Behavioral Dysphonia and Depression in Elementary School Teachers

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Summary: Objective/Hypothesis. To verify the relationship between behavioral dysphonia and current depressive episodes in municipal elementary school teachers. We hypothesize that teachers with behavioral dysphonia will be more susceptible to psychiatric disorders.

Design. Cross-sectional study, quantitative, conducted across municipal schools in both rural and urban regions of Pelotas.

Method. Five-hundred seventy-five teachers from urban and rural areas of the same Brazilian state were included. The full version of the Voice Handicap Index validated into Brazilian Portuguese was used to determine the presence of behavioral dysphonia. A profile of vocal behaviors was also used to quantify the number of phonotraumatic events. In addition, the Mini-International Neuropsychiatric Interview was used to determine current episodes of depression. Data were analyzed via correlative studies using chi-square and Poisson regression analyses.

Results. Across all teachers, the prevalence of dysphonia was 33.9% and 55% reported that they had already taken a leave because of their voice. Those teachers with a current depressive episode had a higher rate of dysphonia compared with those without depression (prevalence ratio [PR] 1.66; $P < 0.000$). Teachers who presented with a risk of serious vocal problems had a prevalence ratio of 2.58, indicating a greater proportion of dysphonia, whereas teachers classified as champions of abuse were five times more likely compared with those teachers with behaved or candidates for voice problems.

Conclusions. There is an association between behavioral dysphonia and current depressive episodes in elementary school teachers.

Key Words: Dysphonia–Depression–Faculty.

INTRODUCTION

Teachers are inherently more likely to present with voice problems.[1–4] A myriad of factors related to work and voice use contribute to the overall vocal health of this challenging population. The voice is essential for communication, one of the main ways to transfer ideas and thoughts, and for teachers, it is a vital tool of the trade. A seminal study from the United States showed a high incidence of voice disorders in teachers when compared with the general population.[5] Similar findings were reported in a recent study of teachers in 27 Brazilian states; 63% of teachers reported that they have had a voice problem compared with 35% of the general population.[1]

Several risk factors may contribute to the increased likelihood of voice disorders in teachers. These factors include (1) physical factors such as inadequate acoustics and increased class size, (2) chemical factors such as dust and smoke exposure, and (3) ergonomics such as continuous voice use at increased intensity.[1,6] Furthermore, increased occupational demands, unsatisfactory teaching environments,[7] poor work organization, daily stresses, few opportunities for vocal rest,[8] and decreased social status and remuneration leading to professional frustration[9] may contribute to dysphonia[9,10] as well as issues related to overall psychological well-being in teachers[11]

In this population, dysphonia may lead to absence from work resulting in financial and social losses.[13] Vocal complaints in this population are likely related to difficulty in producing natural voice.[12] Specifically, altered vocal quality (hoarseness, instability, or as vocal fatigue or effort), difficulties in breathing control, tension, reduced vocal projection, and discomfort during speech have been reported.[1,9,10,12,14,15] Absenteeism can be the result of worsening symptoms.[1,3,7,16,17]

The current literature suggests an emotional component to dysphonia.[2,10,14,16] Although emotional issues with regard to voice production and specifically with regard to employment, has been discussed, these aspects have not received adequate attention through a structured approach with teachers from multiple locations. A recent finish study suggested that stress arising from work conditions may increase vocal symptoms in teachers and have a negative influence on emotional aspects of their occupation.[3] Similarly, major depressive episodes and generalized anxiety disorders were more prevalent in teachers with vocal disorders.[2] A recent review indicated a strong association between functional dysphonia and psychosocial symptoms as those present in depressive episodes.[18] Therefore, the aim of the present study was to investigate the relationship between behavioral dysphonia and depression in primary school teachers.

METHODS

The present study was approved by the Ethics Committee of the Catholic University of Pelotas under the protocol number

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2011/29. The teachers were informed of the study objectives, and all signed a "Statement of Consent."

A cross-sectional quantitative study was performed including municipal schools in both rural and urban area of Pelotas, a city in southern Brazil with more than 330 000 inhabitants; 83% of the population resides in urban areas. The city has 214 educational institutions including state, municipal, federal, and private institutions serving preschool, primary, and secondary children. The present study included municipal elementary schools as they serve the largest number of children (103 schools). The study population included 2194 elementary school teachers (Department of Education of Pelotas-RS); 84.46% taught in urban schools and 15.54% in rural schools. The final study sample was developed via stratified random sampling which involved a raffle of 556 teachers from urban schools and 106 teachers from rural schools.

Sample size was calculated based on the magnitude of effect of Voice Handicap Index (VHI)[19] (minimum difference of outcome between teachers with and without psychiatric disorder, which was found in a pilot study = 9 points × 0.3) with a standard deviation of 15.5 points, confidence interval of 95%, and a statistical power of 80%. This analysis confirmed that 551 teachers were necessary. In addition, this sample was inflated by 20% to control confounding factors, losses, and refusals, resulting in a total of 662 teachers invited to participate. Physical education teachers were excluded from the sample as their educational characteristics differ considerably from classroom teachers. However, due to the lack of information regarding the number of physical education teachers in the registry of municipal teachers, a total of 633 teachers were invited to participate in this study. Fifty-eight subjects did not agree to participate or did not respond adequately the instrument and were considered refusals or losses. This led to a final sample of 575 teachers; 31 schools were visited, 18 urban and 13 rural (Fig. 1).

The research team included two academics from the "Centro de Ciências da Vida e da Saúde da Universidade Católica de Pelotas", who identified teachers and implemented the instruments after specific training and supervision by the primary author. In addition, a pilot study was conducted in two schools; one in an urban area (n = 20) and the other in a rural area (n = 22). The aim was to train the investigators in the instruments as well as the logistics of the present study. Structured interviews and a self-administered questionnaire containing questions related to sociodemographic data, environmental, behavioral, and emotional factors, such as voice use, were used. Socioeconomic status was measured via the economic indicator instrument for Brazil, based on the 2000 census–IEN.[20] The sample was divided into three equal groups and classified into lower, intermediate, and higher socioeconomic status. The evaluation of alcohol consumption was conducted by using the Cut down - Annoyed - Guilty - Eye opener test (CAGE) questionnaire previously validated by Masur and Monteiro.[21] This questionnaire involves four questions to assess alcohol abuse or dependence.

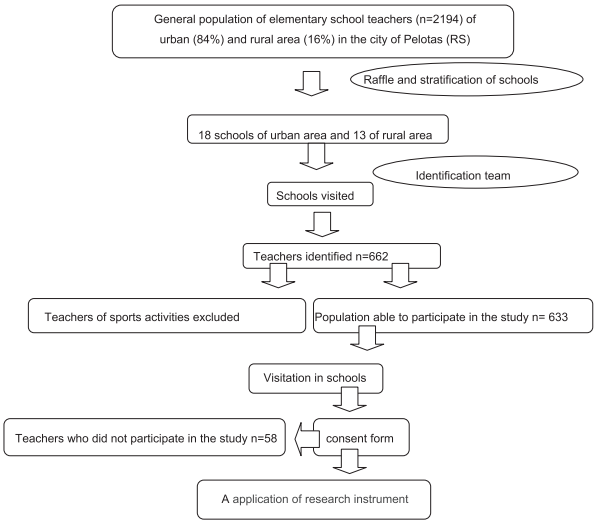

FIGURE 1. Flowchart of the study design and data collection.

To measure current depressive episodes, Module A of the Mini-International Neuropsychiatric Interview (MINI)[22] was used. This instrument includes a brief standardized diagnostic interview to assess mood disorders and is intended for use in clinical practice and research to objectively classify subjects according to the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV) and International Statistical Classification of Diseases and Related Health Problems 10th Edition (ICD-10) criteria. The MINI 5.0, translated into Portuguese, was used in the present study. This instrument was developed for use in primary care and clinical trials. It consists of independent modules, which reduce the interview duration. All sections begin with questions that explore obligatory criteria for a diagnosis, which allows for diagnosis exclusion in cases of negative responses.

To analyze vocal characteristics, the Vocal Behavior Profile adapted by Villela and Behlau (1999)[23] was used. This instrument consists of 28 questions to identify situations of abuse, bad vocal use, and adverse conditions to vocal health. Scoring is as follows: 0 points indicates never; one point, rare occurrence; two points, lower frequency; three points, high frequency and four points, constant. Scores were tallied, and subjects are stratified into groups: the "behaved" (up to 15 points), "the candidate to voice problems" (16–30 points), "serious risk" (31–50 points), "the champion of abuse" (51 points or more).

Finally, dysphonia was quantified via the VHI, validated in Brazilian Portuguese by Behlau et al.[24] This instrument contains 30 questions that describe the vocal experience and the effect of the voice on daily activities. The VHI yields four scores, including one of total handicap (Cronbach's alpha = 0.888). To calculate the total score, the subscores are combined with a maximum score of 120. To determine dysphonia, the cutoff score of 19 was considered; this score was used based on a previous validation study performed in Brazil to characterize the psychometric proprieties of the instrument.[25] None of the participants underwent an otorhinolaryngology evaluation to confirm the presence and the type of dysphonia. We chose to cautiously use behavioral dysphonia to determine the vocal injury. All teachers with an impairment of vocal and/or psychological deficits were referred to treatment.