CoDAS
ISSN 2317-1782 (Online version)

Systematic Review
*Revisão Sistemática*

# Panorama de tres países latinoamericanos en problemas de voz relacionados con condiciones de trabajo

## *Overview of three Latin American countries in voice problems related to working conditions*

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**Keywords**

Faculty
Voice Disorders
Occupational Health
Legislation
Risk Factors

## ABSTRACT

**Purpose:** To identify the normative framework on work-related voice disorders in three Latin American countries: Brazil, Chile and Colombia. **Methods:** Documentary research focused on regulations and statistics occupational voice in the three included countries **Results:** In the three countries included there are normatives that regulate the relationship between work and vocal health. **Conclusion:** Although previous research has reported the negative effect of adverse working conditions on vocal functioning, it is common for workers with vocal problems to continue working in these environments, which reduces their quality of life and increases associated costs. This study shows that there are limitations in the implementation of the regulations. Weaknesses detected in this study could benefit from multicenter investigations that strengthen speech therapy actions in prevention, promotion, diagnosis and rehabilitation.

**Descriptores**

Docentes
Trastornos de la Voz
Salud Laboral
Legislación Laboral
Factores de Riesgo

## RESUMEN

**Objetivo:** Identificar el panorama normativo sobre problemas de voz de origen ocupacional en tres países latinoamericanos: Brasil, Chile y Colombia. **Método:** Investigación documental centrada en las normas y estadísticas en voz laboral en los países citados. **Resultados:** En los tres países incluidos existe normatividad que regula la relación entre trabajo y salud vocal. **Conclusion:** Aunque diversas investigaciones han reportado el efecto negativo de condiciones de trabajo adversas sobre el funcionamiento vocal, es frecuente que trabajadores con problemas vocales continúen ejerciendo sus labores en estos ambientes, lo que disminuye su calidad de vida y aumenta los costos asociados. El estudio demuestra que se observan limitaciones en la puesta en práctica de la normatividad. Los aspectos débiles detectados en este estudio podrían beneficiarse de investigaciones multicéntricas que fortalezcan acciones fonoaudiológicas en prevención, promoción, diagnóstico y rehabilitación.

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**Received:** September 30, 2020

**Accepted:** March 22, 2021

Study conducted at Escuela de Fonoaudiología, Facultad de Ciencias de la Salud, Universidad Católica Silva Henríquez – UCSH (Santiago, Chile), Programa de Fonoaudiología, Universidad Manuela Beltrán, (Bogotá, Colombia) and the Departamento de Teorias e Métodos em Fonoaudiologia e Fisioterapia - Faculdade de Ciências Humanas e da Saúde - Pontifícia Universidade Católica – PUC (São Paulo, Brasil) - Santiago, Chile.

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**Financial support:** nothing to declare.

**Conflict of interests:** nothing to declare.

## INTRODUCTION

Voice problems are highly prevalent and have a high impact on workers who depend on their voices to carry out their work activities (such as teachers, announcers, singers, call-center workers, among others). Previous studies have reported that the annual prevalence of voice problems in teachers is around 57%[1]; while 94% of teachers have reported suffering from voice problems at some point in their lives[2].

Considering that voice problems are multifactorial, their impact includes social, economic, and public health aspects. Previous research has reported that voice-impaired workers in the UK represent annual costs of approximately £ 200 million[3]. While another study carried out with Colombian teachers reported that the costs associated with voice problems represent around USD 458 per month per teacher with voice problems[4]. Taking into account the economic consequences of voice problems in occupational voice users, and specifically in teachers, it is necessary to design actions aimed at preventing their occurrence, and reducing their associated costs.

However, the design of actions aimed at preventing the occurrence of voice problems associated with working conditions in teachers requires the identification of the factors associated with these problems, to determine and prioritize actions in the workplace and from public health. Previous studies have reported that some factors commonly associated with voice problems of occupational origin are high vocal loading[5] and noisy work environments[4,6]. Regarding the high vocal loading, a Polish study reported that after vocal loading activities, the Jitter, Shimmer, and the harmonic-noise ratio decreased, which evidenced the appearance of voice problems of occupational origin[7]. The use of voice in noisy environments or with poor acoustic conditions can generate an increase in the voice effort of the speaker, which can trigger the appearance of voice problems[4,8,9].

Additionally, the definition of associated factors makes it possible to determine norms and laws that regulate programs to promote voice health in the workplace and financial compensation for workers whose work performance is restricted due to the appearance of voice problems. However, the recognition of voice problems of occupational origin is not a reality in many countries of the world. For this reason, we present in this article the panorama in normative and statistical terms of the voice problems of occupational origin in three Latin American countries: Brazil, Chile, and Colombia.

This documentary research followed four phases: In the first phase, the authors looked for national regulations that were referred, related, or could be applied to the voice problems of teachers in Brazil, Chile, and Colombia. In a second phase, we identified the most relevant aspects of each of the revised regulations. The third phase consisted of determining whether the standards were current and/or applied; finally, the situation of the three countries was discussed comparatively, to issue the conclusions.

Each author carried out the first three phases in isolation, analyzing the regulations of their country. In the fourth phase, the authors discussed similarities and differences to conclude the findings.

## NORMATIVE ASPECTS OF VOICE PROBLEMS OF OCCUPATIONAL ORIGIN IN THREE LATIN AMERICAN COUNTRIES

### Brazil, Chile, Colombia

Although various investigations have provided evidence on the effect of working conditions on the voice functioning of occupational voice users, frequently, workers with voice problems must continue to carry out their work, which implies a reduction in productivity and an aggravation of the voice problem; situations that have important socio-economic consequences. Although various studies have reported these relationships, the reality of the different countries reflects important differences. For this reason, the panorama in the area of occupational voice in three Latin American countries is presented below.

#### *Brazil*

After 21 years of hard work, in July 2018, the General Coordination of Worker's Health of the Department of Surveillance in Environmental Health and Worker's Health of the Ministry of Health of Brazil published the WRVD protocol (Work-Related Voice Disorder)[10,11]. The WRVD protocol is part of a set of Differentiated Complexity Protocols of the Ministry of Health, which guides the procedures to be carried out to determine the "occupational nature" of diseases. The existence of the WRVD made it possible to define evaluation criteria (agreed by professional specialists in the area), in addition to the construction of databases. This will allow the epidemiological analysis of data for better identification of WRVD cases and, consequently, better planning of health surveillance actions and worker protection. Although it is not part of the role of work-related diseases with compulsory notification, its publication may favor the creation of a line of care integrated into the National Network for Integral Worker Health Care (RENAST) and enable access to treatment of any worker with voice problems.

Additionally, in Brazil, there are "Voice Health Laws" that are intended to guarantee actions to reduce voice problems, especially in teachers[12]. These laws determine specific actions focused on the rehabilitation of voice problems related to working conditions. Although important, these laws are decoupled from a broad and consistent voice health policy.

On the other hand, the term "care networks" in Brazil is used to define the form of organization of health actions and services, at all levels of complexity, in a given territory. It allows the articulation between knowledge, technologies, professionals, and institutions so that the citizen can access them in a rational, harmonious, systematic, regulated way and following a technical-sanitary logic. The "care networks" imply flows between services and a pact between health professionals, who work in basic health units and specialty outpatients, based on shared care. Its purpose is to improve the efficiency and rationality of services and, for this, the definition of lines of care is among its attributions. In the care line, the patient has access to the services of the Network in an organized manner

based on epidemiological intelligence (characteristics and needs of the patients).

Additionally, in Brazil, there is the Reference Center for Workers' Health (*Centro de Referência em Saúde do Trabalhador* - CEREST), which has the function of providing technical support, permanent education, coordinating promotion, surveillance, and assistance projects for workers' health in its coverage area, as well as providing matrix support for the development of worker health actions in primary care, specialized services, and urgency/emergency. Matrix support is provided by professionals from various specialized areas within an interdisciplinary team to expand the field of action and qualify their actions.

However, despite the achievements of Brazil in the real recognition of WRVD, there are still certain limiting aspects, such as Identification, Notification, and Recognition of WRVD. Regarding Identification, there is the difficulty in diagnosing WRVD. This issue has been discussed, and the following are determined: 1) the need to define an evaluation with technical-scientific and standardized criteria, considering the aspects of severity, frequency, and duration of symptoms, which could be measured by self-referred instruments, evaluations Speech-Language Pathology, and otolaryngology; 2) the use of the ICF (International Classification of Functioning, Disability, and Health) can contribute by systematizing and quantifying, in a standardized way, the loss of voice functionality and the impact of a voice disorder on the loss of the ability to the development of work. In this way, it would support the institution of public policies for the prevention of voice problems related to working conditions.

Some doubts persist concerning the WRVD Notification, such as 1) Notifying suspicious cases of WRVD, which could trivialize the notification, inducing an oversizing of the voice problem. Such consideration reinforces the need to define clear criteria for the identification of WRVDs, returning to the previous item (Identification). About the preparation of specific regional records for WRVDs, the need also arises for direct registration in SINAM (National Medical Assistance System) protocols with the ICD R49 code, so that the voice problem is accounted for in the data of the Ministry of Health. There is an online notification proposal through the link FormSUS - Datasus[13,14]. However, the possibility of online notification is available exclusively in the state of São Paulo. Another important aspect is the difficulty of notification for the Speech-Language Pathologist, hired by the employer but who works in his private practice. Also, the difficulty for speech pathologists working at SUS (Unified Health System) was mentioned, since most of them do not have training as voice specialists. These observations reinforce the need to develop training strategies for the identification and notification of cases.

The last limiting aspect is Recognition since WRVDs are not yet recognized as diseases related to working conditions. To facilitate recognition, their regulations should be published so that they can be included in the lists of 1) occupational diseases; 2) compulsory notification grievances, both from the Ministry of Health and 3) from Social Security, to establish the causal link with work and definition of benefits related to accident relief. The Ministry of Health, fulfilling its function of periodically reviewing diseases related to working conditions, carried out a consultation with experts in August 2019, in which the inclusion of WRVD to the list of occupational diseases was indicated. Currently, the deployment of a new and broad public consultation is expected to seal the inclusion and formal recognition of the grievance. The Brazilian Society of Speech-Language Pathology has shown its interest through the creation of a Working Group called Speech-Language Pathology and Worker's Health: NIHL (Noise-Induced Hearing Loss) and WRVD, to discuss the points presented above.

*Chile*

In the Chilean educational system, teachers work at 4 levels of education: kindergarten, elementary, highschool and university. In recent research, it is stated that the prevalence of vocal problems in Chilean teachers is 46.2%, number that exceeds countries such as Argentina, Mexico and Peru[15], constituting a public health problem[16]. Currently, the Chilean Safety Association (ACHS) reveals that of the 75% dysphonic patients who consult their mutual, only 6% undergo vocal rehabilitation therapy[17]; thus, it is considered that occupational dysphonia has a high prevalence in Chile.

As an example of the above, in a protocolized study including a vocal risk assessment, nasofibroscopy and evaluation by an otolaryngologist, conducted from October 2018 to October 2019, the Institute of Worker Safety (IST) of the V Region of Chile reported that 79 patients (75 women and 4 men) were admitted with a complaint of dysphonia as a possible occupational disease, however, only 61 patients (77.2%) were finally considered as of occupational origin[18]. This value is similar to that indicated in another study from 2015, where the prevalence of dysphonia in teachers from Santiago was investigated, finding 75.5% dysphonic, and of these, 87.8% presenting mild dysphonia. The authors question the late access to consultation and vocal rehabilitation, reinforcing the occupational risk to which these professionals are exposed[16]. Another study from 2018 complements the previous one by verifying that 80% of the teachers surveyed had not received vocal training and were constantly exposed to risk factors for dysphonia in the workplace in addition to presenting abusive behaviors and vocal misuse[19].

In Chile, dysphonia is contemplated in Law 16,744 on occupational accidents and diseases, created in January 1968 and in force three months after this date[20,21]. Law 16,744 establishes the rules on occupational accidents and diseases, including voice problems. Supreme Decree #109, in its article 19, defines voice problems as "Laryngitis with voice problems and/or laryngeal nodules", and maybe present in "[...] all jobs that expose the risk of psychic tension and a relationship of cause to effect", "[...] all jobs that expose the risk of physiological tension of the vocal cords", highlighting its risk for proper work exercise but without mentioning any specific agent, be it chemical, physical or biological. Article 23 of the same decree defines the conditions of temporary disability in "Laryngitis with voice problems and/or laryngeal nodules, caused by jobs that expose them to risk and a relationship between cause and effect with work is proven"[20,22].

Since the establishment of Law 16,744 to the present, the definition of voice problems as the occupational disease has undergone changes that favor its diagnosis and classification. However, difficulties arise in the application of this law in each case because if the law speaks of laryngitis with voice problems and/or nodules, it excludes other injuries (such as polyps, edema, hemorrhages, etc.) The health provision contemplated in the law is left to the medical criteria of each service: the medical diagnosis that is made determines the recognition or rejection of voice problems as an occupational disease, which would affect when cases produce temporary disability in the degree or percentage of disability, where the compensation contemplated in the economic benefits of Law 16,744 is put into play. Circular 3331 establishes more uniform criteria in dealing with occupational voice problems[23].

This law has undergone several reforms since its publication, the last of these being published by *Superintendencia de Seguridad Social del Gobierno de Chile* (SUSESO) as "circular 3331"[23]. The circular suggests a guideline that seeks to guide the clinical evaluation, and thus qualify the origin of the voice pathology, evaluating the risk of developing voice pathology in the work environment according to three aspects: characteristics of the work (11 items, S1), characteristics of voice use (8 items, S2) and according to the type of activity (support, teacher, manager, S3). With the values resulting from sections S1, S2, and S3, the calculation is carried out to determine the voice risk (VR) of the worker. The value resulting from the calculation goes through a new interpretation, which will indicate the voice risk to which the worker with voice problems is exposed.

The management of occupational dysphonia in the last 30 years was at the discretion of each mutual in Chile under current regulations (Law 16,744 and Circular 3331). Circular 3331 standardized a national criterion so that the medical diagnoses of the cases to be recognized as an occupational disease are established, in turn, a formula of the vocal loading to classify the risk of being exposed to dysphonia. In addition, this new modality intended to apply the monitoring or control of cases and alerts in those schools in which cases of dysphonia arise. Described in this way and applying the regulations of the circular, it will be necessary to assess the future casuistry of the cases accepted and rejected as occupational dysphonia[23].

Research from occupational health and ergonomics so far has pointed to the prevention of occupational diseases, making visible the risk factors to which teachers are exposed[15].

*Colombia*

In Colombia, around 71% of teachers have reported voice problems in the last month, with a high occurrence of chronic voice problems, a low recovery rate (22%), and an annual incidence (new cases) of 44%[6]. Although these figures show the impact of voice problems on Colombian teachers, the regulations on voice problems associated with working conditions are relatively recent. However, the regulations on health and safety at work date from the 1980s.

Since 1984, Colombian legislation has regulated the field of occupational health, and within this normative framework, the field of occupational voice is regulated. Article 2 of Decree 614 of 1984 defines the obligations of employers. Within the framework of this article, one of the functions is to inform workers about the effects of prolonged use of the voice in physical and psychosocial conditions on their voice health[24].

Subsequently, in 1989 Resolution 1016 was issued specifying the occupational health subprograms (Article 2) (Preventive Medicine, Occupational Medicine, Industrial Hygiene and Industrial Safety)[25]. In the field of occupational voice, the preventive and occupational medicine subprogram should implement activities aimed at identifying the health effects of working conditions, such as entry, periodic, and retirement voice functioning exams; the implementation of voice epidemiological surveillance programs, voice problem prevention, and voice health education.

The regulations on occupational examinations, initially mentioned in Resolution 1016 of 1989, were updated in 2007 with Resolution 2346. Article 13 of this Resolution establishes that medical evaluations must be specific, according to the risk factors to which the worker will be exposed and according to the individual conditions presented[26]. In the case of occupational voice users, and taking into account what is reported in the literature, occupational medical evaluations must include at least the perceptual and acoustic examination of voice production, in addition to the worker's self-report[27].

The greatest advance in Colombian legislation related to voice problems associated with working conditions occurred in 2014 when Decree 1477 was issued. Decree 1477 issued the Table of Occupational Diseases, and in *Group VII, entitled Ear diseases and phonation problems include voice problems such as chronic laryngitis (J37.0), polyp of the vocal cords and larynx (J38.1), vocal cord nodules, and larynx (J38.2), and dysphonia (R49.0)*[28].

As can be seen, in Colombia some regulations protect occupational voice users. However, in practice, we observe that there is a lack of implementation of some of these standards in the field of voice health. For example, occupational examinations of occupational voice users ***do not*** always include evaluation of voice functioning; and when it is included, the absence of standardized ***occupational voice assessment protocols*** limits the scope of the exams.

## CONCLUSION

After analyzing the panorama in normative and statistical terms of voice problems of occupational origin in Brazil, Chile, and Colombia, we can conclude that although there are regulations for the recognition of the "occupational nature" of voice problems in teachers, and occupational voice of users in general; in practice, there are aspects that must be adjusted so that the occurrence of voice problems in this population is reduced. Some of the aspects to be improved are: 1) the inclusion of teacher training on efficient and healthy use during the performance of the work, 2) interdisciplinary work in the field of occupational voice, and 3) knowledge of costs of voice problems associated with working conditions, their evaluation, and their treatment.

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## Author contributions

*MCMBM, LCCC and LPF were responsible for studying the research, collecting information, organizing and discussing the data collected, writing the article.*