# VOICE SELF-ASSESSMENT OF PROFESSORS AT SANTA MARIA CITY/RS, BRAZIL

## Autoavaliação vocal de professores de Santa Maria/RS

Carla Aparecida Cielo [(1)], Vanessa Veis Ribeiro [(1)]

**ABSTRACT**

**Purpose:** to associate and to correlate the voice handicap index, quality of life, vocal symptoms, sex, vocal complaints and professional characteristics of professors in Santa Maria city (RS/Brazil). **Methods:** 114 individuals, aged 20 to 66 years, 102 women and 12 men, professors of elementary school responded to the protocols: Voice Symptom Scale, Voice Handicap Index and Voice-Related Quality of Life, a questionnaire containing data identification, the overall health, occupational and vocal complaints. **Results:** professors worked on average 6,96 hours a day, there are on average 12,7 years, 72,8% had vocal complaints, 50% belonged to the private school network, 37,7% to the state network and 12,3% to the municipal network. There was an association between voice self-assessment scales and presence of vocal complaints, there was no correlation with age and professional characteristics. Had a higher occurrence of vocal symptoms in women. The Voice Symptom Scale and the Voice Handicap Index showed positive correlation and negative correlation of both protocols in relation to Voice-Related Quality of Life. **Conclusion:** professors with complaints showed higher occurrence of vocal symptoms, greater voice handicap index and lower quality of life in voice, with a higher occurrence of vocal symptoms in females. There was complementarity between the vocal self-assessment protocols.

**KEYWORDS:** Faculty; Quality of Life; Questionnaires; Occupation Health; Voice

## ■ INTRODUCTION

The teaching profession involves many biopsychosocial risks for teachers, making them the professional of spoken voice with higher incidence of voice disorders[1] and becoming the subject of much research in recent years[2-9]. Most studies conducted with teachers in the Voice area discusses the assessment and diagnosis of voice disorders[3], which leads to reflection about the presence of the same and the lack of demand for guidance and speech therapy to the voice[6-10]. However, the relation between the voice, its disorders and its significance for the faculty is more complex, and needs to be best explored.

Thus, some authors have been researching the quality of life related to the teacher's voice[8,11-17], seen that self-perceived voice quality is a subjective parameter that has no direct relationship to the objective measures of vocal Speech-Language-Pathology assessment, being extremely important to obtain data on how relevant that vocal disorder for the patient[8,10].

A recent study that analyzed the influence of aspects of quality of life related to voice in accession of voice therapy for teachers showed that teachers who had a less scores favorable to quality of life also had lower adherence to therapy[8]. Currently, the protocols of vocal self-evaluation are the best procedures to understand this complex relationship between health/disease and the perception of the subject[8,11-14,16,18].

Due to this, many protocols developed in other languages were translated and validated in Portuguese[11-14,16,17,19]. However, although differences are observed in the literature as to the

existence of a correlation between the vocal perception of professor and its influence on quality of life[20,21], however, there is agreement that the lack of an accurate self-perception and knowledge about their own voice characteristics are common among teachers and make that public is in a risk group for the development of vocal pathologies[22-25].

Generally the proposed instruments are composed of scale quantitative analysis, which facilitate the tests, however, have advantages and disadvantages[15,26], there are studies that questioned their processes of elaboration[26] and inconsistency between the subscales that the protocols intend to analyze[15]. Due to such results[15,26], in this study three protocols were used.

It is believed that the joint application and analysis of the Voice Symptom Scale (VoiSS), Voice Handicap Index (VHI) and Voice-Related Quality of Life (VRQL), can provide a general and realistic perspective on the perception of symptoms, handicap and voice-related quality of life[15], since many teachers believe that vocal alterations are normal and inherent in the profession, not developing the appropriate care with the voice[27,28]. Considering the importance of self-perception and the quality of life in search for attendance and adherence to therapy[27-29], it is meant that such data are fundamentals to the compression of the complex process of health and disease of the teacher, that takes into consideration the working conditions and quality of life[8-10].

Based on the considerations presented, the present study aimed to associate and correlate the voice handicap index, quality of life, vocal symptoms, sex, vocal complaints and professional characteristics of teachers in Santa Maria city (RS/Brazil).

## ■ METHODS

That study characterized by being cross-sectional observational analytic of quantitative character, contemporary and prospective, approved by the Ethics Committee in Research from the home institution (23081.016945/2010-76). Those responsible for educational institutions were informed about the research and signed the Institutional Authorization Form (IAF). The subjects interested in participating received the necessary explanations about the study and signed a Free and Informed Consent Form (FICF).

The elementary school teachers from urban area of education networks of state, municipal and private schools in the city of Santa Maria (RS/Brazil) were the target population.

For the sampling process, the urban area of city was divided into regions, each with their respective neighborhoods. Was held a survey of schools that composed each region in the three school systems (36 private, 44 municipal and 24 state), being made three numbered lists in increasing order for each region. Sampling was performed by raffle random of the three school systems, by region. Each listing has a school excluded every couple of list, resulting in 27 private, 31 municipal and 19 state. These schools were randomized, numbered again in increasing order and raffled, comprising the final list, we had a school deleted every two, resulting in 51 schools. All schools in the final list were invited to participate, and of these, 15 schools joined the IAF. At schools that have joined the IAF, all teachers who have qualified for inclusion criteria were invited to participate.

Inclusion criteria were: faculty of elementary schools (1st to 9th grade) of private, state and municipal networks, only in the urban area; age greater than 19 years in order to exclude alterations of the period of changing voices in teenagers; both sexes; adherence FICF. The total number of teachers at this level was 208.

Exclusion criteria were: self-reported account of neurological, metabolic, endocrine, syndromic and/or psychiatric diseases; self-reported of gastric crises or hormonal dysfunction resulting from pregnancy or premenstrual or menstrual on the data collection period; has structural pathologies or laryngeal disorders, hearing disorders detected in the hearing screening; self-reported history of laryngeal surgery and/or any head and neck surgical procedure; have performed speech-language-pathology and/or otorhinolaryngological treatment for voice. It is considered that these factors could influence the vocal self-perception of subjects as quality of voice and laryngeal physical symptoms.

To make it possible to apply the exclusion criteria of the study, teachers completed a questionnaire and hearing screening was performed by scanning of pure tones at frequencies of 500, 1000, 2000, 4000Hz by 25dB, only through air conduction, with Amplivox audiometer, A260 model, 2011. The procedure was performed in a silent room provided by the school, with noise level below of 50dB, verified by measuring of the sound pressure *Instrutherm*, Dec-480 model. The subjects who did not respond to pure tone of 25dB were retested. Subjects who did not pass the retesting were excluded of research and forwarded to complete audiological assessment.

Of the 208 teachers, 14 were excluded from the hearing screening, three for presenting reports of neurological pathologies; 16 due reports of endocrine disorders; seven have performed

speech-language-pathology or otorhinolaryngological prior treatment for voice and 54 with incomplete data. Thus, the sample consisted by 114 individuals (aged 20 to 66 years with a mean of 37,76 years), 102 female and 12 male.

The data collection was composed by the application of vocal self-assessment protocols and quality of life related to voice: VoiSS, VHI and VRQL.

The VoiSS consists of thirty questions[16,17]. Each question is scored according to the frequency of occurrence in: "never" (zero points), "rarely" (one point), "sometimes" (two points), "almost always" (three points) and "always" (four points)[11,16].

The VHI protocol features 30 items[14,18]. Individuals were instructed to mark on a graduated scale from zero to four, the corresponding affirmative, where zero means "never" and four means "always".

The VRQL questionnaire consists of ten questions that investigate the impact of a possible voice problem in the life of the subject. To answer the questionnaire, subjects were instructed to consider both the intensity of the problem, as their frequency of appearance, assessing each item on a scale of one to five, where one corresponds to "never happens and is not a problem" and five corresponds to "always happens and really is a bad problem".

The faculties were instructed to fill out all data in the header and the protocol, leaving the researchers available to clarify possible questions while filling.

It was only analyzed the protocol's total domain. The total VoiSS is also calculated by a simple summation of the value of each question indicates the general level of voice alteration and may have a maximum of 120 points[16,17]. The calculation of the VHI protocol was done by simple summation, in the other words, the higher the value, greater the voice handicap. The total summation of the VHI may vary from zero to 120 points[14,18]. For VRQL protocol was used a standard algorithm, which may range from zero to 100, as higher the score was, better the quality of life[13,15].

The data referring to occupational characteristics (average length of professional experience as a teacher and daily activities), identification (sex and age) and vocal complaints (presence or absence of vocal complaints) were obtained from the questionnaire in the sample selection.

After the data collection, all teachers received individual feedback session, and those who presented vocal self-assessment outside of the expected patterns of normality were instructed and forwarded to individual vocal assessment.

The collected data were tabulated and the variables were analyzed statistically using the non-parametric tests, significance level of 5% was adopted. Pearson correlation test was used to correlate the scales of vocal self together, and quantitative variables age, daily use of voice (hours) and time of practice (years). The ANOVA test was used to associate vocal self-assessment protocols for qualitative variables gender and presence or absence of vocal complaints.

# RESULTS

The group of the teachers worked on average 6,96 hours a day, there are on average 12,7 years, 57 belonged to the private school network (50%), 43 belonged to the state network (37,7%), and 14 (12,3%) to the municipal network, with no significant difference. Of the 114 teachers studied, 72,8% (n=83) had vocal complaints and 27,2% did not present (n=31), with a significant difference (p=<0,001).

The Table 1 shows the descriptive results of vocal self-assessment scales, observing a total of 54,11 vocal symptoms, vocal handicap index of 29,90 points and a score of quality of life related to the voice of 90,05 points.

**Table 1 – Descriptive results of the scales of vocal self-assessment**

| Scales | Average | Median | Standard deviation |
|--------|---------|--------|--------------------|
| VoiSS  | 54,11   | 53     | 14,95              |
| VHI    | 29,90   | 32     | 19,00              |
| VRQL   | 90,05   | 97,5   | 18,07              |

Descriptive analysis
Legend: VoiSS=Voice Symptom Scale; VHI=Voice Handicap Index; VRQL=Voice-Related Quality of Life.

In Table 2 shows the absence of correlation between the scales of vocal self-assessment and age, time of professional performance and daily use of the occupational voice.

The Table 3 shows the results of the association between vocal self-assessment scales and the sex, with higher prevalence of vocal symptoms in women.

At Table 4, show the results of the association between the scales of vocal self-assessment and the presence or absence of vocal complaints. The teachers with presence of voice complaints showed greater impairment in self-assessment scales.

The Table 5 shows that there was a correlation between the total obtained in the vocal self-assessment scales.

**Table 2 – Results of the correlation between the scales of vocal self-assessment and age, time of professional performance and daily use of the occupational voice**

| Scales | Age | | Time of Professional performance | | Daily use of occupational voice (hours) | |
|---|---|---|---|---|---|---|
| | corr | p-value | corr | p-value | corr | p-value |
| VoiSS | 8,4% | 0,377 | -8,9% | 0,347 | 7,0% | 0,459 |
| VHI | 5,5% | 0,561 | -7,8% | 0,411 | -6,3% | 0,504 |
| VRQL | 2,6% | 0,787 | -12,7% | 0,177 | 4,7% | 0,617 |

\* Statistically significant values (p≤0,05) – Pearson Correlation Test
Legend: VoiSS=Voice Symptom Scale; VHI=Voice Handicap Index; VRQL=Voice-Related Quality of Life.

**Table 3 – Results of the association between vocal self-assessment scales and sex**

| Scales | Sex | Average | Median | Standard deviation | p-value |
|---|---|---|---|---|---|
| VoiSS | F | 55,39 | 54,0 | 14,75 | 0,007* |
| | M | 43,17 | 39,0 | 12,31 | |
| VHI | F | 30,76 | 32,5 | 18,63 | 0,159 |
| | M | 22,58 | 24,0 | 21,35 | |
| VRQL | F | 89,56 | 97,5 | 18,76 | 0,406 |
| | M | 94,16 | 97,5 | 10,18 | |

\* Statistically significant values (p≤0,05) – ANOVA Test
Legend: VoiSS=Voice Symptom Scale; VHI=Voice Handicap Index; VRQL=Voice-Related Quality of Life; F=female; M=male.

**Table 4 – Results of the association between vocal self-assessment scales and presence or absence of vocal complaints**

| Scales | Vocal complaints | Average | Median | Standard deviation | p-value |
|---|---|---|---|---|---|
| VoiSS | NC | 43,39 | 41,0 | 10,30 | <0,001* |
| | PC | 58,11 | 56,0 | 14,47 | |
| VHI | NC | 24,16 | 30,0 | 17,36 | 0,048* |
| | PC | 32,05 | 33,0 | 19,24 | |
| VRQL | NC | 96,53 | 97,5 | 6,63 | 0,018* |
| | PC | 87,63 | 85,0 | 20,30 | |

\* Statistically significant values (p≤0,05) – ANOVA Test
Legend: VoiSS=Voice Symptom Scale; VHI=Voice Handicap Index; VRQL=Voice-Related Quality of Life; NC= no complaints; PC= presence of complaint.

**Table 5 – Results of the correlation between the vocal self-assessment scales**

| Scales | | VoiSS | VHI |
|---|---|---|---|
| VHI | corr | 61,1% | |
| | p-value | <0,001* | |
| VRQL | corr | -61,9% | -52,6% |
| | p-value | <0,001* | <0,001* |

* Statistically significant values (p≤0,05) – Pearson Correlation Test
*Legend:* VoiSS=Voice Symptom Scale; VHI=Voice Handicap Index; VRQL=Voice-Related Quality of Life.

■ **DISCUSSION**

The professional features found in the teachers of this study (average of 6,96h/class/day and an average of 12,7 years in the profession) were similar to the single search with similar thematic held in the same city ten years ago. This research was conducted with teachers of preschool and early elementary grades, where the majority of teachers worked eight hours daily (56,31%) and averaged 14,6 years of professional experience[28]. These data show that independently of the school network and over time, teachers in the municipality of Rio Grande do Sul countryside seem to keep the professional features with discrete reduction in the working time and the time of profession.

In this work, a significant majority of teachers (72,8%) had vocal complaints, similar index to that obtained in the study performed in the same county ten years ago, which was found 69%[28]; results expected whereas teachers are the professional class of higher incidence of voice disorders coming from occupational order, and studies show that the prevalence of some dysphonia degree the 17,15% to 80,7% of teachers [22,30-32]. Despite the large number of studies on teacher's vocal health in the scientific literature, the literature shows that is complex the understanding of the health-disease process of the teacher, which extends from the lack of information access during the training process, individual predisposition, the organizational and labor factors and the applicability of knowledge about vocal health in daily routine[6,20,25,33,34].

The major complaints reported by Brazilian teachers are tiredness or effort to speak, hoarseness or persistent cough, voice failures; hoarseness; shortness of breath to speak; loss of voice or hoarseness; variation in vocal utterance; tightness; weight, pain, stinging, burning or dryness in the throat[2,28,35]. Brazilian study showed that although vocal symptoms observed, the teachers do not seek professional help, only doing it when they have other symptoms associated as breathing problems or frame of aphonia[36], different data to those found in Belgian research, where female teachers showed greater demand for professional assistance on vocal symptoms[6].

In Brazil, a study that investigated the prevalence of voice problems, the characteristics of the emergence of a dysphonia and its likely consequences in 3265 individuals, teachers and no-teachers, from 27 states showed that teachers reported a higher average of current symptoms (3,7) and past (3,6) and these symptoms related to work, and showing, also, that they anticipate limitations in their professional future[35].

Even with the high index of dysphonia in these workers, many teachers believe that vocal changes are normal and inherent in the profession, and despite vocal symptoms interfere in their professional practice, are generating necessity of modifications/adaptations of strategies in the classroom, they did not seem the interfere with interpersonal relations and their psychosocial welfare[5,19]. Study with teachers of kindergarten and early elementary school grades reinforce such statements, because it shows that most teachers did not receive any information about vocal health in their training (72%), and despite relate to see a direct correlation between voice and teaching exercise (77%), over 50% have remained voiceless in the past, and even then, only 32% looked for medical help[28].

In this study, female teachers have significant occurrence of vocal symptoms (Table 3), in agreement to researches which highest rates of voice disorders in teachers occurred in females by a ratio of 2,7:1, indicating predisposition of women to acquire a voice disorder, as much the anatomical configuration of the larynx, as the biological aspects[5,6,37]. Moreover, the fact that the fundamental frequency (f0) of the woman is close to f0 of children also creates the need for increased loudness in the classroom[38]. The female teachers of elementary school not only actively participate in the labor market, as often also perform their domestic activities, performing "double journey" and accumulation of activities. This leads to physical and psychological stress, causing stress that can

contribute to the development of voice disorders[7,39]. Other Brazilian studies show similar results to those found in the present study[20,21,33].

Even with the high index quality of life and low voice handicap (Table 1), showing good quality of life related to voice, it was observed that teachers with voice complaints had increased incidence vocal symptoms, greater Voice Handicap Index and lowest Voice-Related Quality of Life, with a significant relationship between between these variables (Table 4).

This is confirmed the research that applied VRQL in 120 elementary school teachers from municipal and state schools where most teachers rated themselves with good quality of life related to voice (average of 84,2 points in the total score), showing that the impact of voice on quality of life and work is still not very noticed by teachers[20]. Another study that investigated the quality of life of 2.133 municipal elementary school teachers, through the application of VRQL and sociodemographic questions, of work organization and vocal health, general and mental, also got higher scores on VRQL in all areas (average of 90,6 in the socioemotional domain, 84,2 total domain and 79,4 in the physical domain)[21].

Research that was analysis of vocal handicap of 36 teachers with vocal complaint from a public school found predominantly low degree of vocal handicap, within normal standards (77,8%), despite complaints related to voice[40]. However, different from what occurred in this study, research that applied the VHI in undergraduate students in Pedagogy and the general population found a higher occurrence of vocal complaints in students (17,2%) than in the reference group (9,7%) with predominance of vocal handicap, among those reporting voice complaints when compared to students who did not complain, suggesting link between vocal complaints and the perception of quality of life[33].

The association between teacher's quality of life, voice and vocal health issues was verified in a study of 128 high school teachers in state schools in work situation. The results showed that the majority of teachers rated their voice as good (42,2%), and mean total score VRQL questionnaire was 66 points. Although reasonably satisfied with the voice and quality of life, the teachers showed difficulties in the perception of the health-disease process. Evidence disadvantaged aspects of quality of life and health needs that may have implications for vocal health in faculty[23]. The relationship between voice and quality of life of teachers was also investigated in university professors, observing reports of voice satisfaction and high index of quality of life, but high occurrence of vocal symptoms[24], agreeing with the findings of this study.

The literature indicates that individuals with symptoms or voice complaints, have lower levels of quality of life[33,40], however, in respect to teachers, despite being smaller, the indexes are still within expectations[13,15,19], showing their lack of vocal recognition and showing that this seems to be the reality of teachers in Brazil, also verified by this research.

The present analysis also showed, that as expected, that there is coherence between the protocols used regarding the proportionality of the findings, since VoiSS and VHI showed significant positive correlation and there was a significant negative correlation of both protocols in relation to VRQL (Table 5), evidencing that increased vocal symptoms goes in the same direction of greater voice handicap index and lower quality of life related to voice, teachers analyzed.

These results agree with research that applied VRQL, VHI and the Voice Activity and Participation Profile in Brazilian dysphonic teachers and showed that, despite the protocols not containing the same information in dysphonic teachers and there is no equivalence between its subscales, they offer similar results in total scores[15]. This research also shows that although a study has pointed out flaws in the patterns of development of VHI and VRQL, questioning their use[26], joint implementation of the VoiSS, VHI and VRQL protocols by analyzing only the total score proved relevant for understanding adequately the perception of voice-related quality of life of individuals.

In addition to the fundamental information about the vocal complaints predominance, the higher occurrence of symptoms in women and the relationship between the presence of complaints with higher amounts of symptoms, lower quality of life and greater voice handicap, the results of the study are of clinical interest by show to work with VRQL, VHI and VoiSS protocols, analyzing the total scores, provides consistent data, complementary and consistent about the population. It is suggested that such protocols be part of speech-language-pathology clinical diagnosis because the importance of vocal self-assessment in adherence of teachers to the therapeutic process.

It is suggested to perform longitudinal research that accompany from training teachers that seeking to better understand the vocal health-disease process and ascertain the external factors that might be influencing the high index of vocal complaints present in this category

## CONCLUSION

Teachers with voice complaints had increased incidence of vocal symptoms (higher occurrence in females), greater voice handicap index and lowest voice-related quality of life, there was complementarity between the vocal self-assessment protocols used in research.

**RESUMO**

**Objetivo:** associar e correlacionar índice de desvantagem vocal, qualidade de vida e sintomas vocais com sexo, presença de queixas vocais e características profissionais de professores de Santa Maria (RS/Brasil). **Métodos:** 114 indivíduos, entre 20 e 66 anos, 102 mulheres e 12 homens, professores do ensino fundamental das redes de ensino estadual, municipal e particular, que responderam aos instrumentos: Escala de Sintomas Vocais, Índice de Desvantagem Vocal e Qualidade de Vida em Voz, um questionário, elaborado pelos pesquisadores, contendo dados de identificação, de saúde geral, ocupacionais e presença ou ausência de queixas vocais. **Resultados:** os professores atuavam em média 6,96h por dia, há, em média, 12,7 anos; 72,8% apresentavam queixas vocais; 50% pertenciam à rede de ensino particular, 37,7% à rede estadual e 12,3% à rede municipal. Houve associação entre as escalas de autoavaliação vocal e a presença de queixas vocais, não havendo correlação com idade e características profissionais. Houve maior ocorrência de sintomas vocais em mulheres. A Escala de Sintomas Vocais e o Índice de Desvantagem Vocal mostraram correlação positiva e houve correlação negativa de ambos os protocolos em relação ao Qualidade de Vida em Voz. **Conclusão:** professores com queixas apresentaram maior ocorrência de sintomas vocais, maior índice de desvantagem vocal e menor de qualidade de vida relacionada a voz, havendo maior ocorrência de sintomas vocais no sexo feminino. Houve complementaridade entre os instrumentos de autoavaliação vocal.

**DESCRITORES:** Docentes; Qualidade de Vida; Questionários; Saúde do Trabalhador; Voz

## REFERENCES

1. Smolander S, Huttunen K. Voice problems experienced by finnish comprehensive school teachers and realization of occupational health care. Logoped Phoniatr Vocol. 2006;31(4):166-71.

2. Caporossi C, Ferreira LP. Sintomas vocais e fatores relativos ao estilo de vida em professores. Rev CEFAC. 2011;13(1):132-9.

3. Dragone ML, Ferreira LP, Giannini SPP, Simões-Zenari M, Vieira VP, Behlau M. Voz do professor: uma revisão de 15 anos de contribuição fonoaudiológica. Rev Soc Bras Fonoaudiol. 2010;15(2):289-96.

4. Choi-Cardim K, Behlau M, Zambon F. Sintomas vocais e perfil de professores em um programa de saúde vocal. Rev CEFAC. 2010;12(5):811-9.

5. Musial PL, Dassie-Leite AP, Zaboroski AP, Casagrande RC. Interferência dos sintomas vocais na atuação profissional de professores. Distúrb Comun. 2011;23(3): 335-41.

6. Van-Houtte E, Claeys S, Wuyts F, Van-Lierde K. The impact of voice disorders among teachers: vocal complaints, treatment-seeking behavior, knowledge of vocal care, and voice-related absenteeism. J Voice. 2011;25(5):570-5.

7. Rocha LMR, Souza LDM. Voice Handicap Index Associated With Common Mental Disorders in Elementary School Teachers. J Voice. 2013;27(5):595-602.

8. Almeida LD, Santos LR, Bassi IB, Teixeira LC, Gama ACC. Relationship between adherence to speech therapy in patients with dysphonia and quality of life. J Voice. 2013;27(5):617-21.

9. Pizolato RA, Rehder MIBC, Dias CTS, Meneghim MC, Ambrosano GMB, Mialhe FL et al. Evaluation of the effectiveness of a voice training program for teachers. J Voice. 2013;27(5):603-10.

10. Kasama ST, Brasolotto AG. Percepção vocal e qualidade de vida. Pró-Fono R Atual Cient. 2007;19(1):19-28.

11. Deary IJ, Wilson JA, Carding PN, Mackenzie K. VoiSS: a patient-derived voice symptom scale. J Psychosom Res. 2003;54(3):483-9.

12. Wilson JA, Webb A, Carding PN, Steen IN, Mackenzie K, Dearly IJ. The Voice Symptom Scale (VoiSS) and the Vocal Handicap Index

(VHI): a comparison of structure and content. Clin Otolaryngol Allied Sci. 2004;29(2):169-74.

13. Gasparini G, Behlau M. Quality of Life: Validation of the Brazilian version of the Voice-Related Quality of Life (V-RQOL) Measure. J Voice. 2009;23(1):76-81.

14. Behlau M, Oliveira G, Santos LMA, Ricarte A. Validação no Brasil de protocolos de auto-avaliação do impacto de uma disfonia. Pró-Fono R Atual Cient. 2009;21(4):326-32.

15. Tutya AS, Zambon F, Oliveira G, Behlau M. Comparação dos escores dos protocolos QVV, IDV e PPAV em professores. Rev Soc Bras Fonoaudiol. 2011;16(3):273-81.

16. Moreti F, Zambon F, Oliveira G, Behlau M. Adaptação transcultural da versão brasileira da escala de sintomas de voz: VoiSS. J Soc Bras Fonoaudiol. 2011;23(4):398-400.

17. Moreti FTG. Validação da versão brasileira da Voice Symptom Scale – VoiSS. Rev Soc Bras Fonoaudiol. 2012;17(2):238.

18. Behlau M, Santos LMA, Oliveira G. Cross Cultural adaptation and validation of the voice handicap index into Brazilian Portuguese. J Voice. 2009;25(3):354-9.

19. Hogikyan ND, Sethuraman G. Validation of an instrument to measure Voice-Related Quality of Life (V-RQOL). J Voice. 1999;13(4):557-69.

20. Grillo MHMM, Penteado RZP. Impacto da voz na qualidade de vida de professore(a)s do ensino fundamental. Pró-Fono R Atual Cient. 2005;17(3):321-30.

21. Jardim R, Barreto SM, Assunção AA. Condições de trabalho, qualidade de vida e disfonia entre docentes. Cad Saúde Pública. 2007a;23(10):2439-61.

22. Munier C, Kinsella R. The prevalence and impact of voice problems in primary school teachers. Occup Med. 2008;58(1):74-6.

23. Penteado RZ, Pereira IMTB. Qualidade de vida e saúde vocal de professores. Rev Saúde Pública. 2007;41(2):236-43.

24. Fabricio MZ, Kasama ST, Martinez EZ. Qualidade de vida relacionada à voz de professores universitários. Rev CEFAC. 2010;12(2):280-7.

25. Morais EPG, Azevedo RR, Chiari BM. Correlação entre voz, autoavaliação vocal e qualidade de vida em voz de professoras. Rev CEFAC. 2012;14(5):892-900.

26. Branski RC, Cukier-Blaj S, Pusic A, Cano SJ, Klassen A, Mener D et al. Measuring quality of life in dysphonic patients: a systematic review of content development in patient-reported outcomes measures. J Voice. 2010;24(2):193-8.

27. Park K, Behlau M. Sinais e sintomas da disfunção autônoma em indivíduos disfônicos. J Soc Bras Fonoaudiol. 2011;23(2):164-9.

28. Tomazzetti CT. A voz do professor: instrumento de trabalho ou problema no trabalho [Dissertação]. Santa Maria (RS): Universidade Federal de Santa Maria; 2003.

29. Rogerson J, Dodd B. Is there an effect of dysphonic teachers' voices on children's processing of spoken language? J Voice. 2005;19(1):47-60.

30. Simões M, Latorre MRDO. Prevalência de alteração vocal em educadoras e sua relação com a autopercepção. Rev Saúde Pública. 2006;40(6):1013-8.

31. Sliwinska-Kowalska M, Niebudek-Bogusz E, Fiszer M, Los-Spychalska T, Kotylo P, Sznurowska-Przygocka B. The prevalence and risk factors for occupational voice disorders in teachers. Folia Phoniatr Logop. 2006;58(2):85-101.

32. Jardim R, Barreto SM, Assunção AA. Disfonia: definição de caso e prevalência em professores. Rev Bras Epidemiol. 2007b;10(4):625-36.

33. Thomas G, Kooijman PG, Cremers CW, De-Jong FI. A comparative study of voice complains and risk factors for voice complaints in female student teachers and practicing teachers early in their career. Eur Arch Otorrinolaryngol. 2006;263(4):370-80.

34. Santana MCCP, Goulart BNG, Chiari BM. Distúrbios da voz em docentes: revisão crítica da literatura sobre a prática da vigilância em saúde do trabalhador. J Soc Bras Fonoaudiol. 2012;24(3):288-95.

35. Behlau M, Zambon F, Guerrieri AC, Roy N. Epidemiology of voice disorders in teachers and nonteachers in Brazil: prevalence and adverse effects. J Voice. 2012;26(5):665-9.

36. Medeiros AM, Assunção AA, Barreto SM. Alterações vocais e cuidados de saúde em professores. Rev CEFAC. 2012;14(4):697-704.

37. Ziegler A, Gillespie AI, Abbott KV. Behavioral treatment of voice disorders in teachers. Folia Phoniatr Logop. 2010;62(1):9-23.

38. Souza CL. Distúrbio vocal em professores da educação básica da cidade de Salvador- BA [Dissertação]. Salvador (BH): Universidade Federal da Bahia; 2008.

39. Holmqvist S, Santilla P, Lindstrom E, Sala E, Simberg S. The association between possible stress markers and vocal symptoms. J Voice. 2013 [no prelo].

40. Puccini FRS, Servilha EAM. Voz e qualidade de vida: avaliação da desvantagem vocal em professores. Encontro de Iniciação Científica da PUC-Campinas. 2010. Pontífice Universidade Católica de Campinas. Disponível em: http://www.puc-campinas.edu.br/websist/portal/pesquisa/ic/pic2010/resumos/2010924_185248_502028297_resl%C3%A1v.pdf. Acesso em 20 de maio de 2013.

Mailing address:
Carla Aparecida Cielo
UFSM – Av. Roraima nº 1000 –
Cidade Universitária – Bairro Camobi
Prédio 26 – 4º andar – Departamento de Fonoaudiologia
Santa Maria – RS – Brasil
CEP: 97105-900
E-mail: cieloca@yahoo.com.br