



## Prevalence of functional dysphonia in elementary school teachers in Colombia

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### SUMMARY

Pedagogical work is an action that is carried out daily in the classrooms and for this the communication mechanism is the voice. However, excessive use of the voice can produce certain disorders that prevent the normal execution of phonetics and phonology, this is called dysfunctional dysphonia. This study consists of a scoping review of the prevalence of functional dysphonia in primary school teachers in the Colombian education sector between 2018 and 2024, following the methodology developed by the Joanna Briggs Institute (JBI), structured in several stages: 1) protocol and registration, 2) identification of the research question, 3) databases and eligibility criteria, 4) search strategy, 5) selection of sources, 6) data extraction process, 7) summary of the data and 8) synthesis of the results. Recommendations for the preparation of scoping reviews of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols - extension for scoping reviews (PRISMA-ScR) were also followed. Based on some terms defined by Bustos (2018), Search Strategies identified 178 articles and the final sample consisted of ten studies. In conclusion, data suggest that teachers will always be at risk of functional dysphonia due to the daily use of their voice in the execution of their school activities and in their work as a social communicator and teacher. In another sense, the reflection on a personal level of each work carried out or researched is exposed.

**Keywords:** Communication, phonology, voice, disorder, health.

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### INTRODUCTION

The definition of the voice problem is not so simple: it is a multidimensional phenomenon that reduces physical, emotional, social, and professional well-being. According to studies in the United States and Switzerland, the professions of singer, social workers, teachers, lawyers, priests, telephone operators,

travel agents, and health workers are the occupations with the highest risk for a voice disorder (Agostini et al, 2013). Dysphonia is the most common pathology of the voice in different trades. According to the International Classification of Diseases (ICD), the incidence of vocal pathology is increasing considerably. International data on the prevalence of dysphonia suggest that the general population is affected between 11 and 29%. In the United States, 28 million workers experience these types of problems daily. In Spain, it is estimated that 5% of the population has voice problems, being more frequent between 25 and 45 years of age, and affecting women slightly more than men ( Agostini et al., 2013; Navarro et al., 2024)

Consequently, the professional use of the voice requires the adaptation of phonatory functions to the demands dictated by work circumstances and social interaction. Each type of profession requires different properties from the voice, teaching requires a high level of resistance to fatigue, and requires certain aesthetic elements. In teaching, people talk for long days in a classroom full of students, where the acoustics are not the best, exposed to different temperatures and other external factors

Due to the prolonged and inappropriate use of vocal function, it is common to find voice disorders within this group of professionals, which have become one of the leading causes of absenteeism due to occupational disease.

Currently Colombian education needs the pedagogical support of teachers and they in turn must project their orientations with different didactic methods, for this they need the modulation of the voice in different tonalities and in this aspect it is necessary that the counselor has characteristics of the voice that impact their students, in an understandable and easy-to-understand way the communication processes. In certain actions, the teacher may go through voice alterations that prevent him from giving an adequate accent to what he transmits due to dysphonia problems. The concept of functional dysphonia is taken here according to Cabrerías et al, (2023) as the loss of the timbre of the voice due to functional voice disorder or organic alteration of the larynx, intensity and tone are added to the alteration of timbre.

From this situation, the interest of carrying out a bibliographic work was born, whose objective is framed in the theme of voice alterations, more frequent in primary school teachers in Colombia, mainly in functional dysphonia.

## **METHODOLOGY**

The research question was developed: what is the prevalence of functional dysphonia in primary school teachers in the educational sector of Colombia, described in the literature? The search strategies identified 178 articles and the final sample consisted of ten studies. The selection of studies is shown in the flowchart (Figure 1). To develop the question, the PCC structure was used, where P: population, C: concept and C: context. In this review, the following were considered: Population: teacher, Concept: functional dysphonia, and Context: educational institution.

The search was performed using descriptors and/or their synonyms, according to the Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH), combined with the Boolean connectors AND and OR. The initial search strategy was developed in Medline through Pubmed and then followed in the other databases (Lefebvre & DuffY, 2021). The eligibility criteria were articles that answered the research question and covered the framework. There were no limits on publication time or language. We excluded other reviews, abstracts presented at events, books, and manuscripts duplicated in the databases.

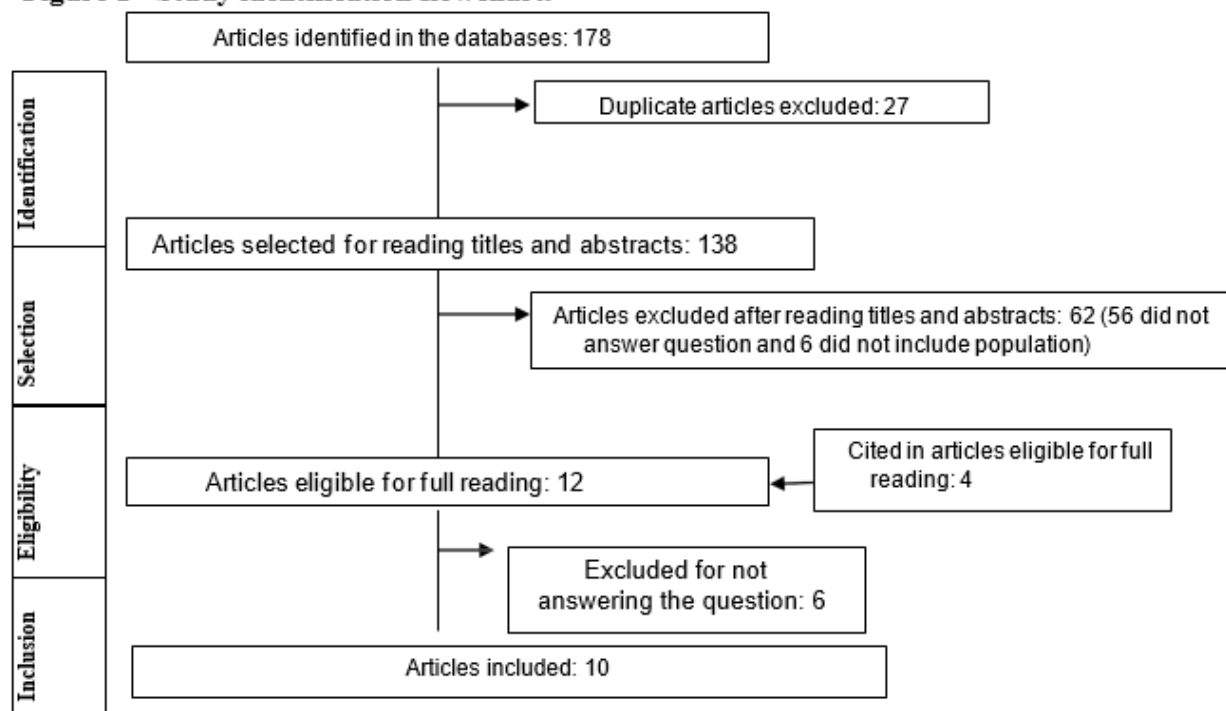
After searches, the articles (sources of evidence) were imported and selected using the free software RYAN (Ouzzani M, et al., 2016). Studies were selected and those that answered the review question and included the framework constituted the final sample of manuscripts. The level of evidence was not analyzed. Data were extracted and summarised using a spreadsheet and analysed using descriptive statistics.

## **RESULTS AND DISCUSSION**

Bustos (2018), defines dysphonia as: "any disturbance that affects the acoustic qualities of the voice: pitch, intensity and timbre" thus having the voice as one of the most important elements in life in relation to the human being, since any alteration will produce a serious limitation in the ability to communicate. Based on

some terms defined by Bustos (2018), Search Strategies identified 178 articles and the final sample consisted of ten studies. The selection of studies is shown in the flowchart (Figure 1).

**Figure 1 - Study identification flowchart.**



Fonte: Added from Navarro, et al., 2024.

In literature, philosophers' opinions are known about the human voice, as an impact of the air that reached through the ears, and the soul, the voice is the substrate, on it is based the usual communicative method of the human being, with which culture is transmitted, expression of feelings and emotions, hence, the voice in the teaching work becomes a primary work tool. According to Jackson, et al. (2019), dysphonia is a consequence of vocal abuse and misuse, although they can also be a consequence of other triggering factors such as: gastroesophageal reflux, smoking, viral or bacterial infection (laryngitis). This type of pathology causes an alteration in the color, timbre and volume and flexibility of the voice (parameters of the normal voice that are also mentioned (Stachler, et al. 2018), and the appreciable symptoms of these parameters reflected in the voice are hoarseness, monotonous voice, tremor and aphonia.

However, authors and researchers have not yet reached a consensus on the definition of a normal voice, but some general criteria have been established that can give indications about what a normal voice is. According to Hunter and Jackson (2019), these criteria for "normal voice" are that the timbre is pleasant, that the tone is appropriate for the age and sex, and that the volume used by the person is appropriate for the situation in which the voice is being used. Dysphonia as such (functional) is not currently recognized as an occupational disease. If it is, the organic injury caused by the use of the professional voice: vocal nodules, and it has been since 2007 (TAS 17/2007), being included in RD 1299/2006 (Arigón, (2021).

In this order of idea, dysphonia is one of the most frequent voice disorders in the teaching population, considering this pathology as an alteration in the quality or timbre of the voice. Teachers use their voice in the most varied communicative situation: explaining and questioning, giving instructions, among others, constituting themselves, as well as their main form of communication and their work tool.

According to Romero et al., (2023), for the group of teaching professionals, a harmonic voice is necessary for their optimal professional development, since any difficulty or alteration in vocal emission that interferes with the natural production of the voice can also affect professional performance and becomes a dysphonia or professional disturbance (Mendes et al. 2019). also called vocal disorder.

Consequently, it can be glimpsed in the literature that in Colombia the most prominent vocal problems in teachers and most frequently are functional dysphonias followed by others of organic origin such as polyps and nodules, which mainly affect professionals who make prolonged use of the voice. The International Labor Organization (ILO) establishes that teachers are the first professional category at risk of contracting voice diseases due to excessive use of the voice, which has an impact on their work performance, thus reducing their quality of life (Cabrera et al 2023, Roja et al., 2018)

In the literature consulted, it is evident that there are some external factors that contribute to having a functional dysphonia pathology within these factors, actions such as smoking, constant alcohol drinking and other situations that are framed within the way of life are cited. Functional dysphonia in teachers results in loss of classes, health problems, mood alterations and above all psychological complexes due to thinking about a possible loss of voice completely.

In this regard, the World Health Organization (WHO) 2021 has defocused prevention plans and programs on voice health, especially in those people such as teachers who need to have communication channels to express their knowledge to a certain society on a daily basis. In this regard, Roa and Zambrano (2020) carried out their research taking into account functional dysphonia in Colombia with teachers at a general level compared to other Latin American countries, in this study samples were taken from elementary school, high school and university teachers to determine the levels at which the voice is altered due to oral work and classroom exposures. The results found reflect that elementary school teachers in Colombia are the ones who suffer the most from functional dysphonia due to the precarious conditions in which classrooms are found, students with overcrowding in a classroom where the teacher must force his voice to reach everyone. In the same study, it is denoted that the country with the least affectations to the voice was Chile, teachers enjoy adequate classrooms and with reduced numbers of students; in Bolivia, its educational organization allows teachers to have technological means to adequately reach the learning processes. What the WHO (2021) says is analyzed, in the sense that the importance of taking care of the teacher's health is seen from the academic field, therefore, this organization establishes preventions in the teacher's health.

Voice disorder or dysphonia can be considered in teachers as an affectation that occurs as a result of their work activity, from this point of view the teaching profession should be understood as an occupational risk factor by health experts. In another sense of research, Romero et al., (2023), exposes the occupational hazards that influence dysphonia in elementary school teachers in Valle del Cauca, the problem arises due to the constant medical appointments with the speech therapist that elementary school teachers have been requesting for voice disorders. The symptoms that teachers give the most are decreased voice quality, hoarseness or dry larynx. The study establishes that such symptoms reduce work performance, increase absenteeism and above all that such a disorder is forcing teachers to change professions. Statistical data showed that 20% of the teachers in the department constantly go to health professionals, the remaining 80% have stated that they are looking for other professional alternatives. In this sense, it is reflected that the teaching profession has the voice as a tool to bring the teaching processes to the level.

On the other hand, researchers such as Alfaro et al. (2019), focused their research on the "pedagogy of noise" for this they took teachers from the municipality of Maicao, Guajira, highlighting the elementary school educational institutions, where teachers had been presenting functional dysphonia due to their academic work. One of the causes was the constant noise to which schools were exposed, they explained in their work that noise in dysphonia is not a risk factor at work, however, the students considered that the noise is too loud so teachers must shout in class. The research related the school circle, noises and screams, as elements that have led elementary school teachers to absences due to functional dysphonia. In this aspect, the voice is an indispensable tool for work and in turn, its use professionally, is considered a risk

factor for the appearance of laryngeal pathologies; which happens when the voice is not prepared for the teacher's professional performance and vocal misuse and abuse is continuous and recurrent (Romero et al., 2023)

On the other hand, Gómez et al (2020) conducted research with the La Alborada Foundation, an institution that provides protection to 300 low-income children under the guidance of 24 teachers distributed in preschool and elementary school. The teachers are in full contact with the children for 8 hours a day, this work has given a great absenteeism due to phonetic difficulties, this being a difficulty for their work. Dysphonia is one of the main phonetic pathologies to which workers are exposed and is considered an occupational disease according to decree 1477 of 2014 where dysphonia is considered as a constant vocal effort that is among the world classification as pathology R490, so it is important to identify what symptoms and what causes in the short and long term lead to this disease and how we can prevent it in the work field of teachers, making them aware of a promotion and prevention against this pathology. In this sense, functional dysphonia projects the limits of the teaching work, while at the same time it is covered by a sector of health risks (Navarro et al., 2024; Lazo et al., 2024).

Within the framework of voice pathologies, research has been carried out as a result of some assignments of teaching activities, as Barreto (2021) described some working and health conditions of the teaching staff working in the District Educational Institutions of the town of Usaquén in Bogotá. The study determined that 230 teachers, in a percentage of 50%, carried out an extension of the teaching work and that 37% reported noise inside the classroom, a situation that required raising the volume of the voice to reach the attention of the students. Similarly, Echevarría (2020) consulted the database of the Medellín health secretariat for 1067 cases of dysphonia in state elementary school teachers, with respiratory tract pathology such as acute pharyngitis as the main cause of consultation and dysphonia ranked first in diagnosed cases. The determining causes were excessive voice due to school overcrowding, noise inside the classroom, shouting from the teacher and allergies to chalk.

In the work of Rojas et al., (2020), there was evidence of a constant deterioration in the voice of each of the active teachers of the Luis López de Mesa school, in Bahía Solano (Chocó), the probable causes were related to factors such as vocal abuse, inadequate environmental and structural conditions and the lack of self-care on the part of the educators (due to the lack of knowledge of guidelines for the use of the voice, before, during and after working days). Similarly, the study reported by Palacios & Hernández (2022) highlights the high risk of occupational dysphonia among teachers due to their professional practice, so it is essential to generate a national program for the early detection of vocal risk that includes promotion and prevention activities.

From a reflective perspective, the works presented are framed in research that exposes the causes and consequences of dysphonia in teachers, but there is no solution to avoid voice disorders in the midst of the work carried out. It is necessary for the teacher to be aware of his work and to look at the need for voice conservation and to be attentive to the multiple causes that damage the normal line of the phonological tone. Taking the postulates of Perelló (2017), he states that the circumstances surrounding the teacher are sometimes reasons for a voice disorder, from this point of view it can be said that no teacher is exempt from suffering from these disorders due to their condition as a social communicator. In the circumstances of space where the teaching profession is framed, there are generally conditions that give reasons to carry out an adequate voice, this is the case of schools for the deaf and dumb, here sign language is the main thing and the teacher uses the voice very little in these events, which makes the dysphonia at this time less compared to the other actions.

Vergara (2018), conceptualizes that one of the differences in profession has to do with the use of the voice, announcers as well as teachers must maintain permanent care of the vowel organs improving the quality in all senses of the tone and the prerogatives of the modality. In this sense, Vargas (2019) states, "dysphonia is one of the most frequent voice disorders in the teaching population. Teachers use their voice in the most varied communicative situations giving instructions, asking questions, explaining, constituting their main

form of communication and their work tool. To all of the above, we must add the environmental and psychological conditions in which the teaching activity is carried out and the frequent need to speak raising vocal intensity, in a noisy environment, in spaces that do not meet the best acoustic conditions, inappropriate habits or the consumption of alcohol or tobacco".

In the studies analyzed, other external factors that influence the pathology of dysphonia are touched, alcohol and tobacco show signs of this, which also depends on the self-care of the teacher, although many health organizations give on average that one of the causes of functional dysphonia in teachers is the cold of alcoholic beverages combined with the heat of rum or whiskey. added to this is the tendency to be in cold climates and then in hot climates, which makes functional dysphonia more severe and causes voice alterations (Perelló, 2020; Rojas et al., 2020 ).

Exploring the academic levels of teachers, Vergara (2018) has stated that many times the teacher, in order to fulfill his academic tasks according to his ethics, arrives in the classrooms with this functional dysphonia disorder, strains his voice and causes damage to his vocal cords, in this sense there is no self-care and it is exposed as a reflection that this cause is caused by the teacher due to his obligations to his or her academic environment. It is necessary that within the occupational risks, these moments that lead the teacher to continue working at the expense of his vocal disorder are taken into account. The Ministry of Health (2022) has proclaimed health prevention in teachers as a way to maintain educational quality, stating that the personal health of the teacher is above all else. This situation leads to reflect that teachers often act according to their personal ethics, establishing their work as a priority in the projections of their educational environment.

Looking at functional dysphonia as a disorder in the Colombian educational population, it is established that the diversity of the causes that produce it leads to a reflexive view from this teaching profession, the previous works have exposed how the elements of space, time and communication are acquired in the classrooms. Serving a student population from preschool to high school is a heavy burden for the use of the voice in the sense of effort and dedication. Health from this point of view is considered a risk because functional dysphonia often becomes chronic and is the cause of total voice loss. The WHO (2022) has stated that within occupational risks, the voice is the main one that must be taken care of in the teacher, for this developing countries such as Colombia must develop plans and programs to prevent this, however, the health system is deteriorated in all sectors.

According to the above, dysphonia is among the occupational hazard diseases and remains a priority not only in the educational field but in other categories of work, this implies that having functional dysphonia in the field of education is an occupational risk that can lead to the teacher having the support of the laws and decrees of the function of the Ministry of Labor and therefore is backed by this entity. It is an insurance provided by the state to the teacher.

## **CONCLUSIONS**

Teaching practice includes the voice as a primary factor, it is the tool that every educator has as a line of transmission of their learning processes. In this circumstance, the proper use of the voice must be in accordance with what he does in the classroom, that is, the modulation and tone are in perfect with what he exposes. In special circumstances, it is often the case that the teacher must raise his voice due to environmental reasons such as noise, student indiscipline and excessive shouting in the classroom, this causes the teacher to be forced to raise his voice. This results in functional dysphonia, which is a vowel disorder that leads to the teacher being absent from their work periods due to their interrupted voice. In Colombia, dysfunctional disorder in teachers is something that occurs almost daily because the working days allow the excessive use of the voice and this brings functional dysphonia as its main consequence.

The studies reviewed have shown that 80% of teachers have suffered from functional dysphonia and the causes are varied according to the context. Common pathologies are persistent hoarseness, pharyngitis, respiratory tract diseases and dry cough. In this regard, the WHO (2021) establishes that functional dysphonia is an occupational risk disease and that this measure is subject to the health sectors in Colombia.

In the same sense, Colombian education within its educational policies exposes laws and decrees that protect the health of teachers and that they in turn have medical sectors that protect these disorders. The voice is essential for the teacher and he must take care of it according to his criteria, but sometimes it is difficult due to the circumstances of the classrooms, educational community and use of materials that in some way damage the modulation of the voice. Finally, it is necessary that there are preventive measures in the teaching sector and that action is taken according to the demands of the voice in particular.

**DECLARATION OF INTERESTS:** The authors have declared that there is no conflict of interest.

**DATA AVAILABILITY:** All relevant data can be found in the article. For more information, contact the corresponding author.

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