

QUALITY OF LIFE RELATED WITH THE VOICE OF TEACHERS: EXPLORATORY SYSTEMATIC REVIEW OF LITERATURE

Qualidade de vida relacionada à voz de professores: uma revisão sistemática exploratória da literatura

Tânia Maestrelli Ribas⁽¹⁾, Regina Zanella Penteadó⁽²⁾, Marco Tulio A. García-Zapata⁽³⁾

ABSTRACT

The objective of this study was to verify, through a systematic revision of literature, the existents studies on quality of life concerning to the voice of professors. It was accepted articles of the Education Resources Information Center (*ERIC*), *LILACS*, *PUBMED Central (PMC)* and *SCIELO* in Portuguese, English or Spanish, using the uniterms "quality of life" and "voice", without determination about the period of publication. The articles had been enclosed in accordance with standardized formularies. The initial search resulted in 315 articles. For articles selection were previously established inclusion and exclusion criteria applied and the Relevance Tests I and II. Articles were included according to standardized forms. The initial search resulted in 315 articles. The analysis process involved reading of headings, abstracts and complete texts; and only 13 articles had filled the inclusion criterion, involving studies of quality of life concerning to the voice of professors of the diverse levels of education (infantile, basic, average and superior) of public and private schools. The quality of life in voice was the most widely used instrument with teachers, and the physical domain of instrument was the one which impacted in a negative way in the quality of life concerning to the voice, considering speaking loud in noisy environments and the air finishes fast and needs to breathe many times while speaks. It had certain difficulty at the moment of the analyses of the articles, since that it had not presented similar standardization of techniques and criterion. There is the necessity of increasing the studies of quality of life concerning to the voice of the professor in the different levels of education and types of schools.

KEYWORDS: Quality of Life; Voice; Faculty; Speech, Language and Hearing Sciences; Public Health

■ INTRODUCTION

Quality of life is a broad, subjective and multi-dimensional concept that encompasses the individual's perceptions in physical, psychological and social aspects, considering his values, experiences and needs, among others. It involves the approximate notion of the degree of the subject's

satisfaction in his family, love and social life and at work, as well as satisfactory environmental, psycho-emotional, physical conditions, functional competence and general health¹. Quality of life evaluation has been a parameter to evaluate the impact of diseases and treatments, considering the subject's point of view².

Teachers have a great amount of vocal demand in their professional activity and are part of a professional group that frequently presents vocal problems, with impacts on quality of life. There has been a great interest in developing and using measurements of results that are based on the subject's perception, in order to verify how the voice or a voice disorder impacts quality of life³.

Most teachers have intense vocal use in conditions that are not always favorable⁴. The inter-relationship between the issues and problems

⁽¹⁾ Pontifícia Universidade Católica de Goiás – PUC-Goiás, Goiânia, Brasil.

⁽²⁾ Universidade Metodista de Piracicaba – UNIMEP/Piracicaba, SP, Brasil e Universidade Estadual Paulista Júlio de Mesquita Filho – UNESP/Marília, SP, Brasil.

⁽³⁾ Departamento de Medicina Tropical e Dermatologia do Instituto de Patologia Tropical e Saúde Pública da Universidade Federal de Goiás – UFG, Goiânia, GO, Brasil.

Conflict of interest: non-existent

in quality of life related to the voice of teachers has been evidenced in a study that showed that teacher's worst quality of life aspects involved work conditions, organization, environment and the process of this specific occupation – especially social relationships⁵. Low salaries that are insufficient for daily needs and personal investment, in addition to intense physical and mental energy drain, associated to insufficient sleep and rest are other aspects with a negative impact on the personal well-being and the life of teachers, thus contributing to physical and mental stress. Thus, the general health of teachers is harmed by different ailments that may be physical and emotional, with general health and vocal problems and needs that are unresolved, unmet or that require specific actions of promotion of teachers' health.

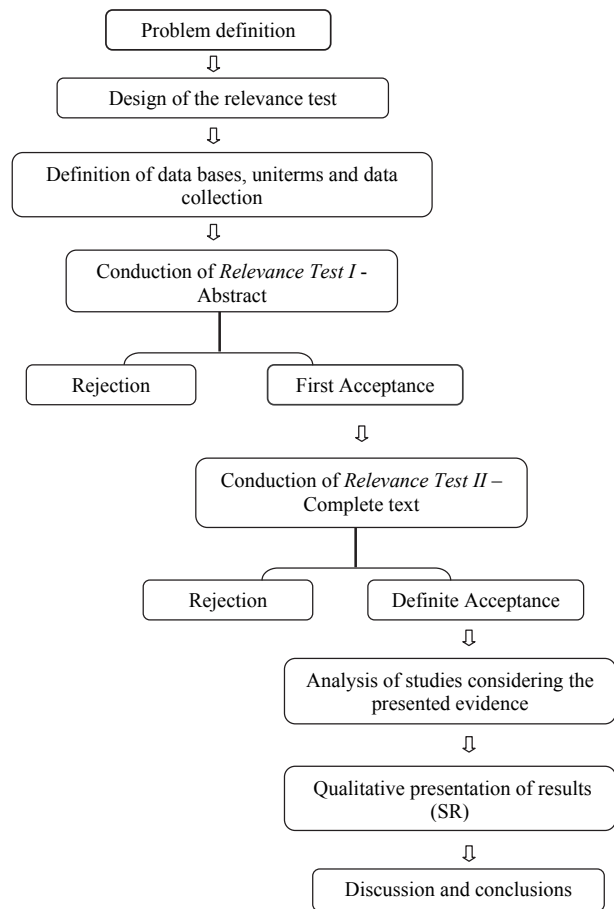
The studies that focus on voice-related quality of life³⁻⁵ contribute to the understanding of the subject's degree of satisfaction in regards to his own health, considering the social and cultural aspects of work that interfere in voice production and has implications in his daily life.

The purpose of this study was to conduct a survey of the studies involving quality of life related to the voice of teachers by performing an exploratory systematic review of the literature in the field of Speech Language Pathology and Audiology.

METHODS

An exploratory systematic review⁶ was used as the research strategy. This method is used in order to synthesize the existing scientific evidence on a research problem in the field of health. The procedure was conducted at the Nucleus for Research in Emergent and Re-emergent Agents (NUPEREME) in the period between May and September, 2011. The research problem question was: has quality of life related to the voice of teachers been investigated?

In order to answer this question, research papers were selected from the following data bases: *Education Resources Information Center (ERIC)*, *LILACS*, *PUBMED Central (PMC)* and *SciELO*, on May 5th, 2011. At a previous stage, the terms to be used in the survey of the publications of the data bases were consulted. Different descriptors were tested, but the best crossing was obtained with the uniterms 'quality of life' and 'voice', and their correspondents in the Portuguese language 'qualidade de vida', 'voz'; that were found in the *Virtual Health Library*, using *DeCs (Health Science Descriptor)* and in *PubMed*, using *MeSH (Medical Subject Headings)*.



Key: SR = Systematic Review

Figure 1 – Flowchart of the design of the exploratory systematic review

On all data bases with the exception of PubMed, that permits searches with associations of 'quality of life'[Mesh] and 'voice'[Mesh] (Pubmed), the uniterms were crossed in pairs in order to assure that all papers related to the subject had been included.

Papers written in English, Portuguese and Spanish were accepted. There were no restraints in regards to the period of publication. The selected studies were evaluated by two reviewers, independently, who used standardized forms for analysis⁷, obeying the previously established criteria for inclusion and exclusion (Figure 2) that were a part of Relevance Test I, to which only the papers' abstracts were submitted. The studies considered relevant were subject to Relevance Test II, conducted for the entire paper.

The variables in each study, method characteristics and results were recorded and summarized. The evaluation of these parameters was used for the comparison, when applicable, of the selected studies.

RELEVANCE TEST I ANSWER SHEET		
Inclusion Criteria	Yes	No
1. Does the study concern quality of life related to voice?		
Exclusion Criteria		
1. Is it an editorial, letter, review, dissertation or thesis?		
RELEVANCE TEST II ANSWER SHEET		
Inclusion Criteria	Yes	No
1. Does the study concern quality of life related to the voice of teachers?		
Exclusion Criteria		
1. Does it investigate Quality of Life in isolation?		

Figure 2 – Reviewed answer sheet for relevance tests I and II⁷

The studies included in this investigation were those concerning quality of life related to the voice of teachers of public and private daycare, elementary, middle and high schools as well as universities, and used different evaluation instruments, such as scales, questionnaires and protocols.

In regard to data analysis, the systematization and description of the characteristics of the studies found in the exploratory review of Speech-Language Pathology and Audiology literature are performed considering the number of studied teachers, the level where they teach, the instruments, results and conclusions in each study.

Description of the instruments used in the studies included in this review

The studies used different instruments, questionnaires, scales and strategies, namely: The Voice-related Quality of Life questionnaire (V-RQOL); the Voice Symptom Severity Scale (VOISS); the Voice Care Knowledge Visual Analogue scale (VAS); the World Health Organization Quality of life/brief (WHOQOL/Brief); the Voice Activity and Participation Profile (VAPP); the General Health Questionnaire-12 (GHQ-12); Anamnesis, Speech-Language Pathology Assessment and Focal Groups (Figure 4).

The Voice-Related Quality of Life (V-RQOL) is an international standardized questionnaire and its Brazilian Version (Qualidade de Vida em Voz – QVV) has been translated and adapted by Behlau⁸ from the original by Hogikyan and Sethuraman⁹. It is composed by ten items and verifies the relationship of quality of life in three domains – physical, social-emotional and global, that integrates the previous two. It assesses the reported impact of a voice problem, composed by 10 easily understandable questions, 6 in the physical and 4 in the social-emotional domain. The standardized domains show

values ranging from 0 to 100, where those closest to zero are worse and the best values are those closer to 100. The total score for *healthy voices* is 97.1; the social-emotional score for these voices is 99.3 and the physical 98.0. For dysphonic voices, the total score is 71.6, social-emotional is 79.5 and the physical score is 74.9¹⁰.

The VAS (Voice Care Knowledge Visual Analogue Scale) is a scale that assesses the changes related to voice and is comprised of questions such as ‘I know how the voice is produced’ and the subject should indicate along the line the level where he evaluates himself. Answers are in between ‘I completely agree’ and ‘I completely disagree’. It was used only in the study by Gillivan-Murphy *et al*¹¹; and is not validated in Brazil.

The VOISS – *The Voice Symptom Severity Scale* is a scale of severity of vocal symptoms that is also composed by three domains: emotional, physical and global¹¹. This scale has not been validated in Brazil.

The WHOQoL Brief is a self-reported questionnaire that contains 26 questions that relate to several aspects of daily life. The first question refers to quality of life and the second question to the level of satisfaction with one’s own health. The answers are given in scores (1 to 5), where the worst level corresponds to one and the best to 5. The remaining 24 questions are divided into the following domains: physical, psychological, social relations and environment¹².

The Voice Activity and Participation Profile (VAPP) is a protocol that is translated and validated for use in Brazil according to the standards of the *Scientific Advisory Committee of the Medical Outcomes Trust*. It is a self-assessment instrument with 28 questions involving voice quality and emotional impacts, in work and communication (day-to-day and at work). The protocol offers

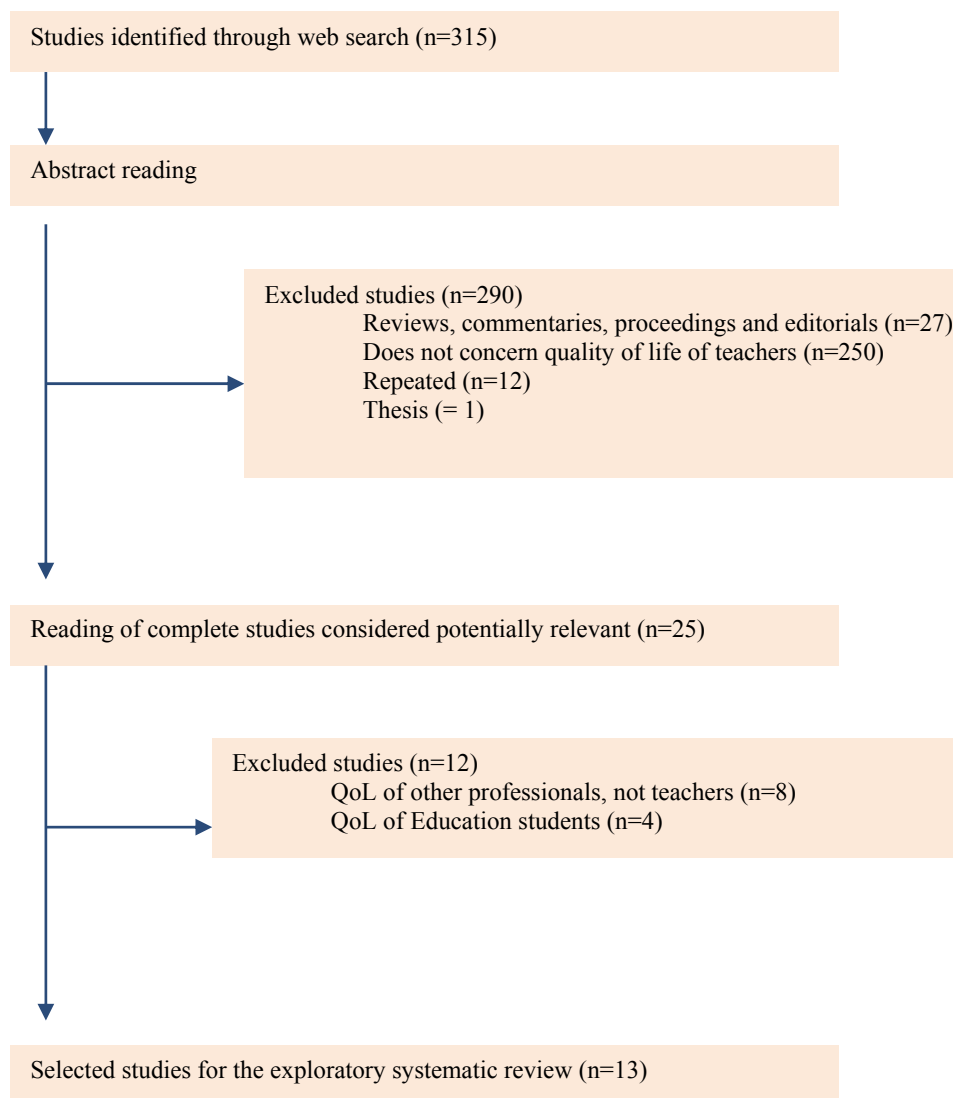
additional scores: Activity Limitation Score and Participation Restriction¹³. It shows a horizontal line that must be marked (the left extremity represents the best voice quality and the right extremity represents the worst voice quality).

A Focus Group is a qualitative technique for data survey that has been employed in studies in the field of Speech-Language Pathology and Audiology¹⁴. Groups are formed with 6 to 15 people who have at least one important trace in common for the investigation being held; and the criteria for participant selection are determined by the purpose of each study.

■ RESULTS

The entire electronic search yielded 315 publications from: PubMed (n=149), Eric (n= 70), Lilacs (n=63) and SciELO (n=33); 12 were repeated and according to the Relevance Test I 25 studies were eligible; and according to Relevance Test II 13 fulfilled the inclusion criteria for the review (Figure 3). The remaining publications were excluded as they were reviews, letters, theses and studies that did not concern the quality of life of teachers.

Figure 4 shows the characteristics of the 13 included studies, of which 11 were quantitative and 2 qualitative. The data are described below.



Key: QoL = Quality of Life

Figure 3 – Inclusion and exclusion process of articles in the exploratory systematic review

Study	Subjects	Education Level Private or Public School	Instrument used	Main Findings
1. GRILLO & PENTEADO (2005)*	120	Elementary and Middle School Public School	V-RQOL	Global Domain– 84,2. Vocal self-assessment: “good” (49.2%). The impact of voice on quality of life was evidenced in work.
2. GILLIVAN-MURPHY <i>et al</i> (2006)*	20	Elementary, Middle and High School The study does not mention whether it was a public or private school	V-RQOL + VOISS + VAS	Global Domain – 65.2 Physical Domain – 84.3 Social-Emotional Domain – 94.4 (No vocal self-assessment) The impact of voice on quality of life was evidenced in work. There was significant improvement in all VAS scores in the treatment group as well as the total VoiSS score between the control and treatment groups.
3. PENTEADO & BICUDO-PEREIRA (2007)*	128	High School Public School	V-RQOL + WHOQOL Brief	Global Domain – 80 Physical Domain – 74,4 Social-Emotional Domain – 87.3 Vocal self-assessment: “good” (42.2%). WHOQOL Brief – Total 66. Physical Domain 68.2; Psychological Domain 68.2; Social Relationships Domain 70.3; Environment Domain 56.1 Quality of life and general health impacted teachers’ vocal health.
4. PENTEADO (2007)**	12	High School Public School	Focus Group	Theme groups approached: Knowledge and caring for the voice/vocal health; concerns and representations regarding the illness-health process; ways of perceiving, identifying and interpreting vocal problems; ways of coping Actions in vocal health should involve aspects on work organization, daily life, subjectivity and quality of life.
5. JARDIM, BARRETO & ASSUNÇÃO (2007)*	2.133	Elementary and Middle School Public School	V-RQOL + GHQ-12	Global Domain –84.2 Physical Domain – 79.4 Social-Emotional Domain – 90.6 (no vocal self-assessment) Mental disorder (50%) and autonomy margin at work were associated to worse quality of life related to voice in the social-emotional domain. Noise in the classroom was associated to worse quality of life related to voice in the physical domain. Work organization, vocal health and mental health are associated to a worse voice-related quality of life. Vocal health actions should involve aspects regarding the environment and teaching work conditions.
6. BRAGION, FOLTRAN & PENTEADO (2008)**	5	Preschool, Elementary, Middle and High School Private Schools	Focus Group	Theme groups approached: Teaching and impacts on health, work and private life; work organization (relationships with co-workers, students and their family members); Work environment; Perception of voice and its disorders; vocal care/vocal health. Practical actions concerning voice use provide relationships between voice, work and health in the promotion of vocal health.

Study	Subjects	Education Level Private or Public School	Instrument used	Main Findings
7. PALHETA NETO <i>et al</i> (2008)*	120	Elementary and Middle School Public and Private Schools	Questionnaire developed for study	Hoarseness(50%) related to lack of vocal care and to work conditions such as less than 15 years of teaching and great number of students per class.
8. SERVILHA & ROCCON (2009)*	21	College Education The study does not mention whether it was a public or private school	V-RQOL Speech- Language Pathology Assessment (body and voice)	Global Domain – 82.61 Physical Domain – 78.18 Social-Emotional Domain – 88.98 During the body Speech-Language Pathology evaluation, the most frequent disorder was tension in 10 (47.61%) teachers; in the vocal evaluation, the most evident aspects were voice modulation in 11 (52.38%) teachers and vocal projection in 10 (47.61%) of them. The relationship between the V-RQOL and the Speech-Language Pathology assessment showed that these teachers adequately evaluated their voices, as well as their impacts on quality of life.
9. GAMPEL, KARSCH & FERREIRA (2010)*	47 active and 5 retired	The study does not mention whether the subjects are from public or private schools	V-RQOL	Global Domain – 91.13 Physical Domain – 90.58 Social-Emotional Domain – 99.46 (No vocal self-assessment)
10. CHOI- CARDIM, BEHLAU & ZAMBON (2010) *	411	Preschool, Elementary and Middle School Private Schools	Anamnesis + Speech- Language Pathology Assessment	Group 1(that participated in a prevention program) had a similar profile as Group 2 (that participated in a treatment and in a prevention program) but there was a greater number of average symptoms in G2, showing that this groups sought the Vocal Health Program for being the group more at risk for voice disorders. Vocal health programs improve the quality of life of teachers.
11. FABRÍCIO, KASAMA & MARTINEZ (2010)*	306	College Education Public School	V-RQOL + Questionnaire developed for study	Global Domain – 100 Physical Domain – 95,8 Social-Emotional Domain – 97,5 Vocal Self-Assessment: “very good” (31%).
12. ALMEIDA <i>ET</i> <i>AL</i> (2010)*	328	College Education The study does not mention whether they are public or private schools	Questionnaire developed for study	The study determined the prevalence of clinical symptoms that are found in dysphonia, as well as the factors concerning work organization of teachers and the quality of life of this population.
13. RICARTE, BOMMARITO & CHIARI (2011)*	107(86 with complaint and 21 without complaint)	High School Private School	VAPP	Teachers with voice complaints feel limited while teaching and in other daily life activities.

Key:

QoL = Quality of Life

V-RQOL = Voice-Related Quality of Life Questionnaire

VOISS= Voice Symptoms Severity Scale

VAS = Voice Care Knowledge Visual Analogue Scale

GHQ-12 – General Health Questionnaire-12

* quantitative study

** qualitative study

Figure 4 – Representative Picture of the systematic exploratory review of the studies in regard to the population, Education Level and Type of School (public or private), instruments used and main findings

The study by Grillo and Penteadó⁴, was observational and involved 120 Elementary School teachers in the Ribeirão Preto area, who completed the Voice-Related Quality of Life questionnaire (V-RQOL). On the vocal self-evaluation question 'How do you evaluate your voice?' most teachers (49.2%) considered their voice *good* in spite of facing difficulties to speak, especially when they are required to speak loudly in noisy environments and of running out of air and feeling the need to breathe many times while speaking. In general, teachers are satisfied with their voices, but several of those who considered their voices good have difficulties speaking, such as speaking loudly in noisy environments and quickly running out of air and feeling the need to constantly breathe when speaking (questions 1 and 2). Time in the occupation was related to question 2 and 5, concerning issues such as lack of air and depression, respectively, so that those with greater time in teaching reported more difficulties regarding rapidly running out of air and the more they feel depressed because of their voices. The impact of voice on quality of life was seen in the difficulties with using one's voice in high intensity, in the lack of speech coordination with breathing, at work and in negative feelings, directly associated to this category's vocal needs.

Gillivan-Murphy *et al*¹¹ conducted an intervention study with 20 Elementary and High School teachers who had reported voice disorders, in Ireland. Eleven participated in the control group and nine were part of the group that underwent treatment. The questionnaires used were the Voice-Related Quality of Life (V-RQOL), the Voice Symptom Severity Scale (VOISS) and the Voice Care Knowledge Visual Analogue Scale (VAS). This last instrument was used to assess changes regarding the voice; all instruments were completed before and after intervention. A combined approach was used, involving vocal function exercises and guidance on vocal hygiene for 8 weeks. Before the treatment there was no significant difference between the groups for the V-RQOL, VOISS and VAS. After the intervention, both groups showed improvement in the V-RQOL and in VOISS, although there was significant difference only for the treatment group. There was significant improvement in all VAS scores of the treatment group and of the total VOISS score when comparing control and treatment groups. There was no statistically significant difference on the V-RQOL between the groups. There was a significant difference regarding the knowledge of mechanisms of voice production for the group who underwent intervention. The study suggests that vocal function exercises associated to vocal hygiene

guidance decrease vocal symptoms and lead to an improvement of vocal care by teachers.

Penteadó and Bicudo-Pereira¹⁵ studied 128 High School teachers in 4 public schools of Rio Claro (SP), evaluated using the World Health Organization Quality of life/brief (WHOQOL/brief) and Voice-Related Quality of Life (V-RQOL). In regard to the answers to the V-RQOL, on the vocal self-evaluation question 'How do you evaluate your voice?' the teachers showed satisfaction with their voice quality: 42.2% of the subjects considered their own voices '*good*', 15.6% '*very good*' and 3.1% '*excellent*', while 32% considered in '*reasonable*' and 7% '*bad*'. The relationship between vocal self-assessment and the domains of the WHOQOL brief showed that the worse the teacher's quality of life, the worse was his/her vocal self-assessment, thus evidencing the hypothesis of the relationship between vocal health and quality of life of teachers. The authors concluded that the teachers, in spite of being satisfied with their voices, showed difficulties in the perception of the health-illness process, of the aspects associated with work, quality of life and health, which are possibly related to vocal health issues.

Jardim, Barreto and Assunção¹⁶ studied 2133 Elementary School teachers from Belo Horizonte, using instruments such as the V-RQOL and the General Health Questionnaire-12 (GHQ-12), in order to seek the presence of the most common mental disorders such as depression and anxiety. They found that less creativity at work and bad relationship with the students were associated to worse quality of life related to voice in the social-emotional and physical domains (90.6 and 79.4 respectively; and total score of 84.2).

The study by Servilha and Roccon¹⁷ shows the investigation on quality of life of 21 university professors, 77% women and 23% men, using the V-RQOL and Speech-Language Pathology evaluation; on the question on vocal self-assessment 'How do you evaluate your voice?' the teachers considered their voices *good* (42.85%), *reasonable* (38.09%) and *very good* and *bad*, equally (9.52%). The physical domain had a mean score of 78.18 where difficulty in speaking loudly or being heard in noisy environments and having problems at work or in carrying out duties because of their voices stood out. On the social-emotional domain, the mean score was 88.98 and evidenced anxiety or frustration because of their voices. The global domain had a mean score of 82.61. The Speech-Language Pathology assessment considered more adapted voices (61.90%) than voices with disorders (38.09%) that had restrictions in projection and modulation or hoarseness. The comparison

between vocal self-assessment, Speech-Language Pathology Evaluation and quality of life evaluation showed more consensus than divergences.

Gampel, Karsch and Ferreira¹⁸ studied 47 elderly teachers (over 65 years of age: GP-23) and non-teachers (GNP-24); and in comparing the scores of the Voice-Related Quality of Life questionnaire (V-RQOL) of both groups verified the relationship among the scores, chronological age and perception of vocal changes. The authors observed that there was no significant difference between the V-RQOL scores of GP and GNP, and no relationship between the scores and perception of vocal changes. Furthermore, they found that the older the chronological age, the greater the values obtained in the total V-RQOL and the values of the physical domain for both groups. Thus, the older the chronological age, the smaller the impact that voice has on the physical domain. No statistically significant difference was found between the groups. For GP, the questions of the physical domain that were reported as most difficult, from higher to lower, were questions 1, 2 and 7 (difficulty in speaking loudly or being heard in noisy environments, needing to breathe many times while speaking, and having problems at work due to their voices); and in regard to the social-emotional domain, the most problematic issue was question number 4 (being anxious or frustrated because of their voices). For the individuals in GP and GNP who perceived changes in their voices during the ageing process, there was significant difference in the questions referring to: Q2 – quickly running out of air ($p=0.02$), Q4 – feeling anxious over voice ($p=0.007$), Q5 – Being depressed because of voice ($p=0.012$) and Q9 – having to repeat what has already been said ($p=0.002$).

Fabrcio, Kasama and Martinez¹⁹ focused their study on 82 professors at the Medical School of Ribeirão Preto, using the V-RQOL and a questionnaire developed by the authors. It was verified that, in the vocal self-evaluation question 'How do you evaluate your voice?' half of the teachers considered their voices 'excellent' or 'very good', and only 3% considered their voices 'bad'. Voice complaints were verified using scales 'always', 'sometimes', 'never' and 'did not answer', and the most frequent complaints were dry throat, phlegm, cough and hoarseness.

The study by Pentead²⁰, involved 12 High School teachers of the city of Rio Claro/SP (nine female subjects and three male subjects) in a qualitative study (focus group). Content analysis of the discussions held during the focus group identified 4 theme groups: knowledge and care, concerns and representations, problem identification and ways to cope with them. In spite of having knowledge and

reasonable information about vocal care, these are not put into practice, which shows a need for attention towards the factors of quality of life, subjectivity, history, culture, conditions and organization of the work environment of teachers – that interfere in the subjects' choices and communities in regard to their health care.

The qualitative study by Bragion, Foltran and Pentead²¹, involved five Preschool, Elementary, Middle and High School teachers from the city of Piracicaba, with the conduction of a focus group before and after the subjects' participation in a group about voice practices. The following categories were identified in the groups: teaching and impacts on health, quality of work and private life (overwork and social relationships) and work environment. The authors concluded that the experience broadened the perception of the teachers about their voices as they became aware of discomforts, disorders in voice production and have also related health to habits, behaviors as well as environment and work conditions.

Palheta Neto *et al*²² in an epidemiological investigation of 120 teachers from the city of Belém in the state of Pará, used a questionnaire to obtain data about: symptoms reported throughout the subjects' professional life (hoarseness) at the time of the interview, time in the teaching career, average number of students per classroom, number of daily work hours and average weekly workload, temperature in the classroom, material used to write (chalk or marker) and vocal care throughout their careers. There was no statistically significant difference in the prevalence of hoarseness in relationship to the use of fans or air conditioning and between the group using chalk and the one using markers. However, there was a significant relationship between the absence of vocal care and hoarseness, symptom presented by half the teachers in the sample (45 teachers did not have vocal care). There was no significant association between hoarseness and daily workload, and there was also not a strong influence of the weekly workload. As far as hoarseness and number of years in the teaching career, 60 teachers had the symptom, of which 39 had been teachers for less than 15 years, while 21 had been working in the field for longer than 15 years.

Choi-Cardim, Behlau and Zambon²³ correlated work conditions, habits and vocal symptoms presented by 411 teachers from the Preschool, Elementary and Middle School Teachers' Union of São Paulo who took part in a Vocal Health Program. Two groups participated in the study: G1 (256 subjects submitted to voice evaluation and guidance) and G2 (155 subjects submitted to voice evaluation, guidance and rehabilitation). The

authors verified that the groups were similar as far as gender (female), age group (31-40 years), taught more than one different grade, with up to 30 students per classroom, reported presence of noise at work, caring for their voices, using their voices excessively outside the school, did not smoke or consume alcohol. The groups were different regarding their daily workload: most of G1 worked up to 5 hours, while G2 worked between 6-10 hours a day; and having sought the care of an otorhinolaryngologist or Speech-Language Pathologist due to voice disorders: most teachers in G1 had not been to a specialist, while G2 had already sought professional care. The mean number of vocal symptoms in G2 was greater than in G1, which shows that this group attended the vocal health program for being more at risk of having a vocal problem. The authors report that G2 possibly needed rehabilitation for working more hours per day.

In the study by Almeida *et al*⁴ 328 professors from four colleges of the north region of the State of São Paulo were investigated. A self-assessment questionnaire developed by the Three-Part Commission for Professional Voice Norms was completed, in order to trace the symptoms of the occupational dysphonic syndrome as well as work organization factors that could interfere in the natural history of occupational voice disorders. The questionnaire was divided into four parts: identification, work organization, clinical symptoms, health and quality of life. In regard to work organization, class time is over 100 minutes; the average number

of students per class is over 51 for most subjects. As far as voice symptoms, the ones occurring in greater proportion were: sore throat (in 70% of the professors), phlegm and neck pain (in 54% of teachers). Hoarseness was reported in 31% of the subjects.

The study by Ricarte, Bommarito and Chiari²⁵ investigated 107 High School teachers (86 with complaints and 21 without voice complaints) from a private school in the city of Maceió. The authors used the Voice Activity Participation Profile (28 questions) that encompasses quality of life evaluation and the result of vocal treatments. The protocol offers additional scores: Activity Limitation Score and Participation Restriction Score. The authors found that the teachers with voice complaints feel restricted not only in their work as teachers but also in other daily life activities; and the study showed that the teachers perceive themselves having vocal problems.

The data about the numeric distribution of the instruments for measuring quality of life related to the voice of teachers, according to the 13 studies selected from the bibliography review are shown in table 1.

Tables 2, 3 and 4 show the scores of the domains of the studies that used the V-RQOL, the answers regarding vocal self-assessment and the distribution of the levels of education studied, respectively.

Table 1 – Numeric distribution of studies according to the types of instruments and strategies employed in the 13 studies

INSTRUMENTS USED	STUDIES
Isolated V-RQOL ^{4,18}	2
V-RQOL associated to another instrument (VOISS; VAS; WHOQOL/Brief; GHQ-12) ¹¹⁻¹⁶	3
V-RQOL + Voice assessment or developed questionnaire ¹⁷⁻¹⁹	2
Questionnaire developed for study (identification, work organization, clinical symptoms, habits and quality of life) ²²⁻²⁴	3
VAPP ²⁵	1
Focus Groups ²⁰⁻²¹	2
Total	13

Key

V-RQOL = Voice-Related Quality of Life Questionnaire

VOISS= Voice Symptom Severity Scale

VAS = Voice Care Knowledge Visual Analogue Scale

GHQ-12 – General Health Questionnaire-12

VAPP – Voice Activity and Participation Profile

Table 2 – Voice-Related Quality of Life Questionnaire (V-RQOL) domain scores in the studies with teachers

STUDIES	GLOBAL DOMAIN	SOCIAL-EMOTIONAL DOMAIN	PHYSICAL DOMAIN
Grillo & Penteadó ⁴	84,2	-	-
Gillivan-Murphy <i>et al</i> ¹¹	65,2	94,4	84,3
Penteadó & Bicudo Pereira ¹⁵	80	87,3	74,4
Jardim, Barreto & Assunção ¹⁶	84,2	90,6	79,4
Servilha & Roccon ¹⁷	82,61	88,98	78,18
Gampel, Karsch & Ferreira ¹⁸	91,13	99,46	90,58
Fabício, Kasama & Martinez ¹⁹	97,5	100,0	95,8

Table 3 – Results for the question ‘How do you evaluate your voice?’, in the studies that have used the Voice-related Quality of Life Questionnaire (V-RQOL) with teachers.

VOICE EVALUATION	EXCELLENT	VERY GOOD	GOOD	REASONABLE	BAD
Grillo & Penteadó ⁴	24%	-	49%	26%	26%
Penteadó & Bicudo Pereira ¹⁵	3%	15%	42%	32%	7%
Servilha & Roccon ¹⁷	-	9%	2%	33%	9%

Table 4 – Distribution of the studies according to the Educational Level involved

STUDIES	EDUCATIONAL LEVEL			
	Preschool	Elementary /Middle	High	College
1. Grillo & Penteadó (2005)	-	x	-	-
2. Gillivan-Murphy <i>et al</i> (2006)	x	x	x	-
3. Penteadó & Bicudo Pereira (2007)	-	-	x	-
4. Penteadó (2007)	-	-	x	-
5. Jardim, Barreto & Assunção (2007)	-	x	-	-
6. Bragion, Foltran & Penteadó (2008)	x	x	x	-
7. Palheta Neto <i>et al</i> (2008)	-	x	-	-
8. Servilha & Roccon (2009)	-	-	-	x
9. Gampel, Karsch & Ferreira (2010)	-	-	-	-
10. Choi-Cardim, Behlau & Zambon (2010)	x	x	-	-
11. Fabício, Kasama & Martinez (2010)	-	-	-	x
12. Almeida <i>et al</i> (2010)	-	-	-	x
13. Ricarte, Bommarito & Chiari (2011)	-	-	x	-

■ DISCUSSION

The studies that were included in this review have used different analysis criteria and standards, which made the comparison between them more difficult. Some studies lack data about the level of teaching, or if the institutions are private or public or if they are run by the city or state administrations.

When analyzing Figure 4, one may observe that studies on quality of life began being published from 2005 onwards⁴, even in Brazil; approximately one a year, except for 2007¹⁵⁻¹⁶ and 2010^{18-19,23-24}, when two and four papers, respectively were published. It should be noted that, in Brazil, the first publication of a translated version for Portuguese of this instrument was in the book by Behlau⁸, published in 2001; and

that the publication of the validation in Brazil of this instrument occurred in 2006 and 2007²⁶.

Figure 4 shows that there are few studies involving private school teachers^{21-23,25}, possibly because there is easier access to public schools than to private schools which may be due to concerns regarding competition, fear of exposing limitations, difficulties among other reasons. Elementary and Middle School were the most investigated education levels^{4,11,16,21-23} and the least explored were Preschool^{11,21,23} and College Education^{17,19,24} (table 4). There is a need to find and understand the relationships between voice and quality of life in the different education levels and in different work conditions in both public and private schools in order to search for the factors that interfere and how they may affect the quality of life of teachers.

Figure 4 evidences that the Voice-Related Quality of Life Questionnaire (V-RQOL) was the most widely used instrument in the investigations about the relationship between quality of life and voice of teachers. However, it should be stressed that, in Brazil, there are studies using the V-RQOL from as early as 2003⁵, that are Masters' Dissertations, Doctoral Theses and Undergraduate and Specialization essays that are not published as journal articles and thus have not been considered for analysis in this study. It should be noted that in Brazilian Speech-Language Pathology and Audiology, the main channel for publication and for sharing the research conducted at the Universities is the National Speech-Language Pathology and Audiology Congress and its respective Proceedings. Many investigations are not published in scientific journals and therefore are not included in systematic review studies.

Table 1 shows that the V-RQOL was used in isolation in two studies; and alongside other instruments (*VOISS*; *VAS*; *WHOQOL*– Brief; *GHQ-12*) in three studies. Other investigations used strategies such as questionnaires developed for the study, the VAPP and focus groups, respectively. The Voice-Related Quality of Life questionnaire was used in a total of seven studies (53.84 %).

The use of the V-RQOL has advantages such as being easy to understand and requires a short amount of time to complete. However, it has only one question related to work. It is important that new studies that aim to use the V-RQOL with teachers do not fail to include other strategies that enable the evaluation of specific aspects and issues of the teaching profession, especially those referring to work conditions and organization. Focus groups may constitute an interesting strategy in this direction.

In table 2, among the studies that have used the V-RQOL, it may be observed that the score in

the global domain varied from 82.61 to 97.5, thus in agreement with the values suggested in literature (97.1 for healthy voices and 71.6 for dysphonic voices)¹⁰, considering that the greater part of the studied population is composed of teachers without voice complaints, except for the study by Gillivan-Murphy¹¹, where the studied group were teachers with complaints such as hoarseness and voice loss, and where there is greater impact on quality of life (65.2). The social-emotional domain varied from 87.3 to 100.0, where the standard score is 99.3 for healthy voices and 79.5 for dysphonic voices. In the same study by Gillivan-Murphy¹¹, with teachers with voice complaints, there was no negative impact of the voice on quality of life. The physical domain varied from 74.4 to 95.8, and is thus equivalent to the standard expected for dysphonic individuals (74.9)¹⁰.

The studies by Penteadó and Bicudo-Pereira¹⁵, Servilha and Roccon¹⁷ and Jardim, Barreto and Assunção¹⁶ showed lower scores in regard to the physical domain of the V-RQOL, which shows that both Elementary teachers and College Professors have problems related to the use of their voices, such as difficulties in speaking loudly in noisy environments; quickly running out of air and needing to breathe many times while speaking; and problems in carrying out their jobs as teachers because of their voices. The physical domain was the one that had the most negative impact on the quality of life of teachers, usually related to the questions referring to using the voice in high intensity, running out of air and needing to breathe many times while speaking; for Elementary, Middle and High School teachers, which reinforces the idea that an accessory in Speech-Language Pathology would benefit the use of voice in teaching. In the social-emotional domain, the impact on quality of life was low, meaning that teachers do not limit their social activities and do not experience feelings of anxiety and depression because of their voices.

Few studies showed results from the isolated question on vocal self-assessment *How do you evaluate your voice?*^{4,15,19} (Table 3). Most responses are concentrated on the parameters "good" and "reasonable". The original version of the instrument in Portuguese, published by Behlau⁸ contained the isolated question that was later removed from the validated version of the questionnaire. In fact, for the validation process, the vocal self-assessment question was answered through a Likert 5-point scale: *bad, reasonable, good, very good* and *excellent*¹⁰. Later studies that have used the published validated version of the questionnaire no longer used this question, reducing the data for analysis.

Even though most teachers considered their own voices *good* in answer to the self-assessment question, previous studies⁵ show that teachers have difficulties perceiving and valuing vocal signs and symptoms. According to Servilha and Roccon¹⁷, when the teacher has a vocal problem, he/she does not notice any negative aspects on his/her quality of life.

Both qualitative studies that conducted focus groups²⁰⁻²¹ reinforced, by the teachers' perceptions, that work conditions influence professional performance, health and the quality of life of teachers.

■ CONCLUSIONS

There are few published studies concerning quality of life related to the voice of teachers, with unequal distribution and unevenness among education levels (Preschool, Elementary, Middle, High School or College) and types of school (public or private). Furthermore, there is no standard technique or similar criteria among the studies, making the analysis process more difficult.

In the analyzed studies, it was verified that the V-RQOL was the most widely used instrument for the teachers; and its physical domain was the one with the most negative impact. The studies that used the vocal self-assessment question found that teachers, in spite of considering their voices good, have difficulties in noticing and valuing vocal symptoms, and do not relate them to the negative aspects of their quality of life.

Thus, the importance of Speech-Language Pathology actions that are constituted as social spaces and health education processes should be stressed, as they have potential to promote awareness and the perception of teachers about their own voices and its eventual changes and disorders, changing the wrong idea that a voice disorder is a natural part of the profession.

There is a need for more studies that relate voice and quality of life of teachers in an organized way and that cover aspects related to teachers' work conditions and organization in different levels of education and schools.

RESUMO

O objetivo deste estudo foi verificar, por meio de uma revisão sistemática de literatura, os estudos existentes sobre qualidade de vida relacionada à voz de professores. Foram selecionados artigos, nas seguintes bases de dados: Education Resources Information Center (*ERIC*), *LILACS*, *PUBMED Central* (PMC) e *SCIELO*. Foram empregados os unitermos 'qualidade de vida' e 'voz' e seus correspondentes na língua inglesa. Foram aceitos artigos em inglês, português ou espanhol, sem determinação quanto ao período de publicação. Para a seleção dos artigos foram previamente estabelecidos critérios de inclusão e exclusão e aplicados os Testes de Relevância I e II. Os artigos foram incluídos de acordo com formulários padronizados. A busca inicial resultou em 315 artigos. O processo de análise envolveu leitura de títulos, resumos e textos completos; sendo que apenas 13 artigos preencheram os critérios de inclusão, envolvendo estudos de qualidade de vida relacionada à voz de professores dos diversos níveis de ensino (infantil, fundamental, médio e superior) e de escolas públicas e privadas. O QVV foi o instrumento mais utilizado com professores; sendo o domínio físico deste instrumento o que impactou de forma mais negativa na qualidade de vida relacionada à voz no que se refere a falar forte em ambientes ruidosos e o ar acabar rápido e precisar respirar muitas vezes enquanto fala. Houve certa dificuldade no momento das análises dos artigos, uma vez que não apresentaram padronização de técnicas e critérios semelhantes. Há necessidade de aumento dos estudos de qualidade de vida relacionada à voz do professor nos diferentes níveis de ensino e tipos de escolas.

DESCRIPTORIOS: Qualidade de Vida; Voz; Docente; Fonoaudiologia; Saúde Pública

■ REFERENCES

1. The Whoqol Group. The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. *Soc.Sci.Med. Oxford.* 1995;41(10):1403-9.
2. Berlim MT, Fleck MPA. Quality of life: a brand new concept for research and practice in psychiatry. *R.Bras. Psiquiatr.* 2003;25(4):249-52.
3. Kasama ST, Brasolotto AG. Percepção vocal e qualidade de vida. *Pró-Fono Rev Atualização Científica.* 2007;19(1):19-28.
4. Grillo MMM, Penteadó RZ. Impacto da voz na qualidade de vida de professore(a)s do ensino fundamental. *Pro Fono.* 2005;17(3):321-30.
5. Penteadó RZ. Aspectos de qualidade de vida e subjetividade na promoção da saúde vocal de professores [tese]. São Paulo (SP): Universidade de São Paulo. Faculdade de Saúde Pública; 2003.
6. Garabito RM, Gómez ST, González ML, Macías LM, D'Agostino M, De Cabo JV. Revisões sistemáticas exploratórias. *Med Segur Trab.* 2009;55(216):12-9.
7. Silva HD, Melo MR, Anúnciação CE, García-Zapata MTA. Avaliação de métodos de concentração e detecção molecular de adenovírus em água não tratadas – uma metanálise. *Revista de la Sociedad Venezolana de Microbiología.* 2010; 30:65-71.
8. Behlau M. *Voz: O livro do especialista.* Rio de Janeiro: Editora Revinter; 2001. 348p.
9. Hogikyan ND, Sethuraman G. Validation of an instrument to measure voice-related quality of life (V-RQOL). *J Voice.* 1999;13:557-69.
10. Behlau M, Oliveira G, Santos LMA, Ricarte A. Validação no Brasil de protocolos de autoavaliação do impacto de uma disfonia. *Pró-Fono Revista de Atual Científica.* 2009;21(4):326-32.
11. Gillivan-Murphy P, Drinnan MJ, O'Dwyer TP, Ridha H, Carding P. The effectiveness of a voice treatment approach for teachers with self-reported voice problems. *J Voice.* 2006;20(3):423-31.
12. Fleck MP, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. Aplicação da versão em português do instrumento abreviado de avaliação da qualidade de vida WHOQOL-bref. *Rev Saude Publica.* 2000;34(2):178-83.
13. Pires Marcela DE, Oliveira G, Behlau M. Aplicação do Protocolo de Participação e Atividades Vocais – PPAV em duas diferentes escalas de resposta. *J. Soc. Bras. Fonoaudiol.* [serial on the Internet]. 2011 Sep [cited 2012 July 09]; 23(3):297-300. Available from: <http://www.scielo.br/scielo.php?>
14. Penteadó RZ, Gonçalves CGO, Silvério KCA, Rossi D, Libardi A, Vieira TPG. Grupos Focais: possibilidades e aplicações para as pesquisas e práticas fonoaudiológicas. *Rev. Soc. Bras. Fonoaudiol.* 2006;11(2):124-8.
15. Penteadó RZ, Bicudo Pereira IMT. Qualidade de vida e saúde vocal dos professores. *Rev. Saúde Pública.* 2007;41(2):236-43.
16. Jardim R, Barreto SM, Assunção ADA Á. Condições de trabalho, qualidade de vida e disfonia entre docentes. *Cad Saude Publica.* 2007;23(10):2439-61.
17. Servilha EAM, Roccon PF. Relação entre voz e qualidade de vida em professores universitários. *Rev. CEFAC.* 2009;11(3):440-8.
18. Gampel D, Karsch UM, Ferreira LP. Percepção de voz e qualidade de vida em idosos professores e não professores. *Ciênc. Saúde Coletiva.* 2010;15(6):2907-1.
19. Fabrício MZ, Kasama ST, Martinez ZE. Qualidade de vida relacionada à voz de professores universitários. *Rev. CEFAC.* 2010;12(2):280-7.
20. Penteadó RZ. Relações entre saúde e trabalho docente: percepções de professores sobre saúde vocal. *Rev. Soc. Bras. Fonoaudiol.* 2007;12(1):18-22.
21. Bragion TA A, Foltran TRF, Penteadó RZ. Relações entre voz, trabalho e saúde: percepções de professores. *Distúrb. Comun.* 2008;20(3):319-25.
22. Palheta Neto FX, Rebelo Neto OB, Ferreira Filho JSS, Palheta ACP, Rodrigues L, Silva FA. Relação entre as condições de trabalho e a autoavaliação em professores do ensino fundamental. *Arq.Int. Otorrinolaringol.* 2008;12(2):230-8.
23. 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.
24. Almeida IC, Pontes P, Bussacos MA, Neves L, Zambon F. Questionário de auto-avaliação vocal: instrumento epidemiológico de controle da síndrome disfônica ocupacional em professores. *Arq Int.Otorrinolaringol.* 2010;14(3):316-21.
25. Ricarte A, Bommarito S, Chiari B. Impacto vocal de professores. *Rev. CEFAC.* 2011;13(4):719-27.
26. Gasparini G, Behlau M. Validação do questionário de avaliação de qualidade de vida em voz – QVV; XIV Congresso Brasileiro de Fonoaudiologia; 2006 Out 04-07; Anais, Salvador. SBFa; 2006.

Received on: March 06, 2012

Accepted on: September 10, 2012

Mailing address:

Tânia Maestrelli Ribas

Rua Terezina, nº 30 – Qd 1 Lote 1/30 – Apto 303 – Spazio GranVille – Alto da Glória – Goiânia – GO
CEP: 74815-320

E-mail: tania.ribas@uol.com.br