

# Vocal Tract Discomfort and Risk Factors in University Teachers

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**Summary: Objectives.** To characterize the presence of and risk factors for throat pain or irritation among male and female university teachers in private institutions within the city of São Paulo.

**Study Design.** This is a cross-sectional survey.

**Methods.** Voice self-evaluation forms prepared by the Brazilian Ministry of Labor were administered to 846 university teachers in a private institution in the city of São Paulo, Brazil.

**Results.** The prevalence of throat pain or irritation was 50.8% and was higher in the women (62.7%) than in the men (43.5%). The prevalence of throat pain or irritation was higher among professionals  $\leq 60$  years old and among those who spent most of their time teaching compared with those who spent most of their time performing other professional activities. Other factors, such as noise and sound competition, air pollution, stress and anxiety, personal habits, and lifestyle/quality of life, were related to the presence of throat pain or irritation.

**Conclusions.** University teachers demonstrated a high prevalence of throat pain or irritation. Factors such as age  $\leq 60$  years, female gender, time-consuming professional activities, noise and sound competition in the work environment, stress and anxiety, air pollution, access to water, personal habits, and lifestyle/quality of life were related to the presence of throat pain or irritation.

**Key Words:** Teachers–Dysphonia–Risk factors.

## INTRODUCTION

Many recent studies on professional voice have focused on teachers. These studies warn of the adverse effects that voice problems have on work performance<sup>1,2</sup> and suggest that teaching is associated with a high risk of work-related vocal problems.<sup>1,3,4</sup> University teachers should be included in these studies because of the considerable cultural and social similarities between university teachers and teachers in other work environments.<sup>5</sup>

The term occupational dysphonic syndrome (ODS), which describes functional dysphonia in a professional voice user, was created in 2010 by Almeida and Pontes.<sup>6</sup> There are five symptoms of ODS: (1) hoarseness; (2) pain or irritation in the throat; (3) neck pain; (4) foreign body sensation; and (5) clearing of the throat. In the same year, Almeida et al (2010)<sup>7</sup> observed some ODS-related symptoms in a group of university teachers (the prevalence ranged from 31 to 54%).

In a systematic review, Cantor Cultiva et al (2013)<sup>8</sup> found wide variation in the prevalence of voice disorders and cited that this variation may be caused by the use of such generic terms as “vocal complaints” and “vocal symptoms” to describe these disorders.

Thus, it is of interest to use the voice self-assessment survey reformulated by the Ministry of Labor of Brazil, which examines each ODS symptom to obtain an epidemiologic profile of vocal complaints and risk factors in university.<sup>5</sup>

Recently, we performed a study to assess the presence of risk factors for a specific symptom of ODS, that is, hoarseness, among 846 university teachers at a private institution using a self-evaluation survey prepared by the Brazilian Ministry of Labor.<sup>9</sup> We concluded that university teachers have a high prevalence of hoarseness (39.6%) and that factors such as teaching time, female gender, work organization, noise and sound competition in the work environment, air pollution–related stress and anxiety in the work environment, tension, personal habits, and lifestyle/quality of life are related to the presence of hoarseness in this population.<sup>5</sup>

In this study, the same voice self-evaluation survey was used to obtain an epidemiologic profile of throat pain or irritation and the associated risk factors in the same sample of university teachers. Rodrigues et al (2013)<sup>10</sup> drew attention to the lack of studies examining vocal tract discomfort among professional voice users, especially teachers.

The objective of this study was to characterize the presence of risk factors for throat pain in male and female university teachers in private institutions within the city of São Paulo.

## METHODS

This cross-sectional study was reviewed by the Research Ethics Committee of the Federal University of São Paulo (UNIFESP) and was authorized by the Universidade Paulista (UNIP), from which the data were collected.

Voice self-evaluation forms, which were prepared by the Brazilian Ministry of Labor, were completed during a 1-month period in 2007 by 846 university teachers working in various positions at a private institution in the city of São Paulo. The response rate was 86%.

To reduce differences in the interpretations of the self-evaluation survey, we surveyed cultural, social, and regional viewpoints among a homogeneous group; that is, teachers

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who had undergone graduate education and were subject to the same work shifts at a single institution under the same environmental conditions in a single city.

The variables related to throat pain or irritation during teaching were selected from the self-evaluation forms and grouped as follows:

- Identification variables: age, gender, and teaching time;
- Work organization variables: number of institutions worked at, maximum workload during the week, class length, time between classes, maximum number of students per classroom, other professional activities, voice use in other professional activities, and time-consuming professional activities;
- Workplace variables: noise in the classrooms, air pollution, stress and anxiety related to a specific activity, and the water supply at the institution;
- Voice care variables: use of medication for the throat or voice, medical consultations made for vocal symptoms, and degree of difficulty during teaching;
- Personal habits and lifestyle/quality of life outside the institution: voice use, stress and anxiety, water consumption/hydration habits, diet, body weight, smoking, alcohol consumption, use of other drugs, continuous use of medication, physical activity, and health care.

Differences in the prevalence of throat pain or irritation pertaining to each variable were considered. Statistical analyses were performed using the statistical package *SPSS* for Windows Version 13.0 (Statistical Package for the Social Sciences). A Student *t* test was used to compare the rates of throat pain or irritation for the numeric variables, the chi-square test was used to compare the categorical variables of throat pain or irritation, and Fisher exact test or a likelihood ratio test was used when necessary. A significance level of 5% ( $P$  value < 0.05) was used.

## RESULTS

The incidence of throat pain or irritation in the 846 university teachers was 50.8% (45.5% did not have throat pain or irritation, and 3.7% did not answer this question).

### Identification variables

The prevalence of throat pain or irritation was higher among the women (62.7% vs 43.5% among the men; Figure 1) and among the participants aged  $\leq 60$  years (Figure 2). In addition, the

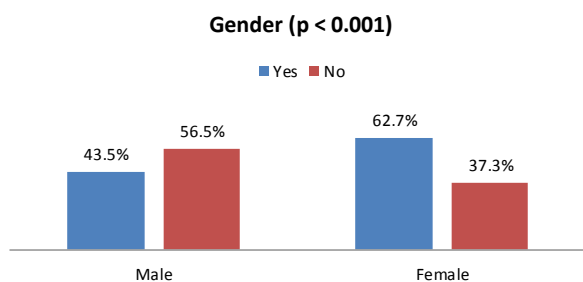


FIGURE 1. Pain or irritation in the throat, by gender.

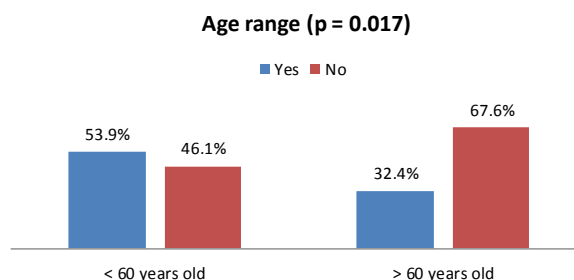


FIGURE 2. Pain or irritation in the throat, by age.

prevalence of throat pain or irritation in people aged  $\leq 60$  years and  $> 60$  years was 53.9% and 32.4%, respectively.

No significant difference in teaching time was observed between subjects with and without throat pain or irritation (Table 1).

### Work organization variables

No significant differences were observed in the prevalence of throat pain or irritation for the variables “number of institutions where you teach,” “maximum workload during the work-week,” “duration of the most frequent classes,” “minutes of break time,” “maximum number of students per classroom,” and “other professional activities besides teaching” (Table 2).

The prevalence of throat pain or irritation was significantly higher among the professionals who spent most of their time teaching compared with those who spent most of their time performing other professional activities (Table 2).

### Workplace variables

The percentage of professionals experiencing throat pain or irritation was significantly higher among those who worked in annoying and unbearably noisy environments (Figure 3).

The prevalence of throat pain or irritation was significantly lower among those who worked in a clean, cool, and airy environment compared with those who worked in a slightly, moderately, or heavily polluted, hot, cold, stuffy, or windy

TABLE 1.  
Presence of Symptoms of Vocal Tract Discomfort Related to Identification Variables

Pain or Irritation in the Throat	Symptoms		Total	<i>P</i> Value
	Yes	No		
Number of years in the profession				
$\leq 1$ y	7 (29.2)	17 (70.8)	24 (100)	0.109*
Between 1 and 5 y	103 (51.2)	98 (48.8)	201 (100)	
Between 5 and 10 y	129 (53.1)	114 (46.9)	243 (100)	
Between 10 and 20 y	129 (57.1)	97 (42.9)	226 (100)	
>20 y	61 (56)	48 (44)	109 (100)	
Total	429 (53.4)	374 (46.6)	803 (100)	

\* Chi-square test.

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