

# Main laryngeal pathologies in teachers

## Principais patologias laríngeas em professores

### Principales patologías laríngeas en profesores

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#### **Abstract**

**Introduction:** Teachers are exposed to several occupational risk factors, and it is believed that vocal quality is related not only to absence of change, but to general well-being of the individual. There are several factors that contribute to the development of vocal problems in teachers such as: inadequate use of voice, vocal competition, vocal overload, inappropriate habits as an example (cigarette and alcohol). **Objective:** This study aimed to analyze the main vocal changes in teachers and consisted of a descriptive bibliographical research of a qualitative nature. **Method:** A survey of the national and international literature was published in English, Spanish and Portuguese between 2007 and 2017. The descriptors, teachers, voice pathologies, and vocal health were selected using the “Biblioteca Virtual em Saúde” (BVS) and “Scientific Electronic Library” (SciELO) databases. **Results:** It was observed that the main pathologies found were nodules, polyps, Reinke’s edema, cyst and vocal groove. Hoarseness is the main symptom described by the teachers, but it is necessary to worry about the other symptoms being: vocal fatigue, voice failures, shortness of breath, burning throat, effort to speak. **Conclusion:** It was verified in the studied literature the suggestion of adopting a public health policy with the objective of educating and making teachers aware of notions of vocal hygiene, communication strategies, vocal economy and valorization of the profession are necessary tools to reduce the indices of teachers with some type of vocal alteration.

**Keywords:** Faculty; Voice; Laryngeal Diseases; Occupational Health; Disease Prevention.

#### **Resumo**

**Introdução:** Os docentes estão expostos a diversos fatores de riscos ocupacionais, e acredita-se que qualidade vocal não está relacionada apenas com ausência de alteração, mas sim com bem-estar geral do indivíduo. Existem vários fatores que contribuem para o aparecimento de problemas vocais nos

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#### **Author’s contribution**

SSLS: Perception of the study, Data collection, Organization of collected data, Elaboration of the article, Methodology, Result, and Discussion

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professores como: o uso inadequado da voz, competição vocal, sobrecarga vocal, hábitos inadequados como exemplo (cigarro e álcool). **Objetivo:** O presente estudo teve como objetivo analisar as principais alterações vocais em professores e consistiu em uma pesquisa bibliográfica, descritiva de caráter qualitativo. **Método:** Realizou-se um levantamento da literatura nacional e internacional, publicada nos idiomas Inglês, Espanhol, Português entre 2007 e 2017. Foram selecionados por meio das bases de dados “Biblioteca Virtual em Saúde” (BVS) e “Scientific Electronic Library” (SciELO), utilizando-se os descritores, professores, patologias da voz, saúde vocal e prevenção. **Resultados:** Observou-se que as principais patologias encontradas foram os nódulos, pólipos, edema de Reinke, cisto e sulco vocal. A rouquidão é o principal sintoma descrito pelos docentes, mas é preciso se preocupar com os demais sintomas sendo eles: fadiga vocal, falhas na voz, falta de ar, ardência na garganta, esforço para falar. **Conclusão:** Verificou-se na literatura estudada a sugestão de adotar uma política pública de saúde com o objetivo de educar e conscientizar os docentes quanto a noções de higiene vocal, estratégias de comunicação, economia vocal e valorização da profissão, que são ferramentas necessárias para diminuir os índices elevados de docentes com algum tipo de alteração vocal.

**Palavras-chave:** Docentes; Voz; Doenças da laringe; Saúde do trabalhador; Prevenção de doenças.

## Resumen

**Introducción:** Los docentes están expuestos a diversos factores de riesgo ocupacional, y se cree que calidad vocal no está relacionada sólo con ausencia de alteración, sino con el bienestar general del individuo. Hay varios factores que contribuyen a la aparición de problemas vocales en los profesores como: el uso inadecuado de la voz, competencia vocal, sobrecarga vocal, hábitos inadecuados como ejemplo (cigarrillo y alcohol). **Objetivo:** El presente estudio tuvo como objetivo analizar las principales alteraciones vocales en profesores y consistió en una investigación bibliográfica, descriptiva de carácter cualitativo. **Métodos:** Se realizó un estudio de la literatura nacional e internacional, publicado en los idiomas Inglés, español, portugués entre 2007 y 2017 fueron seleccionados a través de bases de datos “Biblioteca Virtual em Saúde” (BVS) y “Scientific Electronic Library” (SciELO), utilizando los descriptores, los maestros, las enfermedades de la voz, salud vocal y prevención. **Resultados:** Se observó que las principales patologías encontradas fueron los nódulos, pólipos, edema de Reinke, quiste y surco vocal. La ronquera es el principal síntoma descrito por los docentes, pero hay que preocuparse por los demás síntomas que son: fatiga vocal, fallas en la voz, falta de aire, ardor en la garganta, esfuerzo para hablar. **Conclusión:** Se verificó en la literatura estudiada la sugerencia de adoptar una política pública de salud con el objetivo de educar y concientizar a los docentes en cuanto a nociones de higiene vocal, estrategias de comunicación, economía vocal y valorización de la profesión son herramientas necesarias para disminuir los índices altos de docentes con algún tipo de alteración vocal.

**Palabras claves:** Docentes; Voz; Enfermedades de la Laringe; Salud Laboral; Prevención de Enfermedades.

## Introduction

Voice professionals, including teachers, are all those who use voice as a working tool. Teachers are exposed to several occupational risk factors, and it is believed that vocal quality is not only related to an absence of change but with the general well-being of the individual. It is essential that the professional knows the working tool (structures that make vocal production) to prevent future laryngeal changes and to adopt preventive measures.

In the field of teaching, the voice is one of the primary means of communication between teacher and student and teachers constitute a risk group to develop vocal problems<sup>1</sup>. Teacher's voice is vulnerable to negative influences from vocal and phonotrauma misuse, which are commonly associated with vocal tract discomfort and vocal complaints<sup>2</sup>.

Voice disorders are part of the teacher's context, who use the voice as a working tool. Vocal alterations become a problem for the teacher, which may decrease or prevent teaching. It is necessary

to consider the most common laryngeal diseases in teachers and to correlate with the causal nexus, especially for ICD 10 (J38.1 and R49.0) <sup>3</sup>.

The socioenvironmental factors that are part of the teacher's routine are also considered as a risk factor for vocal health and may evolve to dysphonia<sup>4</sup>.

Several factors contribute to the development of vocal problems in teachers such as the inadequate use of voice, vocal competition, vocal overload, inappropriate habits as an example (smoking and alcohol). Therefore, it is necessary to pay attention to the main signs and symptoms of the vocal alterations such as: persistent hoarseness, dry cough, throat pain, throat clearing, abnormal pitch (too low), voicelessness, dry mouth, decrease in voice volume generating an effort to speak, burning, shouting, strange body sensation in the throat<sup>5</sup>.

The leading causes of vocal alterations are vocal overload, since most present more than one position, classrooms usually with many students and most schools do not present resources for the vocal economy, mainly peripheral public schools and rural area. It is observed a high number of teachers with little hygiene care and vocal economy, which leads to the premature wear of the laryngeal musculature to voice problems and after absenteeism. This lack of work ends up generating a cost for schools, government, and a delay in the teaching schedule for students<sup>6</sup>.

Therefore, a public health policy is essential to reduce the sickness of voice professionals, which generates absenteeism. It is observed that most of

the users of the social security recipients due to vocal problems are professionals of the voice, the teachers being the most demanding category.

Given the above, this study aimed to verify the central laryngeal pathologies that affect teachers through a qualitative and descriptive bibliographical review.

## Methods

The present study is a bibliographical review that seeks to describe the central vocal pathologies found in teachers. Therefore, a survey of the national and international literature was published in English, Spanish and Portuguese between 2007 and 2017. The sample was selected through the databases, "Virtual Health Library" (VHL) and "Scientific Electronic Library" (SciELO), using the descriptors, teachers, professional voice, voice pathologies, vocal health, and prevention.

We have investigated in the literature in national and international journals of speech and language therapy, articles for the elaboration of this study.

The initial analysis of the articles was done through the title and abstract. Those articles that were not in agreement with the proposed objective of the study were eliminated, totalizing in a final sample of 14 articles.

The articles were distributed in one (table 1) for better visualization and then the main findings of each article were described.

**Table 1.** Distribution of articles identified in the literature

YEAR	Author	Title
2008	Silverio, Gonçalves, Penteado, Vieira, Libard, Rossi <sup>29</sup> .	Actions in vocal health: proposal to improve the vocal profile of teachers.
2009	Luchesi, Mourão, Kitamura, Nakamura <sup>25</sup> .	Vocal problems at work: prevention in the teaching practice according to the teacher's view
2009	Azevedo, Vianello, Oliveira, Oliveira, Oliveira, Silva <sup>21</sup> .	Vocal complaints and degree of dysphonia in elementary school teachers
2010	Cardim, Behlau, Zambon <sup>18</sup> .	Vocal symptoms and profile of teachers in a vocal health program
2011	Musial, Dassie-Leite, Zaboroski, Casagrande <sup>22</sup> .	Interference of vocal symptoms in the professional performance of teachers
2011	Caporossi, Ferreira <sup>19</sup> .	Vocal symptoms and factors related to the lifestyle of teachers.
2012	Lima-Silva, Ferreira, Oliveira, Silva, Ghirardi <sup>12</sup> .	Voice disorder in teachers: self-reference, perceptual evaluation of voice and vocal folds.
2012	Santos, Almeida, Paula, Ribeiro, Oliveira <sup>27</sup> .	Effective communicator: the teacher's voice and preventive health.
2013	Pizolato, Mialhe, Cortellazzi, Ambrosano, Cornacchionirehder, Pereira <sup>4</sup> .	Evaluation of risk factors for voice disorders in teachers and vocal acoustic analysis as an instrument for epidemiological evaluation.
2013	Masson, Loiola, Fabron, Horigüela <sup>1</sup> .	Vocal Warm-up and Cool-Down on Pedagogy Students
2014	Valente, Botelho, Silva <sup>7</sup> .	Profile of social security recipients due to benign voice disorders
2015	Cielo, Ribeiro, Hoffmann <sup>5</sup> .	Vocal symptoms of future voice professionals.
2016	Ferreira, Giannini, Alves, Brito, Andrade, Latorre <sup>6</sup> .	Voice disorder and teaching work ability
2016	Silva, Almeida, Lucena, Silva <sup>17</sup> .	Vocal symptoms and self-reported causes in teachers.

## Results and discussion

The main vocal alterations found in teachers are nodules, polyps, Reinke's edema, cyst, sulcus vocalis. The teacher has a high risk of developing voice disorder due to an occupational origin, due to exposure to several factors related to the work environment.

The vocal nodules are benign lesions of the larynx due to poor voice use associated with inappropriate habits. They are typically bilateral and occur in the middle membranous portion of right vocal folds, a place where greater contact force occurs during vocalisation<sup>8</sup>.

The main features of dysphonia are hoarseness, followed by vocal fatigue, sore throat and voice failures throughout the day. The otorhinolaryngologist makes the diagnosis through video laryngoscopy or video laryngo-stroboscopy. Once the lesion is diagnosed, it will initiate speech therapy, through vocal rest, notions of vocal hygiene and exercises to reabsorb the lesion<sup>9</sup>.

Polyps are benign mass lesions located within the lamina propria in the middle membranous portion of the vocal folds. However, polyps can

be found in the contralateral portion and may also involve practically the entire vocal fold extension, which is predominantly unilateral. The occurrence is due to a period of vocal abuse, although they may occur after a traumatic incident as an intense yelling.

The cysts appear on the margins of the vocal folds and are sometimes located on the upper surface, are predominantly unilateral and often confused with nodules and polyps. Reinke's edema is a natural tissue reaction to some trauma or inappropriate or excessive vocal use or concomitant with an infection or inflammation. In addition to vocal abuse, Reinke's edema is more commonly associated with smoking, which occurs more frequently in women, especially if they have been smokers for a long time<sup>8</sup>. Reinke's edema causes a decrease in vocal pitch, due to the increase in vocal fold mass<sup>10</sup>.

Sulcus Vocalis are benign lesions of the larynx in which a notch is observed along the upper midline of the vocal fold. The cause is still uncertain and may be due to misuse and vocal abuse. Inadequate use of voice suggests vocal production behaviors that distort the normal propensity of the

phonatory mechanism to work effectively and efficiently. The smooth production of the voice can be altered in several ways and each one of us can produce voice in a variety of ways, some more efficient, some not.

The vocal changes cause a great impact in the social, psychological and professional context of the teacher, interfering in the quality of life, being this an important factor, since it interferes in the physical and psychological well-being of the teacher. Dysphonia is any alteration that prevents the natural emission of voice and is directly related to the individual's quality of life<sup>11</sup>.

The lack of awareness, knowledge and physical structure of the work environment contribute to the high rate of teachers with voice problems. The teacher is the most investigated professional in relation to voice disorders, due to numerous alterations found in the class, characteristic that is related to the professional context<sup>12</sup>.

It is necessary to raise awareness to prevent vocal changes, since the negative impacts on teachers' health are numerous in the professional, psychological and social context. Several are the factors for vocal problems, the voice disorders in teachers are consequence of external factors, the environmental and organizational conditions that the teacher is exposed and the lack of knowledge of vocal techniques contributes to the sickness of these professionals<sup>13</sup>.

In this case, there is a tendency for the teacher not to consider dysphonia as an occupational hazard, believing that voice problems are inherent in teaching, not considering the need to prevent or treat the problem, which is now seen as a natural consequence of profession. The teacher needs to be aware that his or her voice problems may be related to their work.<sup>13</sup>

On the other hand, this inability to perceive the causes and alterations endangers the voice professional by exposing that some teachers because of lack of knowledge are unaware of their voice, which makes it difficult to perceive alterations in vocal quality, as well as does not associate vocal symptoms incorrect use of voice. Because of these commitments to vocal health, many teachers prefer to continue teaching even though they exhibit various symptoms and are not concerned with voice quality. Teachers are likely to be more concerned

with the functionality of voice rather than with vocal quality<sup>13-14</sup>.

Competing with student noise, fans, or external noise is another aggravating factor for the teacher. It's advisable to avoid this habit and adopt some strategy to save the voice. By competing with these types of noise generates an overload of the laryngeal musculature and friction in the vocal folds, both the external ambient noise and inside the classroom, cause the teachers to increase the vocal intensity causing an overload in the laryngeal musculature, and, besides can generate stress on the teacher. Noise and poor acoustics are a negative factor in the classroom, as well as violence in the school and lack of physical resources contributes to a teacher's vocal wear. In the work environment, several factors contribute to the appearance of vocal fold traumas, such as vocal overload, work stress, time of profession, dust in the workplace, repetitive work<sup>15-16</sup>.

It is known that with the aging of the human body, a series of changes are brought, at times uncomfortable ones, and the voice also suffers this impact. Lack of projection, shortness of breath, and vocal fatigue are some signs of voice aging. The more you age, the higher the chance of developing a vocal problem. Thus, it is verified that many Brazilian teachers face external factors together with a predisposition of the individual's biological factors, which leads to the withdrawal from the classroom<sup>17</sup>.

Stress associated with physical exhaustion can be considered as another cause of vocal alteration. This dissatisfaction with work generates emotional imbalance and many factors may include in this item self-medication, excessive use of alcohol and especially when associated with smoking and illicit drug use. The authors associate the development of stress leading to Burnout syndrome due to work overload and instability in the profession, thus affecting the teacher's emotional. Many teachers report that writing on a chalkboard, standing for a long time, carrying teaching materials, taking work home, and lack of a place to rest increases stress and promotes emotional imbalance. Self-medication is one of the problems among teachers since many do not seek the doctor, which increases the risk of worsening health<sup>16</sup>.

Another factor that compromises the teacher's voice is the excessive use of alcohol and smoking with the association of continuous use of voice and the presence of inappropriate habits. It is essential



for teachers to introduce healthy habits into their daily lives with their voice and to always seek out a qualified professional to guide them about vocal hygiene, thus reducing the risk of vocal changes<sup>18</sup>.

Therefore, it is essential to check the causes, symptoms of vocal changes and list what are the control and prevention measures. By explaining that it is relevant to know the causes/symptoms of vocal changes to adopt a policy of prevention of worker health promotion (teacher), such as vocal screening of teachers in schools as the objective of elaborating actions aimed at preventing vocal changes promoting, thus, quality of life at work (QLW)<sup>17</sup>.

The symptom is the manifestation of organic or functional modifications and is a complaint in which the patient may complain of sensation associated with phonation, such as a pain in the neck region or the sensation of throat irritation<sup>8</sup>. The vocal symptom is a complaint in which the individual reports what he feels in different ways, addressing sensations related to phonation, such as neck or throat pain after prolonged conversations<sup>19</sup>.

Hoarseness is one of the symptoms most presented by teachers and, also, otalgia, dysphagia, odynophagia, dry cough, and constant hoarseness may be present. Laryngoscopy should examine patients with a history of hoarseness for longer than three weeks<sup>20-21</sup>.

It is fundamental to perceive any alteration in vocal quality and to verify the presence of the symptoms. In many cases, the teacher's absence from the workplace is observed due to complications in the vocal folds, having as symptoms hoarseness followed by a weak voice, shortness of breath, voicelessness, vocal fatigue, an absence of voice, local pain, coughing, dry throat especially when teachers are in activities<sup>17-18</sup>.

It is important to emphasize that teachers present more than one symptom, and it is clear the presence of difficulties in communication, in personal relationships and with other school professionals<sup>22</sup>.

Inappropriate voice habits are a factor in triggering the symptoms, associated with a lack of awareness. Teachers use the voice intensely and often without any notion of care and vocal hygiene, thus perpetrating vocal abuses<sup>19</sup>.

The findings regarding vocal symptomatology emphasize that hoarseness is the most frequently reported complaint by teachers and it is noted that it is difficult to perceive the first symptoms of voice

alterations, thus, ignorance about the voice and lack of self-perception. determining factor<sup>23</sup>.

It is important to emphasize that if the symptoms intensify they can evolve into a laryngeal disease, and the consequences of the vocal symptoms lead to a loss to the teacher in professional, social and psychological life. For this reason, it is essential to be aware of the vocal changes<sup>22</sup>.

Work-related dysphonia may also be associated with symptoms of mental distress due to the demands of the work environment, and patients often associate the onset of the symptom with some stressful fact in their lives. The pressure that exists to respond to these demands, the fear of unemployment, the lack of information and other contingencies in the world causes the worker to support these symptoms and to continue working, until there is a worsening of the clinical picture, requiring therapeutic intervention<sup>24</sup>.

The voice is the work tool of the teacher and despite the new technologies nothing replaces the voice of the teacher. The number of teachers with vocal problems has increased significantly in recent years, and new research is being done to prevent vocal changes. Still, it is crucial to improve the vocal quality of the teacher to prevent the changes. However, it is necessary for teachers to understand the importance of identifying the symptoms of vocal problems, to prevent and seek medical assistance as quickly as possible<sup>25</sup>.

A worrying factor is a noise that is high in the school environment and must be addressed. ABNT (Brazilian Association of Technical Standards) NBR-10.152 recommends that the noise level in the school environment be between 40 and 50 dB (A). However, it is common to find noise above the established level, which harms the teacher in both voice and physical health, because excessive noise can lead to dizziness, nausea, insomnia, circulatory problems, digestive problems, irritability, and interfere with the communication process<sup>25</sup>. If the noise level was lower, than educators would not use the voice with such intensity as was observed in the authors' study, in which the relation between the mean values of the sound pressure level of the teachers' voices and the environmental noise (NPS), with and without children, and a positive correlation between vocal intensity and environmental noise was observed during classes with the presence of children<sup>15</sup>.

Teachers have limited knowledge regarding voice and, therefore, vocal health programs for this class of professionals are essential. The vocal health programs contribute satisfactorily to the vocal behavior of the teacher. It is possible to observe the decrease of the symptoms, controlled voice intensity, a decrease of vocal exhaustion, better vocal projection, reduction of cervical tension among others.

Vocal health programs are essential because it shows the teacher how to take care of the voice, being of fundamental importance in the academic curriculum, because when they begin to teach, they will have a higher perception of vocal problems and probably greater care to avoid future problems<sup>11</sup>.

An example of actions is the Voice care for Teacher Program created by the State of Minas Gerais that promotes education and awareness to teachers.

About the Voice care for Teacher Program, the Speech Therapy team conducted face-to-face lectures in public schools and until March 2012, 119,444 teachers were trained in the Program. Regarding the treatment, the teachers who presented vocal disorders were referred to the Public Servants' Welfare Institute (IPSEMG), to schedule the start of speech therapy treatment<sup>27</sup>.

It is crucial for the teacher to perform warm-up and vocal quenching to maintain vocal quality and avoid vocal problems. Also, it is essential to warm up and cool down to the muscles during the performance of activities<sup>28</sup>.

Besides, to warm up and cool down, it is essential to maintain healthy habits as<sup>29</sup>:

1. Avoid smoking, as cigarette affects all respiratory tract, as well as vocal folds, and the use of illegal drugs (crack, cocaine, marijuana, among others) because the aggression is even more significant in the respiratory tract and organism in general;
2. Avoid throat clearing, because even being an involuntary movement it ends up causing a friction in the vocal folds;
3. It is essential to pay attention to a cough, as the vocal folds beat up with each other;
4. Avoid screaming, as the scream further disturbs the vocal folds;
5. Avoid the use of air conditioning, as exposure causes drying of all vocal tract;
6. Avoid talking in a noisy environment;
7. The use of sprays and lozenges only hides the

symptoms, further aggravating the condition. Seeking the otorhinolaryngologist for an evaluation is fundamental.

8. Avoid tight clothing in the region of the diaphragm and accessories that hamper the production of speech like earrings, necklaces.
9. Temperature change is another factor, as it causes thermal shock, causing edema in the musculature of the larynx.
10. Allergies should be treated as a factor for vocal fold changes.
11. It is essential to always do vocal rest, a good night's sleep helps maintain vocal quality.
12. Healthy eating is essential to avoid heavy foods that make breathing difficult;
13. Drink 2 to 3 liters of natural water throughout the day.
14. Avoid milk and derivatives that increase the secretion of any vocal tract.

It is known that dysphonia is a great factor of absence in the work, for that reason, several researchers have been studying and they point out the urgency of new researches with preventive measures, related to the work environment of the teacher<sup>30</sup>. When talking about prevention, it is believed that it is necessary to give "voice" to the teacher, to know better the work environment, physical resources of the school among others, that is, to verify the real need of the teacher and thus, to build effective actions<sup>25</sup>.

Also, it is interesting the presence of speech-language pathologists in schools for issues related to voice and psychologists for mental health issues, noting that this assistance is not of a charitable but preventive nature. The actions which are multidisciplinary should complement the curriculum of the student, to learn notions of economy and vocal health, thus putting in practice the actions studied during graduation<sup>25</sup>.

Vocal alterations in teachers need to be studied and it should be addressed as soon as possible the forms of prevention, and it is crucial that Brazilian legislation adopts preventive actions, with the purpose of reducing vocal changes and early identification of symptoms and diagnosis<sup>2</sup>.

Vocal health programs are important because they aim to improve vocal changes in educators, considering that dysphonia is a symptom that interferes not only with the communication process but also with the physical, psychological and social

health of the individual, and often the teacher or because of lack of knowledge or because he is still able to give classes, even presenting the symptom, does not seek a specialized professional which leads to aggravation and worsening of dysphonia<sup>31</sup>.

## Conclusion

The voice is the work tool of the teacher and considering that the vocal alterations interfere in the interpersonal relations, it is fundamental to maintain a pleasant vocal quality.

It was possible to verify the central laryngeal pathologies that affect teachers such as nodules, polyps, Reinke's edema, cyst, vocal groove and the main symptoms that trigger these pathologies. Hoarseness is still the main symptom that affects the vocal quality of the teacher, but in addition to identifying the hoarseness one must worry about the other symptoms being: vocal fatigue, sensation of a strange body in the throat, voice failures, shortness of breath, burning in the throat, effort to speak, loss of voice power. It was verified that the teacher demonstrates resistance in seeking specialized care when they present some type of vocal symptom. The work environment is not always ideal, lack physical structure, classrooms are crowded, the teacher usually works in more than one school, which ends up causing fatigue in the musculature of the larynx. The lack of education of the students contributes to the increase of the stress in the teachers leading to physical and emotional problems that will end up interfering in the vocal quality. Besides, not adequate food (coffee, ice water, dense foods like chocolate, milk, and derivatives) causes clearing, excess mucus, thus generating effort when speaking.

Therefore, one can conclude that it is necessary to adopt measures of public health policy with the objective of educating teachers about notions of vocal hygiene communication strategies, vocal economy, and valorization of the profession. It is through a public policy and investments aimed at the vocal health of the teacher that one will be able to reduce the vocal pathologies and reduce the number of teachers adjusted due to vocal problems. As a suggestion of research, it is fundamental to invest in programs that deal with notions of vocal hygiene, vocal economy strategies, communication facilitation techniques, and periodic teacher screening. It is through awareness and prevention

that it will be possible to reduce these high rates of educators with vocal alteration.

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