

Evidence-based Speech-Language
Pathology and Audiology
*Fonoaudiologia Baseada
em Evidências*

Maria da Conceição C. Pessoa de Santana¹
Bárbara Niegia Garcia de Goulart²
Brasília Maria Chiari³

Keywords

Voice disorders
Faculty
Occupational health
Surveillance of the workers health
Dysphonia
Occupational risks

Descritores

Distúrbios da voz
Docentes
Saúde do trabalhador
Vigilância em saúde do trabalhador
Disfonia
Riscos ocupacionais

Correspondence address:

Bárbara Niegia Garcia de Goulart
Universidade Federal do Rio Grande do Sul
R. Ramiro Barcelos, 2600, Santa Cecília, Porto Alegre (RS), Brasil, CEP: 91003-500.
E-mail: bgoulart@ufrgs.br

Received: 12/20/2011

Accepted: 8/8/2012

Voice disorders in teachers: critical review on the worker's health surveillance practice

Distúrbios da voz em docentes: revisão crítica da literatura sobre a prática da vigilância em saúde do trabalhador

ABSTRACT

Purpose: To analyze scientific bibliographic production on the practice of occupational health surveillance related to voice disorders in teachers. Search **Strategy:** The Cochrane Handbook precepts which involves the formulation of the question to be investigated, the location, the studies selection and articles' critical evaluation were followed. **Selection criteria:** The articles published between 2000 and 2011 were selected in the PubMed, LILACS, MEDLINE database, and the Cochrane Library using the descriptors voice disorders; teachers, occupational health, workers' health surveillance. **Data analysis:** Texts were analyzed, using a standardized form when the following data were collected: objectives, research design, characteristics of the study group, obtained results and discussion on the practice of surveillance related to voice disorder. **Results:** Initially, 141 studies were identified. After reviewing the titles and abstracts, considering inclusion and exclusion criteria, verifying consistency with the topic researched and eliminating the ones which were concurrently in more than one database, 32 articles were effectively analyzed for relating in the findings and/or conclusions to the practice of surveillance related to voice disorders in teachers. **Conclusion:** The practice of monitoring workers' health was evidenced in this research mainly as the identification of risk factors associated with voice disorders in teachers, aimed at the transformation of the working conditions and the assurance of quality of assistance to these workers as professionals.

RESUMO

Objetivo: Analisar a produção bibliográfica científica sobre a prática da vigilância à saúde do trabalhador relacionada aos distúrbios vocais em professores. **Estratégia de pesquisa:** Foram seguidos os preceitos do *Cochrane Handbook*, que envolveu a formulação da questão a ser investigada, a localização, a seleção dos estudos e a avaliação crítica dos artigos. **Critérios de seleção:** Os artigos publicados entre 2000 e 2011 foram selecionados por meio das bases de dados PubMed, LILACS, MEDLINE e Biblioteca Cochrane, utilizando-se os descritores distúrbio da voz/*voice disorders*, docentes/*faculty*, saúde do trabalhador/*occupational health*, vigilância em saúde do trabalhador/*surveillance of the workers health*. **Análise de dados:** Os textos foram analisados utilizando-se um formulário padronizado, quando os seguintes dados foram coletados: objetivos, desenho da pesquisa, características do grupo pesquisa, resultados obtidos e discussão sobre a prática da vigilância relacionada ao distúrbio da voz. **Resultados:** Inicialmente, foram identificados 141 estudos. Após revisão dos títulos e resumos, consideração dos critérios de inclusão e exclusão, verificação da coerência com a temática pesquisada e eliminação por estarem concomitantemente em mais de uma base de dados, 32 foram efetivamente analisados por referirem nos resultados e/ou nas conclusões a prática da vigilância relacionada aos distúrbios vocais em professores. **Conclusão:** A prática da vigilância em saúde do trabalhador foi evidenciada nesta pesquisa principalmente enquanto identificação dos fatores de riscos associados aos distúrbios vocais em professores, visando à transformação das condições de trabalho e à garantia da qualidade da assistência a esses profissionais como trabalhadores.

Work performed at Universidade Estadual de Ciências da Saúde de Alagoas – UNCISAL – Maceió (AL), Brazil, in partnership with Universidade Federal de São Paulo – UNIFESP – São Paulo (SP), Brazil, and Universidade Federal do Rio Grande do Sul – UFRGS – Porto Alegre (RS), Brazil.

(1) Multidisciplinary Residency in Family Health, Universidade Estadual de Ciências da Saúde de Alagoas – UNCISAL – Maceió (AL), Brazil.

(2) Department of Social and Institutional Psychology, Universidade Federal do Rio Grande do Sul – UFRGS – Porto Alegre (RS), Brazil.

(3) Department of Speech-Language Pathology and Audiology, Universidade Federal de São Paulo – UNIFESP – São Paulo (SP), Brazil.

Conflict of interests: None

INTRODUCTION

Work complements and gives meaning to life and is one of the most important ways to position oneself as an individual, considering that good working condition is a determinant and conditioning factor for good health⁽¹⁾. The interest in investigating the relationship between voice disorders and teaching has grown in recent years. Authors explain teachers' illness by means of changes in work organization and incompatibility between the latter and the actual working conditions⁽²⁾.

Work environment surveillance has been included in the Brazilian Unified Health System (SUS) as one of the component operations of the workers' health surveillance. This action has been structured in the centers, nuclei or in the worker's health programs and has been characterized by the presence of multi-disciplinary teams, which enable the integration of perspectives from various disciplines as well as those from institutions⁽³⁾. The harm to human communication has already been widely described. It should evolve into more detailed knowledge of issues related to risk factors to such alterations, besides the impact of these on the subject's life⁽⁴⁾.

This review will certainly contribute to discussions on the relationship between teaching, health-disease process and teacher's voice, which constitute an indicator of the progress necessary to reorient actions, overcoming fragmentation and dichotomies.

OBJECTIVE

To analyze scientific bibliographic production on the practice of occupational health surveillance related to voice disorders in teachers.

RESEARCH STRATEGY

The Cochrane Handbook precepts⁽⁵⁾ which involved the formulation of the question to be investigated, the location, the studies selection and articles' critical evaluation were followed. The research question that supported the review was the following: „What surveillance practices are being directed to voice disorders in teachers in occupational health?“

Following the research question formulation, the bibliographic research on the central topic of this paper was performed in the PubMed, LILACS, MEDLINE database, and the Cochrane Library. The following Boolean operator AND associated descriptors were used: voice disorders; teachers, occupational health, workers' health surveillance

SELECTION CRITERIA

The study included articles published both in English and Portuguese, from 2000 to 2011, available in full version. This allowed a more detailed analysis of surveillance practices in occupational health related to voice disorders in teachers.

For the selected articles, the following inclusion criteria were used: It should contain at least two of the descriptors and the research subject should be the teacher. The full text

versions which did not relate to the purpose of the research were excluded.

DATA ANALYSIS

Only the studies whose abstracts were related to the purpose of the research were considered and selected, following that, the full versions were obtained. The full versions of the potentially relevant articles to the review were analyzed, using a standardized form when the following data were collected: objectives, research design, characteristics of the study group, obtained results and discussion on the practice of surveillance related to voice disorder.

RESULTS

Initially, 141 studies were identified, however after reviewing the titles and abstracts, considering inclusion and exclusion criteria, verifying consistency with the topic researched and eliminating those which were concurrently in more than one database, 32 articles were effectively analyzed for relating in the findings and/or conclusions to the practice of surveillance related to voice disorders in teachers.

Whilst analyzing the selected articles (Chart 1), it was possible to observe researchers' concern, especially from 2003 onwards, about the use of an instrument to investigate the teachers' working conditions. A cross-sectional study⁽⁶⁾, for example, with 328 teachers from four schools in São Paulo aimed at validating a self-assessment questionnaire for teachers at all educational levels, including, in addition to the clinical symptoms, work organizational factors. Among the results, the study population's work organization and quality of life were portrayed. The authors reported that the instrument was proven satisfactory in the description and elaboration of parameters in order to implement preventive programs for teachers exposed to risks related to the development of vocal disorders. Other Brazilian researchers have also investigated teacher's voice production conditions⁽⁷⁾ and proposed a questionnaire that has been continuously perfected⁽⁸⁾ through its use as a research tool in investigations with other teachers from different levels of education.

Many studies have been conducted in order to investigate the prevalence of voice disorders in teachers, in which working conditions are included in the results. A cross-sectional observational study conducted in 2000⁽⁹⁾ in eight kindergartens in the city of São Paulo, in which actions of a program were being developed, aimed at verifying the prevalence of self-reported voice alteration among educators in daycare and associated factors. The authors concluded that educators' adequate perception of their voice problems might become an important tool for future work with this population in order to reduce the high prevalence of voice disorders.

Among the studies verified, it is observed that an effort to understand the causes of voice disorders in teachers, in order to prevent such problems and promote their health, has been undertaken especially by speech therapists authors. In recent years, discussions have focused on environmental aspects

Chart 1. Contents on surveillance practice of the studies selected for this literature review

| Study | Contents |
|--|---|
| Ferreira <i>et al.</i> ⁽⁷⁾ | Emphasis on the conditions of teacher's vocal production in the municipality of São Paulo. |
| Fuess and Lorenz ⁽¹⁶⁾ | Preventive measures which should include workload reduction and the number of students per class, as well as the treatment of concomitant conditions. |
| Porto <i>et al.</i> ⁽¹⁷⁾ | Identification of the most frequent occupational diseases diagnosed in care provided to teachers. |
| Penteado and Pereira ⁽¹¹⁾ | Themes related to professional voice use by the teacher, establishing relationships between vocal health, voice disorders and work and life conditions. |
| Simões and Latorre ⁽⁹⁾ | Verification of prevalence of self-reported voice alteration among kindergarten female educators and associated factors. Conclusion that the proper perception among female educators concerning their voice problems can become an important tool for future work with this population. |
| Jong <i>et al.</i> ⁽⁴⁰⁾ | Evaluation of vocal complaints and work leave due to teachers' voice problems. |
| Ferreira <i>et al.</i> ⁽⁸⁾ | Presentation of a questionnaire that, due to the high number of teachers who filled it out (almost ten thousand), can be considered a useful and comprehensive tool. It was possible to assess the socio-demographic and occupational questions related to voice, general aspects of health, lifestyle, family history or leisure environment. |
| Ruotsalainen <i>et al.</i> ⁽¹²⁾ | Evaluation of the interventions effectiveness for preventing voice disorders in adults. Conclusion stating that the practice of training to at-risk populations, such as teachers, to prevent the development of voice disorders is not supported by efficiently definitive evidence. |
| Penteado and Pereira ⁽¹³⁾ | Evaluation of the aspects associated with teachers' quality of life and the attempt to establish relationships with vocal health. |
| Kasama and Brasolotto ⁽²⁴⁾ | Verification of the possibility of interference of dysphonia in quality of life being related to the dysphonic vocal autoperception and the perception of pleasantness of these individuals' voice by the community. It was observed that the worst the dysphonic's opinion on the impact of dysphonia on quality of life, the worst was their vocal autoperception. |
| Simões-Zenari and Latorre ⁽¹⁵⁾ | Evaluation of the changes in behavior considered negative to voice during speech therapy intervention program offered to educators. Finding that the changes observed during the program were interesting, but very limited, leading to a reflection on the scope of this type of practice and how broader changes depend not only on small individual changes, which is often recommended. |
| McAleavy <i>et al.</i> ⁽³⁰⁾ | Demonstration of important contributions of psychological and behavioral variables to vocal health. The implications of these results lead to rethinking policy and practice with the intention of identifying preventive actions to improve teachers' vocal health. |
| Macedo, Souza and Thomé ⁽³²⁾ | Verification of the rehabilitation frequency of municipal school teachers, due to voice alteration, in Salvador, addressing more specific issues, such as comparing the frequency of rehabilitation because of dysphonia compared to other health hazards and knowledge of the teachers' profile in rehabilitation due to dysphonia. |
| Fernandes and Rocha ⁽¹⁴⁾ | Investigation of the impact of psychosocial factors on teachers' quality of life in municipal schools in Natal-RN. Finding that teachers with work characterized as active and demanding, were more affected in the areas of quality of life, requiring greater investment in health promotion policies of these workers. |
| Luchesi <i>et al.</i> ⁽⁴³⁾ | Indication of the importance of multidisciplinary interventions in health promotion and prevention of vocal health in teacher and emphasized that it is essential to consider the teacher's point of view to develop an intervention program. |
| Servilha and Roccon ⁽⁴⁵⁾ | Finding that voice presents a low impact on the quality of life of university professors and the physical aspect was the most affected one due to the difficulty of speaking loudly or being heard in noisy environments, problems at work or in following the profession because of voice are the most significant. |
| Santana <i>et al.</i> ⁽⁴⁹⁾ | Stress on the need of incorporation of the surveillance structures in speech therapist's practice, identifying and modifying the risks arising from work activities. Statement that surveillance has to be anticipatory, enabling the delivery of important information for planning actions, ensuring the health care quality to the population of workers. |
| Fabron, Nemr and Giannini ⁽²⁵⁾ | Significance of the efforts made in order to change social and governmental recognition of voice disorder as a disease related to working conditions of professional categories. |
| Alves, Araújo and Neto ⁽²⁶⁾ | Finding that vocal commitment in teaching is related to environmental factors as well as to clinical symptoms associated with rhinitis and gastroesophageal reflux. |
| Gassul <i>et al.</i> ⁽³⁵⁾ | Indication that stress is an important factor related to voice problems in teachers. |
| Ziegler and Gillespie ⁽³⁶⁾ | Revision of the literature on behavioral treatment of voice disorders in teachers. Remark on the fact that, although data on the treatment of voice problems in teachers are still limited in the literature, new trends are observed. |

Chart 1. Continuation

| | |
|--|--|
| Alvear <i>et al.</i> ⁽³⁷⁾ | Study of teachers' vocal complaints, voice standard and impact of voice disorders and psychosocial aspects regarding working conditions. Stress on the importance of interdisciplinary work to shed light on the multifactorial mechanisms and effects. |
| Dragone <i>et al.</i> ⁽⁴¹⁾ | Emphasis on the effects of evaluations of interventions indicating a changing trend of focus that can be helpful in understanding the complex reality of the use of voice in teaching, guide future speech therapy actions and inspire treatment of these individuals. |
| Servilha and Pena ⁽⁴⁷⁾ | Performance of socio-demographic characterization of the environmental and organizational work conditions of teachers and their symptoms which were typified and submitted to descriptive statistical analysis. |
| Zerbetto, Tieko and Zangiacomí ⁽⁴⁶⁾ | Presentation of a high prevalence of vocal symptoms in professors and demonstration of the need for preventive measures and voice guidance to teachers. |
| Servilha and Mestre ⁽⁴⁸⁾ | Detection that teachers' vocal illness began more than four years ago with multiple and intermittent symptoms of moderate degree, resulting from abusive voice use and with privilege of drug treatment. |
| Souza <i>et al.</i> ⁽³³⁾ | Examination of factors associated with the prevalence of referred medical diagnosis of vocal fold pathologies in teachers. The presence of vocal fold pathologies was associated with factors that indicate the need for actions to promote vocal health and changes in the organization and structure of teaching. |
| Ferreira, Latorre and Giannini ⁽³⁴⁾ | Verification of the association between the presence of self-reported voice disorder and aspects related to violence towards teachers. |
| Servilha and Bueno ⁽³⁸⁾ | Highlight of the correlation existent between lifestyle, health and voice problems in the following variables "have already smoked" and "having the last meal 30 minutes before bedtime". |
| Ceballos <i>et al.</i> ⁽³⁹⁾ | Identification of the factors associated with voice disorders in teachers and assertion that teachers aged over 40 years with a family history of dysphonia and weekly workload greater than 20 hours teaching in classrooms with chalk dust are more likely to develop vocal alterations than others. |
| Medeiros, Assunção and Barreto ⁽⁴⁴⁾ | Stress on the fact that demand or lack of it for health care articulates the factors related to other dimensions beyond sickening. |
| Emilse and Servilha ⁽⁵⁰⁾ | Verification of risk factors such as carrying weight, indiscipline in the classroom, constant supervision, inappropriate location for rest and stress in the workplace need to be addressed because of its association with vocal complaints, osteoarticular, emotional and auditory complaints. Emphasis on speech therapist's assistance in vocal preservation and indication of changes that make work more beneficial. |

and those concerning work organization and conditions in the pursuit of broader relations between these, health and quality of life⁽¹⁰⁻¹²⁾. A worrying finding is that teachers demonstrate misperceptions of their health-disease process⁽¹³⁾. Some authors even concluded that teachers whose work is characterized as active and highly demanding were more affected in the areas of quality of life, requiring, thus, greater investment in health promotion policies⁽¹⁴⁾.

One study⁽¹³⁾ had as its focus to evaluate aspects related to teachers' quality of life and seek relationships with vocal health matters in 2002. A sample of 128 high school teachers from four state schools in Rio Claro (SP), Brazil, was studied. Although reasonably satisfied with their voice and quality of life, teachers showed misperceptions of their health-disease process. In their conclusions, the authors mentioned that once speech therapy actions were extended, workshops and voice experience groups would be a social space for possible interventions.

Researchers emphasize that prevention programs are important and should focus on raising professionals' awareness about the problems, early symptoms recognition and guidance on a good vocal hygiene⁽¹⁰⁾. However, the practice of offering training to at-risk populations to prevent voice disorders development does not get the support from definitive evidence on their effectiveness⁽¹²⁾. An experimental study⁽¹⁵⁾,

developed by means of theoretical and practical program, addressing professional vocal use with 26 female educators from two daycare centers in São Paulo, was aimed at evaluating, over speech therapy intervention program offered, changes in behaviors which the literature considered negative to the voice. The study concluded that the observed changes during the program were interesting, nevertheless, very limited, leading to a reflection on the scope of this type of practice and how broader changes do not rely on small individual changes, which is often recommended.

Studies, however, suggest strategies based on the results obtained, as a cross-sectional cohort study⁽¹⁶⁾ with 451 teachers from 66 schools in Mogi das Cruzes (SP), Brazil, which aimed at determining dysphonia prevalence and evaluating factors and symptoms associated. In the conclusions, it was evident that preventive measures should include reducing the workload and the number of students per class as well as the treatment of concomitant conditions.

It is considered that human work has a dual character: it can be a source of fulfillment, satisfaction and pleasure which structures and shapes the subjects' identity process, but it can also become a pathogen element, becoming harmful to health⁽¹⁷⁾. The legislation proposed by the Occupational Health and Safety (OSH), in the European Union, states that understanding work-related health problems should start from

the observation of the interaction between workers, environment and the conditions of their workplace⁽¹⁸⁾. In Occupational Health, the need to have a holistic view of the subject in their relation to work emerges together with the need to consider the political, economic, administrative, logistical, technological, environmental, social, cultural and psychological issues that define the characteristics of work organization and production process which shape social relations in the work contexts in which the worker's health-disease process⁽¹⁹⁾ is developed.

The dimensions of Occupational Health performance are established on three intervention levels: damages, risks and the socio-environmental determinants⁽²⁰⁾. Based on the review conducted, it was observed that the study of the teachers' working conditions in Brazil is a recent approach in the field of professional activities. Starting in 1999, the surveys conducted by the National Confederation of Education Workers (CNTE) in partnership with the Laboratory of Work Psychology at Universidade de Brasília (UNB-LPT), revealed the Portrait of Education in Brazil, mainly the public education, in three series, establishing a relationship between these categories' working conditions and health⁽²⁰⁾.

In the Brazilian public health history, the term invigilator conveys the meaning of monitoring in order to control, and thus to prevent the outbreak of new cases, the transmission of the disease to communicants, i.e., it means to watch in order to prevent transmission, to prevent new cases. Etymologically, the term surveillance (*vigilância*) comes from the Latin word *Vigilare*, meaning something or someone to be closely watched. Originally, surveillance was aimed at recognizing and intervening in environmental factors, predisposing to the disease and observing the first signs of an infection⁽¹⁷⁾ in potentially sick individuals.

It is unacceptable to talk about quality of work without thinking about the environment quality and working conditions as well, which would be greatly aided by the democratization of social relations in the workplace⁽²¹⁾. Thinking about the teacher as a worker implies that the school is seen as an environment with certain structural and organizational features that configure workloads which can be more or less healthy, influencing and determining the health-disease process in the teacher-worker. It is important to monitor the work environment, analyzing the risk factors for the development of diseases in teachers, verifying what actions can be taken to minimize or eliminate such factors⁽²²⁾.

Recurring complaints in the workers' speech are actually common in organizations as a demonstration of dissatisfaction⁽²³⁾. As an isolated fact, however, little is mentioned in studies. In the context of professional voice use, the multiple dimensions of relations established between the teacher and their work are relevant. In the detected studies, self-assessment or self-vocal perception has been highly valued⁽²⁴⁾. A reflective analysis about Voice Seminars, events which earned importance, voice and tradition over the years, held by Pontifícia Universidade Católica de São Paulo⁽²⁵⁾ highlighted that there is a significant advancement in society's attention to the problem in question and in offering professional voice health prevention and promotion programs.

A cross-sectional study⁽²⁶⁾ that included 126 elementary school teachers in municipal schools in Maceió (AL), Brazil, randomly selected, concluded that it is possible to intervene in a direct and simple way in environmental and organizational work factors, which would certainly help reducing the occurrence of work-related pathologies.

Speech-Language Pathology and Audiology, inserted in Occupational Health, has the particularity of being an area that establishes innovative practices in construction, in the pursuit of integral health care and the transformation of the status quo, resulting often in the de-construction of the existing dichotomy between preventive and healing actions and between individual and collective ones. It also seeks to improve and enhance worker's communication, by means of guidance concerning the possibilities of improving environmental conditions and elimination of factors that interfere with communication, promoting a more efficient interaction between the individual and their environment which is seen as essential for one's well-being⁽²⁷⁾.

Occupational Health Surveillance is, more specifically, the set of actions aimed at knowing the magnitude of accidents and work-related diseases, identifying operational risk factors, establishing prevention and control measures and evaluating health services permanently, seeking the transformation of working conditions and ensuring the quality of health care provided to the worker⁽²⁸⁾. The sanitary practice that organizes the work processes in health, in the form of operations, to continuously confront problems in a given territory-population is also related to the concept of Occupational Health Surveillance⁽²⁸⁾. This confrontation requires actions that target the condition and determinants of the issues in a convergent (which includes intersectoral actions), systematic way which has a favorable impact on the quality of life of a population⁽²⁹⁾. It is important to monitor the work environment, analyzing the risk factors for the development of diseases in teachers, verifying what actions can be taken to minimize or eliminate such factors⁽³⁰⁾. Moreover, the importance managers give to vocal wellness is paramount.

A qualitative and exploratory study based on semi-structured interviews was developed in 2011. Its aim was to investigate the importance given to the teachers' vocal wellness during graduation by coordinators of the courses in Education in São Paulo. According to the research participants, in most institutions there are no ongoing prevention programs for the teachers' vocal wellness. It was concluded that, although coordinators have emphasized the importance of vocal wellness in the courses curriculum, which they coordinated, this aspect is not questioned⁽³¹⁾. This is considered very serious, since studies show that voice disorder represents one of the occupational diagnosis responsible for the largest number of teachers leave from their working activities⁽³²⁾.

The presence of self-reported vocal pathologies is associated with factors that point to the need to develop actions that promote teachers' vocal health and changes in the work structure and organization. This need was identified in an epidemiological-based census of a cross-sectional study conducted with 4,495 primary and secondary primary school

teachers in Salvador (BA), northeastern of Brazil, between March and April 2006⁽³³⁾.

It has been noticed, especially in recent years, the authors' concern to verify the association between the presence of self-reported voice disorder and isolated aspects considered important risk factors, such as violence. For instance, in a study, 422 municipal school teachers in São Paulo were selected to fill out a questionnaire containing yes/no questions, which had as its objective to investigate the association between vocal disorder and aspects related to school violence⁽³⁴⁾. It was concluded that the self-reference to the presence of voice disorder is associated with frequent threat situations towards the teacher, assaults, insults and violence at the school entrance gate or against employees, regardless of the variables experience and time performing the profession.

Another aspect that has been widely investigated in the context of teaching is the psychological one. Studies show stress as a major risk factor related to voice disorders in teachers⁽³⁵⁻³⁷⁾.

The interest in investigating the correlation between lifestyle, health problems and voice disorder was also noted, as verified in a study with 51 teachers in a public school in Campinas (SP). Data were analyzed using descriptive statistics and later compared to those provided by teachers who reported voice alteration and those who denied it, in the following variables present in the instrument: health, life habits, leisure and vocal habits. The conclusion was that there was a correlation between lifestyle, health problems and voice disorder in the variables "have already smoked" and "having the last meal 30 minutes before bed"⁽³⁸⁾.

The objective of identifying risk factors, establishing control and prevention measures and evaluating health services, aimed at transforming the working conditions and assuring the quality of health care to the worker, is not only present in the national literature⁽³⁹⁾, but also in the international one⁽⁴⁰⁾. Studies have identified the groups most likely to develop voice disorders, such as teachers with 40 years of age or older with a family history of dysphonia working over 20 hours a week exposed to chalk dust⁽³⁹⁾.

A comprehensive consideration about this review is that the practice within the workers' health surveillance scope related to voice disorders in teachers was consistent and crescent over the period studied. The growing contribution of health/prevention promotion of voice disorders in teachers is supported by the increasing number of speech therapy descriptive studies among teachers and the effects of evaluation of vocal health programs. The characterization of teacher's vocal problem is primarily made through descriptions of signs and symptoms and perceptual-auditory voice analysis. The identification of the conditions of voice use at work in certain population samples gave rise to a series of descriptive studies, with a change of the analysis focus from the subject's voice to the teaching environment and organization. With the completion of this review, it was evident that there is a search for the identification of problems to be minimized in favor of teachers' vocal health.

As noted in another review⁽⁴¹⁾, studies constitute support to the development of public policy proposals for the recognition

of voice disorder as a work-related disease⁽⁴²⁾. We highlight the important development of the document Work-related Voice Disorder which aimed at helping voice professionals in general and, therefore, teachers, in prevention, assistance, rehabilitation, notification and benefits payment. However, there is a need for scientific production increasingly effective in providing consolidated data to support such initiatives^(41,42).

The literature points to the importance of multidisciplinary interventions in vocal health promotion and prevention in teacher and emphasizes that it is essential to consider the teacher's point of view to develop an intervention program⁽⁴³⁾. Furthermore, it is noteworthy that the demand or the lack of it for health care is attached to factors related to other dimensions beyond the illness⁽⁴⁴⁾.

It is also important to highlight the study populations' diversity concerning the educational levels. Professors have been contemplated by investigations especially in recent years^(45,46).

Through this study, it was found that, increasingly, speech therapists authors seek to perform socio-demographic characterization as well as teachers' environmental and organizational working conditions, showing that teachers work in unfavorable working conditions, which can contribute to the intensive and abusive voice use⁽⁴⁷⁾. It was noticed that the identification of vocal alteration process in teachers is contemplating the understanding of the relationship between work and health, according to workers' perspective. The characterization of vocal sickening in teachers currently aims at identifying the intervening factors involved in this process and proposing relevant speech therapy actions in order to preserve the health and quality of life at school⁽⁴⁸⁾.

Authors already point to the need for speech therapists to incorporate surveillance structures to their practice, identifying and modifying the risks arising from work activities⁽⁴⁹⁾. Furthermore, these professionals can assist in vocal preservation and indicate changes that make work more beneficial⁽⁵⁰⁾. They also mention that surveillance should be anticipatory, enabling the delivery of important information for planning actions and ensuring the health care quality to the workers population⁽⁴⁹⁾.

CONCLUSION

The practice of monitoring workers' health was evidenced in this research mainly as identification of risk factors associated with voice disorders in teachers, aimed at the transformation of the working conditions and the assurance of quality of assistance to these workers as professionals. Studies show the importance of prevention and vocal health promotion actions for teachers and emphasize the need for consideration of the voice problems determinant factors in the sense of recognizing that vocal disorder is not determined simply by prolonged or excessive voice use, but that there are other factors contributing to the development of these changes. Based on this research, it is possible to suggest that studies are needed to verify the impact of actions that affect the conditioning and determinant factors of the issues in a convergent, systematic way which will impact teachers' quality of life.

REFERENCES

1. Martinez MC, Paraguay AI, Latorre MR. Relação entre satisfação com aspectos psicossociais e saúde dos trabalhadores. *Rev Saúde Pública*. 2004;38(1):55-61.
2. Smith E, Kirchner HL, Taylor M, Hoffman H, Lemke JH. Voice problems among teachers: differences by gender and teaching characteristics. *J Voice*. 1998;12(3):328-34.
3. Sala E, Laine A, Simberg S, Pentti J, Suonpää J. The prevalence of voice disorders among day care center teachers compared with nurses: a questionnaire and clinical study. *J Voice*. 2001;15(3):413-23.
4. Goulart BN, Chiari BM. Construção e aplicação de indicadores de saúde na perspectiva fonoaudiológica - contribuição para reflexão. *Rev Soc Bras Fonoaudiol*. 2006;11(3):194-204.
5. The Cochrane Collaboration. *Cochrane handbook for systematic reviews of interventions* [Internet]. 2001 [cited 2011 may 11]. Available from: www.cochrane.org/training/cochrane-handbook.
6. Almeida SI, Pontes P, Bussacos MA, Neves L, Zambon FC. Questionário de auto-avaliação vocal: instrumento epidemiológico de controle da síndrome disfônica ocupacional em professores. *Arq Int Otorrinolaringol*. 2010;14(3):316-21.
7. Ferreira LP, Giannini SP, Figueira S, Silva EE, Karmann DF, Souza TM. Condições de produção vocal de professores da prefeitura do município de São Paulo. *Distúrb Comun*. 2003;14(2):275-308.
8. Ferreira LP, Giannini SP, Latorre MR, Zenari MS. Distúrbio de voz relacionado ao trabalho: proposta de um instrumento para avaliação de professores. *Distúrb Comun*. 2007;19(1):127-36.
9. Simões M, Latorre MR. Prevalência de alteração vocal em educadoras e sua relação com a auto-percepção. *Rev Saúde Pública*. 2006;40(6):1013-18.
10. Fortes FS, Imamura R, Hiroshi Tsuji DH, Sennes LU. Perfil dos profissionais da voz com queixas vocais atendidos em um centro terciário de saúde. *Rev Bras Otorrinolaringol*. 2007;73(1):27-31.
11. Penteado RZ, Pereira IM. A voz do professor: relações entre trabalho, saúde e qualidade de vida. *Rev Bras Saúde Ocup*. 2004;25(95/96):109-30.
12. Ruotsalainen JH, Sellman J, Lehto L, Jauhiainen N, Verbeek JH. Interventions for preventing voice disorders in adults. *Cochrane Database Syst Rev*. 2007;17(4):CD006372.
13. Penteado RZ, Pereira IM. Qualidade de vida e saúde vocal de professores. *Rev Saúde Pública*. 2007;41(2):236-43.
14. Fernandes MH, Rocha VM. Impacto dos aspectos psicossociais do trabalho na qualidade de vida de professores. *Rev Bras Psiquiatr*. 2009;31(1):15-20.
15. Simões-Zenari M, Latorre MR. Mudanças em comportamentos relacionados com o uso da voz após intervenção fonoaudiológica junto a educadoras de creche. *Pró-Fono*. 2008;20(1):61-7.
16. Fuess VL, Lorenz MC. Disfonia em professores do ensino municipal: prevalência e fatores de risco. *Rev Bras Otorrinolaringol*. 2003;69(6):70-6.
17. Porto LA, Reis IC, Andrade JM, Nascimento CR, Carvalho FM. Doenças ocupacionais em professores atendidos pelo Centro de Estudos da Saúde do Trabalhador (CESAT). *Rev Baiana Saúde Pública*. 2004;28(1):33-49.
18. Soárez PC, Kowalski CC, Ferraz MB, Ciconelli RM. Translation into Brazilian Portuguese and validation of the work limitations questionnaire. *Rev Panam Salud Publica*. 2007;22(1):21-8.
19. Reis EJ, Carvalho FM, Araújo TM, Porto LA, Silvany Neto AM. Trabalho e distúrbios psíquicos em professores da rede municipal de Vitória da Conquista, Bahia, Brasil. *Cad Saúde Pública*. 2005;21(5):1480-90.
20. Lacaz FA. Qualidade de vida no trabalho e saúde/doença. *Ciênc Saúde Coletiva*. 2000;5(1):151-61.
21. Reyes GM. Morbilidad por laringitis nodular crónica profesional en educadores cubanos. *Rev Cubana Hig Epidemiol*. 2006;44(1):92-6.
22. McAleavy GJ, Adamson G, Hazlett DE, Donegan HA, Livesey GE. Modelling determinants of the vocal health of teachers in Northern Ireland: implications for educational policy and practice. *Public Health*. 2008;122(7):691-9.
23. Dejours C. Addendum: da psicopatologia à psicodinâmica do trabalho. In: Lancman S, Szelwar LI. *Christophe Dejours: da psicopatologia à psicodinâmica do trabalho*. Rio de Janeiro: Fiocruz; 2004. 104 p.
24. Kasama ST, Brasolotto AG. Percepção vocal e qualidade de vida. *Pró-Fono*. 2007;19(1):19-28.
25. Fabron EM, Nembr NK, Giannini SP. Seminários de Voz da PUC-SP: análise da trajetória entre os anos de 1993 a 2009. *Distúrb Comun*. 2010;22(3):241-9.
26. Alves LP, Araújo LT, Neto JA. Prevalências de queixas vocais e estudos de fatores associados em uma amostra de professores de ensino fundamental em Maceió, Alagoas, Brasil. *Rev Bras Saúde Ocup*. 2010;35(121):168-75.
27. Oliveira TC. A Fonoaudiologia pode fazer muito pela saúde do trabalhador. *Jornal do CFFa*. 2000;7:8-11.
28. Machado JM. A propósito da vigilância em saúde do trabalhador. *Ciênc Saúde Coletiva*. 2005;10(4):987-92.
29. Eitas CM. Problemas ambientais, saúde coletiva e ciências sociais. *Ciênc Saúde Coletiva*. 2003;8(1):137-50.
30. McAleavy GJ, Adamson G, Hazlett DE, Donegan HA, Livesey GE. Modelling determinants of the vocal health of teachers in Northern Ireland: implications for educational policy and practice. *Public Health*. 2008;122(7):691-9.
31. Fantini LA, Ferreira LP, Trenche MC. O bem-estar vocal na formação de professores. *Distúrb Comun*. 2011;23(2): 217-26.
32. Macedo CS, Souza CL, Thomé C. Readaptação de professores por disfonia na rede municipal de ensino de Salvador. *Rev Baiana Saúde Pública*. 2008;32(1):72-84.
33. Souza CL, Carvalho FM, Araújo TM, Reis EJ, Lima VM, Porto LA. Fatores associados a patologias vocais em professores. *Rev Saúde Pública*. 2011;45(5):914-21.
34. Ferreira LP, Latorre MR, Giannini SP. A violência na escola e os distúrbios de voz de professores. *Distúrb Comun*. 2011;23(2):165-72.
35. Gassull C, Casanova C, Botey Q, Amador M. O impacto da reatividade ao estresse em professores com problemas de voz. *Folia Phoniatr Logop*. 2010;62(1-2):35-9.
36. Ziegler A, Gillespie AI, Abbott KV. Tratamento comportamental de distúrbios vocais em professores. *Folia Phoniatr Logop*. 2010;62(1-2):9-23.
37. Alvear RM, Martínez-Arqueiro G, Barón FJ, Hernández-Mendo A. An interdisciplinary approach to teachers' voice disorders and psychosocial working conditions. *Folia Phoniatr Logop*. 2010;62(1-2):24-34.
38. Servilha EA, Bueno SS. Estilo de vida e agravos à saúde e voz em professores. *Distúrb Comun*. 2011;23(2):153-63.
39. Ceballos AG, Carvalho FM, Araújo TM, Borges EJ. Avaliação perceptivo-auditiva e fatores associados a alterações vocais em professores. *Rev Bras Epidemiol*. 2011;14(2):285-95.
40. Jong FI, Kooijman PG, Thomas G, Huinck WJ, Graamans K, Schutte HK. Epidemiology of voice problems in Dutch teachers. *Folia Phoniatr Logop*. 2006;58(3):186-98.
41. Dragone ML, Ferreira LP, Giannini SP, Simões-Zenari M, Vieira VP, Behlau M. Voz do professor: uma revisão de 15 anos de contribuição fonoaudiológica. *Rev Soc Bras Fonoaudiol*. 2010;16(2):289-96.
42. Secretaria de Estado de Saúde de São Paulo. Centro de Referência de Saúde do Trabalhador. CEREST-SP. Distúrbios da voz relacionados ao trabalho. *Bol Epidemiol Paul* [Internet]. 2006 [citado 2009 Dez 29]; 3(26):16-22. Disponível em: http://www.cve.saude.sp.gov.br/agencia/bepa26_dist.htm
43. Luchesi KF, Mourão LF, Kitamura S, Nakamura HY. Problemas vocais no trabalho: prevenção na prática docente sob a óptica do professor. *Saúde Soc*. São Paulo. 2009;18(4):673-81.
44. Medeiros AM, Assunção AA, Barreto SM. Alterações vocais e cuidados de saúde entre professoras. *Rev CEFAC*. 2011;22 [Ahead of print]. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462011005000146&lng=en&nrm=iso.
45. Servilha EA, Roccon PF. Relação entre voz e qualidade de vida em professores universitários. *Rev CEFAC*. 2009;11(3):440-8.
46. Zerbetto FM, Tiekos KS, Zangiacomini ME. Qualidade de vida relacionada à voz de professores universitários. *Rev CEFAC*. 2010;12(2):280-7.

47. Servilha EA, Pena J. Tipificação de sintomas relacionados à voz e sua produção em professores identificados com ausência de alteração vocal na avaliação fonoaudiológica. *Rev CEFAC*. 2010;12(3):454-61.
48. Servilha EA, Mestre LR. Adoecimento vocal em professores e estratégias para sua superação. *Distúrb Comum*. 2010;22(3):231-9.
49. Santana MC, Brandão KK, Goulart BN, Chiari BM. Fonoaudiologia e saúde do trabalhador: vigilância é informação para a ação! *Rev CEFAC*. 2009;11(3): 522-8.
50. Servilha EA, Arbach MP. Queixas de saúde em professores universitários e sua relação com fatores de risco presentes na organização do trabalho. *Disturb Comum*. 2011;23(2):181-91.