

# Outcomes of teachers away from work for voice disorders, State Secretariat of Education, Federal District, 2009-2010

Desfecho dos professores afastados da Secretaria de Estado de Educação do Distrito Federal por distúrbios vocais entre 2009-2010

Cristine Matos de Souza<sup>1</sup>, Ronaldo Campos Granjeiro<sup>1</sup>, Magda Patrícia de Castro<sup>1</sup>, Ricardo da Cunha Ibiapina<sup>1</sup>, Glauce Maria Gomes Ferreira Oliveira<sup>1</sup>

**ABSTRACT | Background:** Voice is an important working tool for teachers. These professionals are often forced to stay away from work due to voice disorders, resulting in high frequency of sick leaves, function restriction and professional readjustment. **Objective:** To evaluate the epidemiological profile of teacher absenteeism due to voice disorders and the impact of dysphonia on reduction of work activities, function restriction and professional readjustment. **Methods:** A retrospective study of teachers away from work for more than 30 days was performed from January 2009 to December 2010 based on data collected from medical records at State Secretariat of Education, Federal District, Brazil. **Results:** A total of 153 teachers away from work due to dysphonia were analyzed. The highest prevalence of voice disorders corresponded to women (96.7%). Vocal nodules were the most prevalent diagnosis, corresponding to 40% of the vocal lesions. The average time away from work was 120 days. About 55% of the teachers on sick leave were indicated function restriction and remained in that condition for 166 days, on average. In total, 25.5% of the teachers needed professional readjustment, and 73.8% were able to return to the classroom. **Conclusion:** Voice disorders are a frequent cause of sick leaves, resulting in high annual costs. Preventive measures and vocal orientation might significantly reduce the number of teachers with function restriction or requiring readjustment.

**Keywords |** dysphonia; teachers; sick leave.

**RESUMO | Contexto:** A voz é uma importante ferramenta de trabalho para professores. Esses profissionais são frequentemente afastados da docência por distúrbios vocais, repercutindo no grande número de licença médica, restrição de função e readaptação profissional. **Objetivo:** Avaliar o perfil epidemiológico de professores afastados por distúrbios vocais e a repercussão da disfonia na diminuição das atividades laborais, na restrição de função e na readaptação profissional. **Métodos:** Estudo retrospectivo realizado entre janeiro de 2009 e dezembro de 2010, a partir da coleta de dados de prontuários da Secretaria de Estado de Educação do Distrito Federal, sobre os professores afastados por período superior a 30 dias. **Resultados:** Foram analisados 153 professores afastados por disfonia. A maior prevalência de distúrbios vocais ocorreu no gênero feminino (96,7%). Os nódulos vocais predominam no diagnóstico, representando 40% das lesões vocais encontradas. O tempo médio de afastamento foi de 120 dias. Aproximadamente 55% dos professores em licença médica estavam em restrição de função e ficaram em média 166 dias nessa condição. Ao todo, 25,5% dos professores foram readaptados e 73,8% retornaram à sala de aula. **Conclusão:** Adoecimento vocal é uma causa frequente de afastamento profissional, gerando grandes gastos anuais. Medidas preventivas e a consolidação de orientações quanto ao uso vocal reduziriam significativamente o número de professores em restrição ou readaptação de função.

**Palavras-chave |** disfonia; docentes; licença médica.

Study conducted at State Secretariat of Education of the Federal District (Secretaria de Estado de Educação do Distrito Federal - SEE/DF) - Brasília (DF), Brazil.

<sup>1</sup>Otorhinolaryngology Department, Federal District Base Hospital - Brasília (DF), Brazil.

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## INTRODUCTION

Voice is the main means of communication in our society, being fundamental for interactions among individuals. Occupational voice disorders account for a large number of sick leaves, function restriction and readjustment among workers<sup>1,2</sup>.

Dysphonia might be defined as any difficulty in the production of voice due to functional and/or organic damage<sup>3</sup>, and manifests in several ways: hoarseness, fatigue or short breath during phonation, hacking, burning, difficulty for voice projection and dry throat, among others<sup>2</sup>.

Many studies evidenced a strong relationship between voice professionals and voice disorders. Voice is the fundamental work tool for 1/3 of jobs in our society<sup>4</sup>. Among this population of workers, teachers represent the group more prone to voice disorders<sup>5</sup>.

According to Sliwinska-Kowalska et al.<sup>6</sup> and Angelillo et al.<sup>7</sup>, voice disorders are 2 to 3 times more frequent among teachers, being more common among women. These authors further observe that voice disorders represent 25% of work-related diseases and describe the following as significant risk factors: strained phonation, inadequate phonation technique and psychological/emotional aspects<sup>8</sup>. Also other agents directly contribute to the occurrence of dysphonia among teachers, including heavy weekly workload, classroom noise, poor acoustics, anguish and exposure to inadequate environmental temperature and humidity.

The National Institute of Studies and Research (Instituto Nacional de Estudos e Pesquisas – INEP) performed in 2009 a survey of teachers in Brazil and found that there were almost 2 millions at public schools alone. The National Consensus on Professional Voice (2004) found that 2% of active teachers were away from the classroom due to sick leave, function restriction or professional readjustment, while the annual cost of voice disorders was over BRL 200 millions<sup>9</sup>. A consolidated voice prevention program<sup>10</sup> might allow for early detection of dysphonia, based on the work of and orientation provided by a multi-professional staff.

More than 29,000 medical certificates were issued in the Federal District (Distrito Federal – DF) in 2014, while the number of employees allocated to the local Secretariat of Education is about 35,000. According to a report published by the National Council of State Administration

Secretaries (Conselho Nacional de Secretários de Estado de Administração – CONSAD) the rate of sickness absenteeism was about 48% for DF civil servants in 2011<sup>11</sup>. Investment in educational, preventive or therapeutic interventions might significantly reduce the cost of the days teachers are forced to spend away from the classroom.

The present study assessed the profile of teachers away from the classroom, with special emphasis on the most prevalent voice disorders, average age at the time of interrupting work in the classroom, and average length of sick leaves, function restriction and readjustment.

## METHODS

In the present retrospective study we analyzed data extracted from the DF State Secretariat of Education labor records relative to teachers who remained more than 30 days away from work due to dysphonia (ICD R49) from January 2009 to December 2010. The study, no. 17032713.7.0000.5553, was approved by the research ethics committee of Health Sciences Teaching and Research Foundation (Fundação de Ensino e Pesquisa em Ciências da Saúde – FEPECS).

An objective form was used for data collection, the parameters considered were: age, sex, weekly working hours, date of hiring, diagnosis, date of onset and end of sick leave, date of onset and end of function restriction and date of return to work and professional readjustment.

Diagnosis of laryngeal disorders was based on analysis of video laryngoscopy reports issued by several otorhinolaryngologists. We only had access to the test reports as included in medical records, but not to the corresponding images. Different cameras were for used for taking the images analyzed in the reports, because the patients performed the video laryngoscopy tests at various otorhinolaryngology services available in DF.

Data analysis was performed using software IBM SPSS 20 (2011). First we performed descriptive statistics of the considered variables based on graphics and frequency tables. Next we tested the normality of numerical variables (current age, age at the time of interrupting work, time away from work, duration of function restriction and duration of readjustment) by means of the Lilliefors test. Such variables were analyzed by means of non-parametric tests.

Correlation between numerical variables were analyzed by means of Spearman's non-parametric correlation test. The significance level was set to 5% in all the analyses, i.e., results were considered to be significant when  $p < 0.05$ .

## RESULTS

The sample comprised 153 teachers from both sexes from the DF State Secretariat of Education, who taught several subjects; 148 (96.7%) were female and 5 (3.3%) were male, and their average age was 41 years old (minimum: 28, maximum: 62 years old). About 90.2% of the teachers worked 40 hours a week and 1.2% had a 20-hour workweek; this information was missing for 8.5% of the sample.

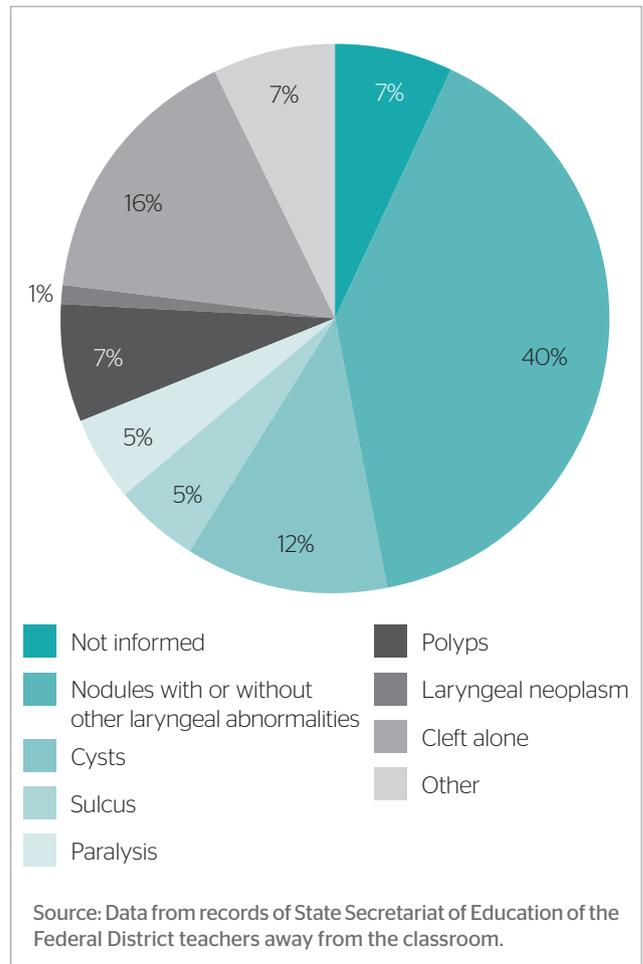
Vocal cord nodules was the most frequent voice disorder described in the video laryngoscopy reports, corresponding to 40% of the sample; in 27% of the cases they were associated with hourglass deformity, and in 13% to other and less frequent structural laryngeal abnormalities (Graphic 1).

All the teachers were on sick leave for voice disorders for a period of 30 days. The possible outcomes on the first medical assessment were: return to work in the same position, prolongation of sick leave or return to work with restriction of activities in the classroom. In turn, the possible outcomes on the last medical assessment were: return to work in the same position or professional readjustment (after a period of 12 months away from work). One teacher retired for length of service within the study period.

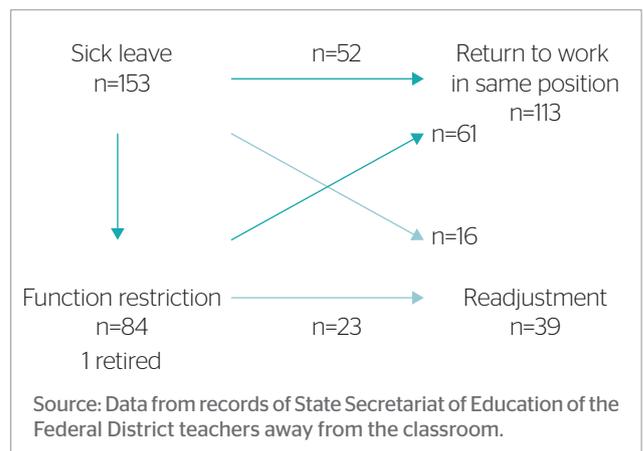
Therefore, the sample comprised 153 teachers on sick leave, among whom 113 (73.8%) returned to work in the classroom, 39 (25.5%) underwent professional readjustment and 1 retired for length of service. Eighty-four teachers (54.9%) were initially indicated function restriction, then 23 underwent readjustment and 61 returned to work in the same position (Figure 1).

Relative to the total number of teachers, association of vocal cord nodules and hourglass deformity accounted for the largest number of sick leave days. This condition was the most prevalent (27%) and accounted for a total of 4,534 sick leave days. The average length of sick leaves was 113 days.

Seven out of the 153 teachers had to interrupt work due to vocal fold paralysis, and 2 due to laryngeal tumors.



**Graphic 1.** Distribution of voice disorders found in video laryngoscopy reports included in records of teachers from the State Secretariat of Education of the Federal District.



**Figure 1.** Initial distribution and outcomes of State Secretariat of Education of the Federal District teachers on sick leave for dysphonia.

These disorders accounted for the longest sick leaves, which is explainable as a function of the greater severity of these conditions (227 and 413 days, on average, respectively). Two among these 9 teachers returned to work in the classroom and 7 required readjustment.

For the 39 teachers subjected to readjustment (25.5% of the sample), the average time from sick leave to readjustment was 319 days. The average length of function restriction (54.9% of the sample) was 166 days. The average time the teachers with voice disorders were away from work was 120 days (Table 1).

Relative to the sick leave length, 86% of the teachers were away from work for up to 6 months (Graphic 2).

**Table 1.** Average number of days away from work of teachers due to sick leave, function restriction or readjustment.

Variable	N	Minimum	Maximum	Mean	SD
Sick leave length (days)	153	3	623	120.7	92.9
Function restriction duration (days)	84	19	771	166.6	136.1
Time to readjustment (days)	39	19	695	319.6	177.1

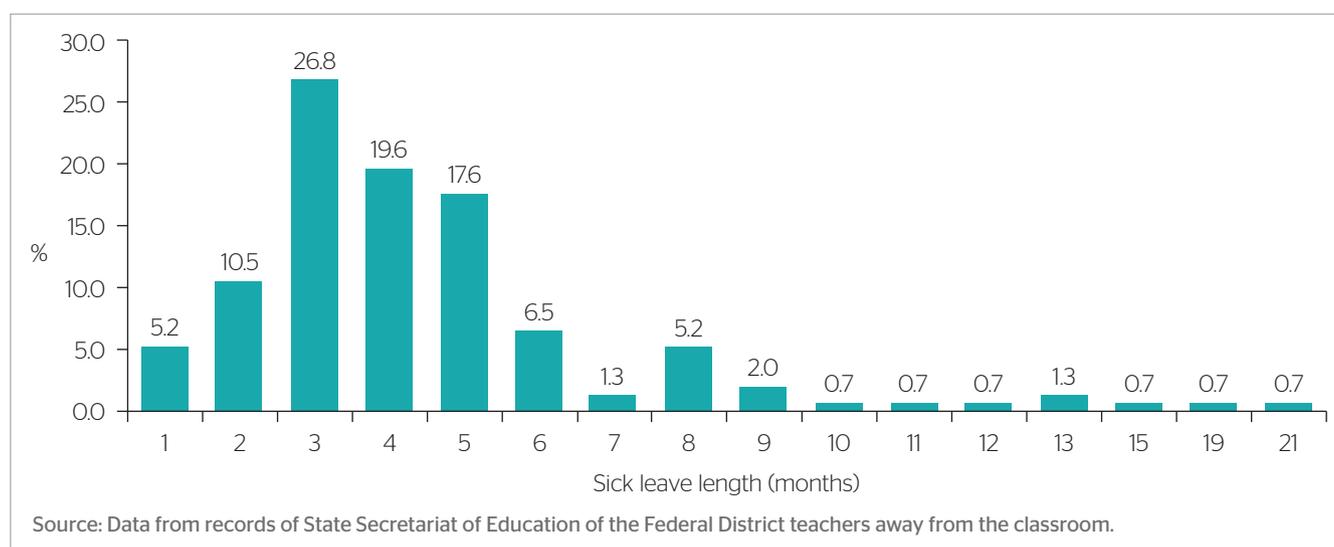
Source: Data from records of State Secretariat of Education of the Federal District teachers away from the classroom.

## DISCUSSION

Voice is an important work tool for teachers<sup>10</sup>, and the main means of expression for human beings. Dysphonia is a frequent cause of absence from work, especially as a function of voice abuse and the working conditions in the classroom. Dysphonia accounts for long sick leaves, function restriction and readjustment<sup>1,2</sup>.

The results of the present study showed higher prevalence of dysphonia among the female teachers, which agrees with the observations made by Sliwinska-Kowalska et al.<sup>6</sup> and Angelillo et al.<sup>7</sup>. Many factors are associated with this phenomenon, including: 1:1 glottic proportion, wider anterior commissure angle — resulting in greater collision of the vocal folds during phonation, lower concentration of hyaluronic acid in the superficial layer of the lamina propria and higher fundamental frequency by comparison to men<sup>12</sup>. In addition to the anatomical factors, also work-related (too long weekly working hours, loud environmental noise, poor classroom acoustics, inadequate environmental temperature and humidity) and psycho-emotional aspects are associated with development of voice disorders.

The most prevalent diagnosis was vocal cord nodules (alone or associated with other laryngeal abnormalities) corresponding to 40% of the sample. This finding corroborates the notion that phonotrauma is more frequent among voice professionals, as they are mainly due to improper use



**Graphic 2.** Percent distribution of State Secretariat of Education of the Federal District teachers per length of sick leaves due to dysphonia.

or abuse of voice<sup>13</sup>. The results of the present study showed that association of vocal cord nodules with hourglass deformity led to an average of 113 days away from work in the classroom. This problem usually affects the area of the junction of the anterior and middle thirds of the vocal folds, where the amplitude of vibration is highest and consequently is exposed to considerable friction during phonation<sup>5</sup>. This type of injury might be avoided or reduced via specific orientation provided by a multi-professional staff.

One of the limitations of the present study derives from the fact we only had access to the video laryngoscopy results. The tests were performed by different otorhinolaryngologists, for which reason our analysis of the results was subjective. Different types of clefts and structural lesions were described in the reports, the most frequent lesion being association of nodules and hourglass deformity (27%).

Sick leaves lasted 120 days, on average, independently from the vocal disorder exhibited by the teachers. About 86% of the sample remained away from work for less than 6 months. Eighty-four out of the 153 teachers were indicated function restriction and remained in this condition for 166 days, on average, before they returned to their previous position or

underwent readjustment. A total of 113 teachers returned to work and 1 retired within the study period. A total of 39 participants underwent readjustment, corresponding to 25.5% of the sample; the average time from sick leave to readjustment was 319 days.

The data collected in the present study point to the significant impact of the absence<sup>14</sup> of teachers from work. Brazil spends about BRL 200 millions per year in sick leaves of teachers with voice disorders<sup>9</sup>. Prevention is the best approach to significantly reduce phonotrauma, and thus reduce the annual expenses derived from improper use of voice.

## CONCLUSION

The present was the first study that drew the epidemiological profile of DF State Secretariat of Education teachers away from the classroom for more than 30 days due to voice disorders.

The high rates of absenteeism among teachers result in high annual expenses, which might be reduced by investing on educational, preventive and/or therapeutic interventions.

## REFERENCES

1. Da Costa V, Prada E, Roberts A, Cohen S. Voice Disorders in Primary School Teachers and Barriers to Care. *J Voice*. 2012;26:69-79.
2. Servilha EAM, Ruela IS. Riscos ocupacionais à saúde e voz de professores: especificidades das unidades de rede municipal de ensino. *Rev CEFAC*. 2010;12:109-14.
3. Jardim R, Barreto SH, Assunção AA. Condições de trabalho, qualidade de vida e disfonia entre docentes. *Cad Saúde Publ*. 2007;23:2439-61.
4. Vilkmann E. Occupational safety and health aspects of voice and speech professions. *Folia Phoniatr Logop*. 2004;56:220-53.
5. Smith E, Lemke J, Taylor M, Kirchner LH, Hoffman H. Frequency of Voice problems among teachers and other occupations. *J Voice*. 1998;4:480-8.
6. Sliwinska-Kowalska M, Noebudeck-Bogusz E, Fiszler M, Los-Spychalska T, Kotylo P, Sznurrowska-Przygocka B, et al. The prevalence and risk factors for occupational voice disorders in teachers. *Folia Phoniatr Logop*. 2006;58:85-101.
7. Angelillo M, Di Maio G, Costa G, Angelillo N, Barillari U. Prevalence of occupational voice disorders in teachers. *J Prev Med Hyg*. 2009;50:26-32.
8. Park K, Behlau M. Perda da voz em professores e não professores. *Rev Soc Bras Fonoaudiol*. 2009;14:463-9.
9. Academia Brasileira de Laringologia e Voz. 3º Consenso Nacional sobre Voz Profissional. *Voz e trabalho: uma questão de saúde e direito do trabalhador*. Vox Brasilis. 2004;68.
10. Granjeiro RC. Manual de Saúde e Segurança do Trabalho. Brasília: SEAP; 2012. p.127-33.
11. Araújo L, Ribeiro MVR. Absenteísmo: doença entre Servidores Estatutários estaduais. 2014 [cited on 2015 Dec 10]. Available from: [http://consad.org.br/wp-content/uploads/2013/08/Consad\\_Relat%C3%B3rio\\_Final\\_Consolidado\\_Revisado-08.2014.pdf](http://consad.org.br/wp-content/uploads/2013/08/Consad_Relat%C3%B3rio_Final_Consolidado_Revisado-08.2014.pdf)
12. Smith E, Kirchner HL, Taylor M, Hoffman H, Lemke JH. Voice Problems Among Teachers: Differences by Gender and Teaching Characteristics. *J Voice*. 1998;12:328-34.
13. Fuess VLR, Lorenz MC. Disfonia em professores do ensino municipal: prevalência e fatores de risco. *Rev Bras Otorrinolaringol*. 2003;69:807-12.
14. Daniel E, Koerich CRC, Lang A. O perfil do absenteísmo dos servidores da prefeitura municipal de Curitiba, de 2010 a 2015. *Rev Bras Med Trab*. 2017;15:142-9.

Corresponding address: Cristine Matos de Souza - Rua dos Jasmins, casa 6 - Ponte D'Areia - CEP: 65077-540 - São Luís (MA), Brazil - E-mail: [cristinematoss@gmail.com](mailto:cristinematoss@gmail.com)