Table 2. Symptoms and feelings reported by the professors

Variables	G1 pre	G1 post	G2 pre	G2 post
Hoarseness	8 (40%)	5 (25%)	8 (36.3%)	3 (13.6%)
Throat dryness	12 (60%)	9 (45%)	15 (68.1%)	8 (36.3%)
Soreness	5 (25%)	0 (0%)	1 (4.5%)	0 (0%)
Tension	2 (10%)	1 (5%)	7 (31.8%)	0 (0%)
Pain	1 (5%)	0 (0%)	5 (22.7%)	1 (4.5%)
Vocal fatigue	6 (30%)	0 (0%)	10 (45.4%)	1 (4.5%)
Tightness feeling	2 (10%)	0 (0%)	2 (9.0%)	0 (0%)
Foreign body	2 (10%)	1 (5%)	5 (22.7%)	2 (22.7%)
Voice loss	5 (25%)	1 (5%)	2 (9.0%)	1 (4.5%)

Values expressed as absolute and relative frequencies

Table 3. Comparison between G1 and G2 regarding vocal activity and participation profile protocol

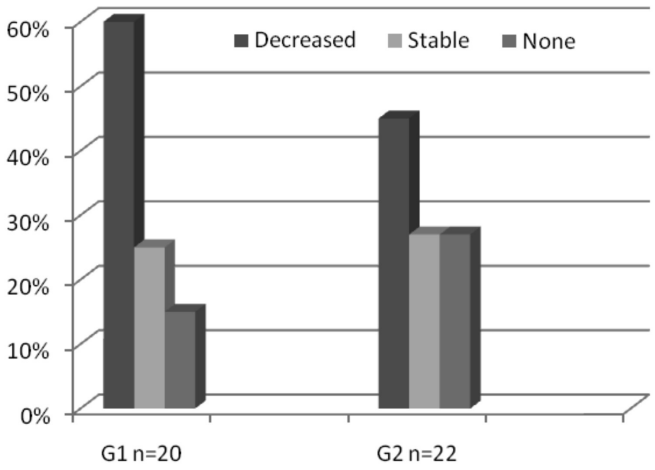
Variables	G1 (n=20)			G2 (n=22)			
	Pre	Post	p-value#	Pre	Post	p-value#	p-value†
Partial VAPP scores							
Vocal self-perception	3.5 (0-7)	1.5 (0-5)	0.013*	1.5 (0-7)	1 (0-6)	0.084	0.305
Effects on work	5 (0-18)	2 (0-13)	0.060	2.5 (0-19)	2 (0-20)	0.185	0.778
Effects on daily communication	11.5 (0-61)	5 (0-55)	0.067	8.5 (0-53)	3 (0-34)	0.006*	0.484
Effects on social communication	0 (0-16)	0 (0-12)	0.721	1 (0-12)	0 (0-8)	0.237	0.453
Effects on emotion	4 (0-25)	2.5 (0-34)	0.236	4.5 (0-35)	3 (0-27)	0.007*	0.616
Activity limitation	5 (0-12)	2 (0-19)	0.066	4 (0-18)	3 (0-14)	0.003*	0.869
Restriction of participation	0 (0-13)	0 (0-11)	0.474	0 (0-5)	0 (0-9)	0.929	0.812
Total VAPP score	33 (0-94)	12 (0-127)	0.058	22 (0-97)	9 (0-77)	0.003*	0.357

* Significant values (p≤0.05)
# For intragroup significance - Wilcoxon test
† For post-intervention inter-group significance – Mann-Whitney U-test
Values expressed as median (minimum-maximum)
Note: G1 = manual perilaryngeal massage; G2 = traditional vocal training; VAPP = vocal activity and participation profile protocol

after the vocal intervention, 60% of the subjects in G1 reported that the symptoms had decreased, 25% reported that the symptoms remained, and 15% reported no symptoms. As for G2, 45% had a reduction in voice symptoms, 27% reported that the symptoms remained, and 27% had no voice symptoms (Figure 2).

Amount of voice symptoms, cervical tension, and self-perceived pain

The amount of voice symptoms decreased in both groups after the vocal intervention. Wilcoxon T-test showed an intragroup difference both in G1 (p=0.000) and G2 (p=0.000). However, Mann-Whitney U-test showed no intergroup difference after the vocal intervention (p=0.544). The pre-intervention assessment showed that 100% of the subjects in G1 and 95% of the G2 subjects had cervical tension. After the intervention, 70% of the G1 subjects and 77% of



Note: G1 = group that received manual perilaryngeal massage; G2 = group that received vocal training

Figure 2. Self-perceived vocal symptoms after the interventions

Tabela 4. Comparação dos grupos para a quantidade de sintomas vocais, tensão cervical e escala visual analógica

Variables	G1 (n=20)			G2 (n=22)			
	Pre	Post	p-value#	Pre	Post	p-value#	p-value†
Amount of vocal symptoms	3 (1-7)	1 (0-3)	0.000*	2 (1-6)	1 (0-3)	0.000*	0.544
Cervical tension	20 (100%)	14 (70%)		21 (95%)	17 (77%)		
Self-perceived pain	3 (0-6)	2 (0-7)	0.006*	2 (0-7)	2.5 (0-7)	0.951	0.318

* Significant values (p≤0.05)
# For intragroup significance - Wilcoxon test
† For post-intervention inter-group significance – Mann-Whitney U-test
Values expressed as median (minimum-maximum) and absolute and relative frequencies
Note: G1 = manual perilaryngeal massage; G2 = traditional vocal training

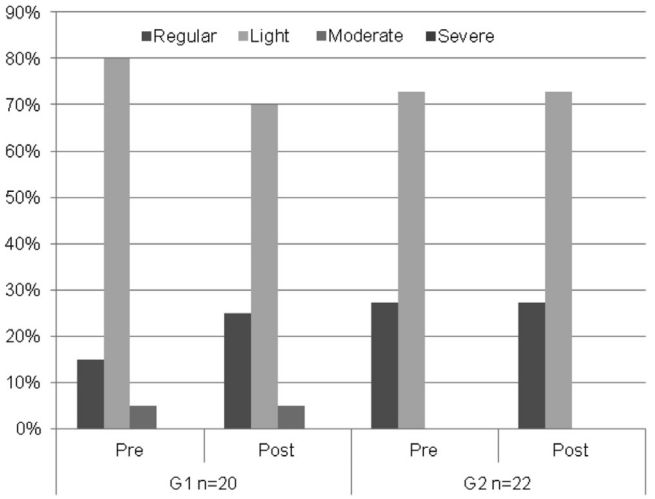
the G2 subjects had such change in muscle tonus. G1 had an intragroup difference (p=0.006) for self-perceived pain assessed through the AVS. However, no intergroup difference was found (p=0.318). The results regarding the amount of vocal symptoms, cervical tension, and self-perceived pain are presented in Table 4.

Perceptual-auditory analysis

Prior to the vocal intervention, 80% of the G1 subjects had light dysphonia, while only 5% had moderate dysphonia and 15% were non-dysphonic. The number of subjects with moderate dysphonia in this group remained the same, but the number of those with light dysphonia decreased to 70% and those with no dysphonia increased to 25%. The number of G2 subjects with light or no dysphonia remained stable before and after the vocal intervention (Figure 3).

Acoustic analysis

No difference was found between the groups' acoustic analysis after the vocal intervention. An intragroup difference was found in G1 for glottal noise energy (p=0.003). In G2, differences were found for shimmer (p=0.009) and glottal noise energy (p=0.000) (Table 5).



Note: G1 = group that received manual perilaryngeal massage; G2 = group that received vocal training

Figure 3. Perceptual-auditory analysis of the groups assessed regarding the global dysphonia level

DISCUSSION

The larger percentage of female subjects in both groups (Table 1) is a consistent characteristic in the national and international literature[4,6] since women are the majority of teachers and have a higher prevalence of vocal issues due to

Tabela 5. Comparação dos grupos para análise acústica

Variables	G1 (n=20)			G2 (n=22)			
	Pre	Post	p-value#	Pre	Post	p-value#	p-value†
Acoustic analysis							
Jitter	0.21 (0.13-0.69)	0.19 (0.12-0.29)	0.552	0.24 (0.13-0.84)	0.23 (0.11-0.48)	0.063	0.123
Shimmer	2.93 (1.93-6.51)	2.86 (1.93-6.22)	0.411	3.6 (2.23-8.57)	2.94 (1.81-6.31)	0.009*	0.413
Glottal noise energy	11 (0.39-15.07)	12.57 (7.53-17.43)	0.003*	9.49 (1.85-16.1)	11.52 (4.28-16.86)	0.000*	0.222

* Significant values (p≤0.05)
# For intragroup significance - Wilcoxon test
† For post-intervention inter-group significance – Mann-Whitney U-test
Values expressed as median (minimum-maximum) and absolute and relative frequencies
Note: G1 = manual perilaryngeal massage; G2 = traditional vocal training

their professional use of the voice[5,21].

The vocal complaints reported by the professors - the most common being throat dryness and hoarseness (Table 2) - were also reported in other researches[6,22,23] at rates similar to those found in the present study. This finding is explained by the unfavorable work conditions such as strong competitive noise, classrooms with inappropriate acoustics, tension when speaking, lack of knowledge of appropriate vocal techniques, and lack of vocal hydration.

The similar partial and total VAPP scores (Table 3) and acoustic analysis results (Table 5) between the groups can be justified by the level of individual variation in the response to the intervention, which may reflect differences in learning strategies. The short intervention time and the importance of the subjects' dedication during the sessions are also considered, which is also pointed out in another study[24]. In a research with teachers[19], the group that was oriented regarding vocal hygiene and the group that received laryngeal massage also did not differ when the aforementioned assessments were compared.

The findings regarding voice symptoms after the vocal intervention (Table 1 and Figure 2) indicate that, no matter how short the vocal intervention, it has some impact on the professors' vocal self-perception.

Certain musculoskeletal change patterns are found in subjects with vocal disorders[24]. The reduction observed in cervical tension in G1 subjects, with a significant difference in pre- and pos-intervention self-perceived pain (Table 4), can be justified by the greater personal attention the patients receive from the therapist in this method, which is likely to build a positive interaction related to this type of approach. In a study carried out in Finland[19], the subjects who received laryngeal massage reported greater relaxing, better body awareness, and reduction in vocal fatigue feeling after the intervention.

The results related to the perceptual-auditory analysis show that the percentage of G2 subjects with regular and light global dysphonia level remained the same after the intervention, while in G1 the number of those with light dysphonia decreased and the number of those with regular dysphonia increased (Figure 3). Such results indicate that the manual perilaryngeal passage slightly increase the voice's perceptual-auditory dimension, which is considered the gold standard in vocal assessment. On the other hand, a study that combined vocal treatment with vocal hygiene guidance reported an improvement in dysphonia[21].

Regarding the acoustic analysis, in which shimmer and glottal noise energy differed in G2 and only the latter differed in G1, it must be pointed out that this parameter is extremely relevant for appropriate vocal quality and is a very sensitive index in differentiating normal and dysphonic voices. Another study[22] reported a difference in shimmer for the vocal training group. A research carried out with future teachers[23] also reported no difference in jitter after a short vocal training program.

The manual perilaryngeal massage technique in this research was associated to facilitating sounds such as vowels and nasal sound[25]. Other researches that employed massage techniques[7,19], however, reported that, overall, vocalization is not part of the procedure. In this study, by combining these two techniques, a more relaxed and projected voice with deeper fundamental frequency could be observed. These characteristics were noticed and reported by the therapists and subjects during the exercises.

This study was limited by the weather changes along the interventions and the sample size, which did not remain as suggested by the sample calculation since a considerable number of subjects dropped out of the vocal intervention program proposed during the research. It is believed that these subjects dropped out due to the numerous roles a professor plays in the university, which leaves less time for healthcare in general.

The importance of the subject's dedication is highlighted since the amount of individual variation in the response to the intervention may reflect differences in learning strategies. Moreover, the therapist's personal quality may be a crucial variable in the treatment's effectiveness.

It is suggested, in future studies, the long-term effects of each intervention and of combining the manual perilaryngeal massage with vocal training be verified.

CONCLUSION

The manual perilaryngeal massage provides a slight improvements in professors' global dysphonia level and reduces cervical tension, which is significantly reflected in self-perceived pain.

It can be concluded that both manual perilaryngeal massage and vocal training contributed to the professors' well-being and vocal quality. It is the speech therapist's role to decide which intervention will be used given the professor's complaints and vocal requirements.

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