

Voice disorders in teachers. Implications for occupational health nursing care

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Abstract

Objective. To identify the occupational characteristics and their implications for the occurrence of voice disorders among teachers in early childhood and primary education. **Methodology.** A quantitative and exploratory research was undertaken in a metropolitan city of the state capital of Rio Grande do Sul/Brazil. The sample consisted of 37 teachers from early childhood and primary education. **Results.** All participants were female, with a mean age of 40 years. Seventy-eight percent indicated one or more voice disorders (54% hoarseness, 41% voice cracks, 27% voice loss and 3% coughing). The noisy school environment was identified as a possible triggering factor of the voice disorder in 49% of cases. Forty-six percent of all teachers indicated not doing any treatment in case of voice disorders. The most frequently used specific measures were: medication use (32%) and speech therapy (5%). **Conclusion.** Voice disorders are frequent among the participating teachers and are mainly related to a noisy school environment. It is important for the nurse to intervene, using educative strategies to reduce the risk factors for the vocal health of teachers working in these conditions.

Key words: occupational health nursing; occupational health; voice disorders.

Trastornos de la voz en profesores. Implicaciones para el cuidado enfermero laboral

Resumen

Objetivo. Identificar las características laborales y sus implicaciones en la ocurrencia de trastornos de la voz en profesores de escuelas de enseñanza infantil y fundamental. **Metodología.** Estudio cuantitativo exploratorio realizado en un municipio de la región metropolitana de la capital de Rio Grande do Sul/Brazil. La muestra estuvo compuesta por 37 profesores de escuelas de enseñanza infantil y fundamental. **Resultados.** Todos

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los participantes fueron de sexo femenino y tenían un promedio de edad de 40 años. El 78% refirió presentar uno o más trastornos de la voz (54% ronquidos, 41% fallas en la voz, 27% pérdida de la voz y 3% tos). El ambiente escolar ruidoso fue identificado como posible factor desencadenador del trastorno de la voz en un 49%. Un 46% de todas las profesoras refirió no realizar ningún tratamiento cuando tiene problemas vocales. Las medidas específicas empleadas con más frecuentes fueron: el uso de medicamentos (32%) y la terapia fonoaudiológica (5%). **Conclusión.** Los trastornos de la voz son frecuentes en las profesoras participantes en el estudio, siendo relacionados principalmente con un ambiente ruidoso escolar. Es importante que el enfermero intervenga con estrategias educativas para la reducción de los factores de riesgo para la salud vocal de los profesores en esas condiciones de trabajo.

Palabras clave: enfermería del trabajo; salud laboral; trastornos de la voz.

Transtornos da voz em professores. Envolvimentos para o cuidado enfermeiro trabalhista

■ Resumo ■

Objetivo. Identificar as características trabalhistas e seus envolvimento na ocorrência de transtornos da voz em professores de escolas de ensino infantil e fundamental. Metodologia. Estudo quantitativo exploratório realizado num município da região metropolitana da capital do Rio Grande do Sul/Brasil. A mostra esteve composta por 37 professores de escolas de ensino infantil e fundamental. Resultados. Todos os participantes foram de sexo feminino e tinham uma média de idade de 40 anos. Em 78% se referiu apresentar um ou mais transtornos da voz (54% ronquidos, 41% falhas na voz, 27% perda da voz e 3% tosse). O ambiente escolar ruidoso foi identificado como possível fator desencadeador do transtorno da voz num 49%. Um 46% de todas as professoras referiu não realizar nenhum tratamento quando tem problemas vocais. As medidas específicas empregadas com mais frequentes foram: o uso de medicamentos (32%) e a terapia fonoaudiológica (5%). Conclusão. Os transtornos da voz são frequentes nas professoras participantes no estudo, sendo relacionados principalmente com um ambiente ruidoso escolar. É importante que o enfermeiro intervenha com estratégias educativas para a redução dos fatores de risco para a saúde vocal dos professores nessas condições de trabalho.

Palavras chave: enfermagem do trabalho; saúde do trabalhador; distúrbios da voz.

Introduction

Using one's voice is related to different professionals' work. For some, its use is more required in communication and expressive process,¹ turning it into a theme for the knowledge subarea occupational health. In that context, vocal health is considered a specialized care target, represented by a structured set of knowledge as well as an interdisciplinary research problem. The prevalence of voice disorders among different professional categories is highlighted, including teachers.² Nevertheless, work-related

voice disorders have not been included into the Brazilian Ministry of Health's Occupational Health Protocols, as opposed to Noise-Induced Hearing Loss (NIHL).³

Teaching is one of the most numerous professional categories in terms of voice use⁴ as a work instrument, in the reflexive processes of thinking and acting. That is so because the voice allows the verbal language to turn into communication between teachers and students in the formal or

even informal teaching-learning processes. In these processes, conditions exist that trigger disorders in the oropharyngeal region, like for example: the excessive hour load spent on direct activities with the students; the intensive use of a loud voice as a resource in a noisy classroom; deficient acoustics, ventilation and aeration in the classrooms; the exaggerated number of students in the classroom; stress itself, among others.⁴

Voice disorders, which hamper the transmission of the desired oral message, are called dysphonia.⁵ Its most common symptoms are: hoarseness, cough, sore/burning throat, vocal fatigue, dry throat, voice loss and variation in vocal production.^{5,6} Voice problems lead to the development of hearing changes, including a range of physical and behavioral disorders, such as the presence of humming, dizziness, headache, fatigue, insomnia and stress, capable of provoking the constriction of peripheral vessels. Constriction can induce increased blood pressure, cardiac frequency and gastrointestinal activity. In addition, the need to raise one's voice during group activities in noisy environments can provoke changes in the ability to communicate, directly affecting teachers' health.⁶

In view of the possible voice disorders the professional category under analysis faces, specific care is demanded, as well as studies focused on the work conditions. This requires specific knowledge from occupational health nurses, related to the work conditions that interfere in vocal production. This set of knowledge can support health promotion interventions for teachers through the occupational health clinic. In the literature on teachers' vocal health, nurses still hardly participate as authors. Important studies are available about work conditions and risk factors for voice disorders,⁷⁻¹⁰ enhancing the understanding of these disorders in communication and expressive processes.¹ This study contributes to complement the established knowledge and support occupational health practice. That gives rise to the question: what work characteristics do teachers mention as conditioning factors for the occurrence of voice disorders?

The proposed study is justified, departing from the principle that nurses play an important role in the search for better life and work conditions for workers, in this case teachers. In this perspective, it is relevant to identify the work characteristics and their implications for the occurrence of self-referred voice disorders by public school teachers.

Methodology

A descriptive and cross-sectional study was undertaken, in which voice disorders among teachers were subject to quantitative analysis. The research was developed in a small city (39,685 inhabitants)¹¹ in the metropolitan region of the state capital of Rio Grande do Sul/Brazil, which hosts one of the community service hubs of the *Universidade Federal do Rio Grande – FURG*. The intentional sample comprises 37 teachers active in public early childhood and primary education in that city. The teachers were invited by the University and the Municipal Secretary of Education to participate in a collective health integration workshop between the university and the school community. The study informants complied with the following inclusion criteria: representing teachers from a public school and participating in the collective health integration workshop between the university and the school community.

To collect the data, a closed, self-applied multiple-choice questionnaire was used, which addressed variables related to vocal health, including environmental characteristics of the school, voice disorders and vocal healthcare measures. The questionnaire was adapted from another study¹² and previously validated at the Study Laboratory of Socio-environmental and Collective Health Production Processes. The main researcher and *stricto sensu* post-graduate students were responsible for the application during a health work workshop that was part of the above mentioned integration program between the university and the school community in the city, during the first semester of 2012.

For data organization and quantitative analysis, the software Statistical Package for the Social Sciences (SPSS), version 19.0 was used. To present the results, frequency distributions were shown in absolute figures and percentages, through simple descriptive statistical analysis, weighting the absolute and percentage frequency of the data for their organization and presentation.¹³ Then, the data were grouped in the set of variables corresponding to the study focus – the work characteristics and their implications for the occurrence of voice disorders among public school teachers. All study participants were informed about the study objectives and signed two copies of the Informed Consent Form, which guaranteed their anonymity and information privacy. Authorization for the research was obtained from the Municipal Secretary of Education and approval was received from the Health Research Ethics Committee, under opinion 019/2010.

Results

All teachers were female; the mean age was 39.6 ± 10.1, ranging between 19 and 68 years; 73% were married or lived with a fixed partner and 91.9% self-declared white. As regards education, 45.9% informed they held a post-graduation degree. Concerning the interviewees' time on the job, 51.4% affirmed they work at more than one school for more than ten years. Regarding their professional experience, 62.2% answered they have worked as teachers for more than ten years. With respect to the places where they work, 75.7% indicated working at one school. In terms of work hours per week, 37.8% of the teachers answered that they spend between 30 and 40 hours with the students directly in the classroom (Table 1).

Concerning environmental aspects like dust, ventilation, humidity and temperature at the school, the teachers did not indicate any of these as risk factors for their vocal health. On the other hand, 48.6% identified noise as a possible trigger of voice disorders, coming from the classroom itself according to 32.4% of the interviewees (Table 2).

In the group of teachers, 78.7% indicated some voice disorder, mainly hoarseness (54.1%), voice cracks (41.1%), voice loss (27.0%) and cough (2.7%). Concerning vocal habits, 51.4% of the teachers mentioned that they talk a lot (Table 3). The following voice care measures were indicated: 35.1% mentioned saving their voice when they are not with the students, 18.9% indicated drinking water while using their voice. Among the 37 teachers questioned, none consumed alcohol and tobacco.

Discussion

The intensification of work is very common in the activity routine of early childhood and primary education teachers, mainly when considering their vocal health.¹⁴ One of the characteristics observed in a study¹⁵ is their work at more than one school, in line with the present research, which may be related to the category's low remuneration.⁸ Most professionals indicated gaining more than the baseline salary (R\$ 950.00) established in law No. 11.738, keeping in mind that the Brazilian minimum wage amounted to R\$ 545.00 at the time of the research. This may be directly associated with the intensification of working at more than one school, due to the need to increase their family income.⁸ This is yet another aspect that causes health problems for teachers, as verified in a study¹⁶ that pictures stress in relation to teachers' inappropriate salaries, contributing to vocal problems as an aggravating factor.⁴

Also, excess work can cause dysphonia, as it produces anxiety and stress, which both cause deteriorations in the teachers' voice,¹⁷ as identified in this study. This may be related to the concentration of the weekly hour load in the classroom directly with the students, ranging from 30 to more than 40 hours, and to the fact that most participants have worked in the profession for more than ten years. A similar hour load was reported in a study⁸ that involved primary education teachers, indicating hour loads of more than 30 hours per week, besides the hours spent to prepare classes, correcting student work and

Table 1. Sociodemographic characteristics. City in the metropolitan region of Porto Alegre, RS, 2012

Variable	n	%
Marital status		
Single	7	18.9
Married/Fixed partner	27	73.0
Separated/Divorced	3	8.1
Skin color		
White	34	91.9
Mulatto	2	5.4
Did not answer	1	2.7
Education		
Unfinished secondary education	4	10.8
Unfinished higher education	2	5.4
Finished higher education	7	18.9
Unfinished post-graduate education	7	18.9
Finished post-graduate education	17	45.9
Works at how many schools/institutions		
One	28	75.7
Two	7	18.9
Three	2	5.4
Time of work at the school		
Less than one year	3	8.1
Between 1 and 5 years	10	27.0
Between 5 and 10 years	5	13.5
More than 10 years	19	51.4
Professional experience in teaching		
Less than one year	1	2.7
Between 1 and 5 years	6	16.2
Between 5 and 10 years	6	16.2
More than 10 years	23	62.2
Did not answer	1	2.7
Weekly time spent with students		
Less than 10 hours	5	13.5
Between 10 and 20 hours	8	21.6
Between 20 and 30 hours	3	8.1
Between 30 and 40 hours	14	37.8
More than 40 hours	3	8.1
Income range		
Up to R\$950.00	2	5.4
Between R\$950.00 and R\$1900.00	23	62.2
Between R\$1900.00 and R\$2375.00	10	27.0
Did not answer	2	5.4

Table 2. Presence of noise in the school environment self-referred by teachers. City in the metropolitan region of Porto Alegre, RS, 2012

Origin of noise *	n	%
From classroom itself	12	32.4
From other classrooms	10	27.0
School patio	8	21.6
Street	7	18.9
People's voice	3	20.0
Stereo/TV	2	5.4
Works inside the school	1	2.7
Industry near the school	1	2.7

* Multiple-choice question.

Table 3. Self-referred vocal healthcare measures by teachers. City in the metropolitan region of Porto Alegre, RS, 2012

Care measures	n	%
Voice habits		
Talk a lot	19	51.4
Save one's voice when not with the students	13	35.1
Drink water when using voice in classroom activities	7	18.9
Talk in open-air places	7	18.9
Talk during physical exercises	6	16.2
Raise one's voice in the classroom	3	8.1
Specific treatments against vocal problems		
No treatment	17	45.9
Medication use	12	32.4
Speech therapy	2	5.4
Surgical treatment	0	0.0

* Multiple-choice question.

traveling between one school and the other, with a mean professional experience of 14 years. This aspect justifies the development of vocal problems, which may surface in the future.

Excessive noise represents an aggravating factor of teachers' health, as it makes them raise their voice to make it audible to the students, increasing efforts and vocal fatigue at the end of the day.¹⁸ This is considered a risk factor for dysphonia, as it causes sound competition and the increase of vocal efforts made during classtime.¹⁵ A study¹⁹

evidences that vocal behavior in relation to noise exposure has an individual spectrum in which raising or lowering one's voice is not directly associated with the increase or decrease of the noise, but with individual perceptions, as voices can be raised or lowered in the same noise environment.

The results indicate that voice disorders are present in the teachers' lives, in the form of voice cracks and losses, hoarseness and coughing. In the literature, evidence is provided that ratifies the

reality presented here. In different studies,^{8,9,14} primary education teachers were observed who suffer from dysphonia, hoarseness, weak and shrill voice, voice loss, vocal fatigue, sore throat and voice cracks. Thus, these symptoms reflect vocal exhaustion, generally associated with the teachers' attempt to make themselves understood and their need to control the students in the classrooms, using extreme voice pitch variations. Besides the exhaustion caused, they need to understand that dysphonic voices also impair students' learning. These actions entail changes in the voice muscles, which last the entire workday, cause fatigue and a gradual loss of vocal quality.¹⁵

In order to minimize the damage mentioned, it is important to take care of one's vocal health. It was verified that consuming water while using one's voice was one of the habits the teachers mentioned least, in line with findings from a study²⁰ that involved a different category of teachers, faculty members, demonstrating that this healthy habit for these professionals' activity is not put in practice either. This posture contributes to the triggering of voice disorders,⁵ which can be aggravated by environmental factors like the organization of work and the lifestyle.⁴ Smoking, alcohol consumption and lack of hydration are particularly highlighted, besides inappropriate vocal usage habits, like those presented here – talking a lot, talking during physical exercise, talking in open-air places and yelling. One positive aspect in the teachers' lifestyle is related to the absence of alcohol consumption and smoking habits.

In this study, most respondents reported work-related voice disorders; nevertheless, a minority made reference to treatments. It is important to visit health services for periodical examinations, particularly voice tests in this case, as they can help to identify potential signs and symptoms that can negatively affect the workers' health in the long term.¹⁹ In view of the above, greater care for teachers' vocal health is needed, as talking too much and aloud without drinking water during classes to hydrate the vocal cords, for example, is a harmful factor that can trigger voice disorders.⁵

These conditions reveal the need to prepare teachers to take care of their vocal health, so that they understand the factors that can influence their work routine and, consequently, their life. Individual and collective health prevention and promotion measures regarding teachers' work environment stand out in the intervention spectrum of occupational health nurses. One example is advice in direct negotiations between colleagues and students to constitute less noisy environments in the work context. This fact represents teachers' increased participation in processes to facilitate the organization of their work. The teachers represent an intellectual stimulus that enables them to assess their work environment, considering the actual health conditions, with a view to proposing and even developing technological changes in order to achieve a healthy environment at the school. This condition can permit a focus on the investment policy in continuing education, looking at changes in the work conditions, affecting the teaching-learning process and the teachers' health.

Another point of advice to negotiate on work conditions is health care as a specific occupational health aspect, including the treatment of concomitant problems and monitoring to achieve a precise laryngological diagnosis, in view of evidences related to environmental and social factors involved in the use of one's voice. In that sense, it is underlined that occupational health nurses need to know the work reality of teachers, so as to advise them on how to prevent voice disorders and promote a healthy environment. For this purpose, they can indicate essential care for the sake of vocal health maintenance, helping with reformulations to improve the teachers' health that depart from their daily habits: water consumption for hydration; prevention of thermal shocks on the vocal cords due to food or fluids; maintenance of a healthy and regular diet, avoiding excessive alcohol intake; avoidance of smoking and intensive talking in smoking environments; avoid talking in dry, noisy, open-air or dusty environments, and while writing on the blackboard; avoid talking during flue or allergic conditions, during physical exercise; and avoid

using vocal pitches that are too high or low; attempt not to compete with the noise, assessing its interference in vocal production; during classes, control the students' discipline through attitude and conduct changes, always talking while turned towards them; use class intervals to let one's voice rest.⁵ Another important vocal healthcare aspects found in the literature is the use of microphones in the classroom,²⁰ a strategy that would minimize the vocal effort and, hence, the vocal exhaustion during work hours.

Maintaining the abovementioned habits contributes to the minimization of teachers' voice problems, who need to pay attention to their health since the start of their academic education and throughout their career.²⁰ Thus, they promote their health, wellbeing and mainly the professional pleasure of working in healthy and appropriate conditions, in the individual as well as the school group dimension.

Conclusions

Most teachers indicated voice disorders, related to the noise environment at the school. Knowing in order to avoid or even eliminate vocal health risks involves the intervention of skilled and experienced professionals in the work area, like occupational health nurses. For this to happen, knowledge about teachers' vocal health is needed, which can be obtained through the investigation of collective environmental work conditions and clinical knowledge on individual health conditions. Study limitations are related to the number of professionals investigated and other issues related to the investigated professionals' health within a holistic perspective, like psychosocial factors for example, which can also be associated with vocal health disorders. Despite these limitations, however, the researchers believe that this study contributes to the knowledge area and to occupational health nursing practices in this specific context and in others with similar work conditions.

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