

Epidemiological Study of Voice Disorders Among Teaching Professionals of La Rioja, Spain

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Summary: The purpose of the present study was to calculate the prevalence and incidence of voice disorders among teaching staff and find out the associated occupational risk factors. A case-control study was performed with 905 teachers, 579 cases and 326 controls; 492 were randomly selected and 413 volunteered. All teachers were asked to fill out a standard questionnaire. Next, a complete laryngeal exam was performed including a general ear, nose, and throat evaluation and videolaryngostroboscopy. The prevalence of voice disorders among teaching staff was 57%. The most prevalent lesions were vocal overstrain (18%), nodular lesions (14%), and hyperfunctional dysphonia (8%). The incidence rate was 3.87 new cases per year per 1000 teachers. Women had organic lesions three times more than men (odds ratio [OR]: 3.52, confidence interval [CI]: 2.04–6.09). However, men had chronic laryngitis three times more than women (OR: 2.93, CI: 1.50–5.71) and functional dysphonia nearly twice more than women (OR: 1.81, CI: 1.21–2.69). We find a significant risk of suffering voice disorders in teachers who smoke daily (OR: 2.31, CI: 1.58–3.37) and who drink several cups of coffee or tea (OR: 1.87, CI: 1.36–2.56). It is advisable to carry out an annual evaluation of all teaching staff on account of the high prevalence of voice disorders among them.

Key Words: Voice disorders—Epidemiological study—Case-control study—Prevalence—Risk factors—Teachers—Vocal symptoms—Videolaryngostroboscopy—Vocal nodules—Functional dysphonia—Larynx.

INTRODUCTION

Voice disorders, often known by the generic name dysphonia when caused by laryngeal pathology, convey the presence of a poor functioning of

the voice in its most general aspects. Dysphonia can be classified¹ as organic, functional, minimal lesions, and psychiatric. Dysphonia is a very common pathological process in voice professionals,

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especially those in education, as Mattiske et al² document well in their review of articles published on vocal pathology in teachers. This collective being a very numerous group, and taking into account the important social task they perform in educating children and young people, dysphonia cases present significant work-related, economic, social, and cultural problems. However, the social significance of dysphonia in teachers is related not only to sick leave and the consequent nuisance that a change of teacher means, but also to the fact that a dysphonic voice causes a feeling of insecurity in the teacher and a lack of authority, a change in personality, and the isolation of the teacher.³

Different studies have reported the seriousness and frequency of this disorder in teachers. According to Bonet,⁴ who carried out a phone survey, 30% of the teaching staff of the public schools in Barcelona had chronic dysphonia. Llinas et al⁵ carried out a postal survey of 66 schools in 17 Spanish provinces and reported that 48% of the 790 teachers who answered the survey had confirmed that they had some type of dysphonia or voice-related problem; 16% of teachers also said that they had been off sick because of this vocal pathology. Russell et al⁶ mailed a questionnaire to 1168 teachers in 480 public schools in South Australia (chosen randomly from among the 9205 teachers who work in 1060 schools) and reported that, of the 877 questionnaires that were answered correctly, 14.3% of men and 22.5% of women had voice problems with a frequency of once every 2–3 months, or even more frequently during the school year. Smith et al^{7–9} also carried out a self-administered survey on 274 male and 280 female primary and secondary school teachers in Nevada, Utah, and Iowa and on 178 other adults (nonteachers). The teachers had 3.5 times more chance of having vocal symptoms than the adults who were not teachers and had symptoms of physical malaise two times more often than nonteachers. Thirty-eight percent of the teachers said that working in education had had a negative effect on their voices. Urrutikoetxea et al¹⁰ reported that some organic pathology was found in 20.84% of the teachers in Guipúzcoa, the Basque Country, in the videolaryngostroboscopic examination of 1046 teachers in public education. Preciado et al¹¹ said that the prevalence of

voice disorders in the teaching staff of Logroño is 17.7% (confidence interval [CI], 12%–25%). Sala et al,¹² in their epidemiological study of vocal pathology in 262 preschool (PrS) teachers in Finland and in 108 nurses in a hospital in Turku, Finland, put the prevalence of voice disorders at 29% in the PrS teachers and at 7% in the nurses. Roy et al¹³ carried out a phone survey of 1243 randomly chosen teachers and 1288 nonteachers. The teachers reported having more voice problems than the nonteachers both at the time of the survey (11% vs 6.2%) and throughout their lives (58% vs 29%). Simberg et al¹⁴ showed that the 42% students of teaching interviewed reported one or more vocal symptoms than 25% students of different faculties at the University of Turku.

A well-functioning voice is an essential tool for teachers. Vocal demands vary to a great extent between the different voice and speech professions. In professions with heavy voice use (eg, school and kindergarten teachers), occupational voice disorders threatening working ability are common. Vocal loading is a combination of prolonged voice use and additional loading factors (eg, background noise, acoustics, air quality) affecting the fundamental frequency, type, and loudness of phonation or the vibratory characteristics of the vocal folds as well as the external frame of the larynx.¹⁵

In this regard, the distinguished writer Marco Fabio Quintiliano¹⁶ from Calahorra, La Rioja (1st century AD) tells us in his book *Institutio Oratoria* that “each man has some natural talents and, if he is only averagely endowed, he can be improved by methodology.” Every person, therefore, whose job involves oratory should look after himself/herself and learn to speak with appropriate intonation with melody, to pause where the meaning of the verse ends, to raise or lower his or her voice, and to vary the rhythm. Everyone should know when to slow down, speed up, fill with enthusiasm, or soften the voice. Everybody should speak with an appropriately modulated voice, and use graceful gestures in order to stimulate and question the audience, adapting their elocution to the demands of each passage and to the type of public to whom it is directed. Furthermore, he advises us to not force the voice, as the very effort used suffocates and drowns, producing a voice that is not very clear

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