



Atena
Editora
2022

PROFESSIONAL VOICE:

Integrated Practices of Teaching,
Research and University Extension

Maria Fabiana Bonfim de Lima-Silva
Aline Menezes Guedes Dias de Araújo
Patrícia Brianne da Costa Penha
Gabriella Lucena Feitosa
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Dados Internacionais de Catalogação na Publicação (CIP)

P964 Professional voice: integrated practices of teaching, research and university extension / Organizers Maria Fabiana Bonfim de Lima-Silva, Aline Menezes Guedes Dias de Araújo, Patrícia Brianne da Costa Penha, et al. – Ponta Grossa - PR: Atena, 2022.

Other organizers
Gabiella Lucena Feitosa
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Formato: PDF
Requisitos de sistema: Adobe Acrobat Reader
Modo de acesso: World Wide Web
Inclui bibliografia
ISBN 978-65-258-0261-9
DOI: <https://doi.org/10.22533/at.ed.619223005>

1. Voice. I. Maria Fabiana Bonfim de Lima-Silva (Organizer). II. Aline Menezes Guedes Dias de Araújo (Organizer). III. Patrícia Brianne da Costa Penha (Organizer). IV. Title.

CDD 784.9

Elaborado por Bibliotecária Janaina Ramos – CRB-8/9166

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ACKNOWLEDGEMENTS

To the Postgraduate Program in Linguistics (PROLING-UFPB) for the financial support for the publication of this e-book, which will allow reaching and inspiring new researchers in the universe and charming area of communication professionals.

To the Secretary of Education and Culture of the municipality of João Pessoa (SEDEC-JP) and the Integrated Center for Police Operations (CIOP - PB), for the partnership since the beginning of the ASSEVOX extension project.

To the Dean of Graduate Studies (PRPG-UFPB), the Coordination for the Improvement of Higher Education Personnel (CAPES), the Dean of Research (PROPESQ), the National Council for Scientific and Technological Development (CNPq) and the Extension Scholarship Program (PROBEX), for financial support through scholarships.

To the collaboration, participation, affection and receptivity of all voice professionals who, directly or indirectly, contributed to the development of the research.

To the commitment and dedication of all extension workers, ASSEVOX collaborators and the students of the Associated Postgraduate Program in Speech Therapy (PPGFon – UFPB, UFRN, UNCISAL), for making possible the elaboration of the works that contemplate this fascinating and priceless work.

PREFACE

Maria Fabiana Bonfim de Lima-Silva

This e-book is a collection of experiences from my insertion, in 2011, as a professor in the Department of Speech Therapy at the Federal University of Paraíba (UFPB). Upon joining this institution, I developed an extension project called the Voice Advisory Program for Teachers (ASSEVOX), based on the knowledge I gained during the period in which I took my master's and doctorate, at the Pontifical Catholic University of São Paulo (PUC-SP), under the guidance of the Professor Dr. Leslie Piccolotto Ferreira and Prof. Dr. Zuleica Camargo.

So, in the following year, with the desire that extension students could experience the reality of professors through practical experiences that went beyond the walls of the university, I submitted ASSEVOX to the UFPB 2012 Probex Notice, but unfortunately we did not receive the scholarship. Even so, with a pioneering group of six students, we started our actions through a Fluex project (Project only with volunteer students) in a private school with the objective of promoting vocal health for teachers and the school community. I remember that we went through several challenges, because the room that the school gave us for collection was not a clean, pleasant environment, however, we did not get discouraged and cleaned, painted the walls and renovated the entire room. Shortly after the renovation, we started our vocal health assessments and workshops. I remember to this day that many teachers were surprised by our act of cleaning the room, as no one had ever done anything to improve that room, and they said: "*It was an abandoned room*"; "...it was a real storage room for the school, now there is another room, well *organized and clean*".

It is worth noting that in the first meeting with the director of this school, it was emphasized that we would carry out vocal assessments of the teachers, but that after these procedures, the teachers participating in the project would receive the reports with the diagnosis and then participate in voice experience workshops with content theoretical and practical, within the school. In addition, our team inserted vocal health actions in the school calendar events (student day, teacher's day, family day, among others).

Then, in 2013, we took an important step towards ASSEVOX, we managed to get the project approved with a grant in the Probex 2013 Notice, and we entered into a partnership with the Department of Education and Culture of João Pessoa (SEDEC-JP). Thus, between 2012 and 2019, with the support of the Edital Probex and Fluex (UFPB), more than 60 extension workers participated in our project, from undergraduate, graduate and other courses (Psychology, Physiotherapy, among others). Currently, ASSEVOX has managed to cover 15 schools in the public and private network, including kindergarten, elementary and

high school. In addition, during these seven years, in person, we carried out an average of 420 vocal screenings, 44 voice experience workshops and 21 lectures. In the last lecture, held in 2019, we were invited by SEDEC-JP to talk about the importance of voice in teaching work and handling voice amplifiers, in which my doctoral student Patrícia Penha and I presented relevant data from the research developed by ASSEVOX and strategies correct handling of microphones (voice amplifiers). It is worth noting that more than 500 amplifiers were delivered to the teachers participating in this event.

Such actions carried out during this period, yielded us several products, including participation in local, regional and national events (congresses, seminars, meetings), 10 publications of scientific articles in national and international journals, 14 book chapters, 73 complete, expanded abstracts and annals, 21 course conclusion works, 31 scientific initiation works, 5 dissertations, among others.

However, in the first months of 2020, we were surprised by the onset of the SARS-CoV-2 pandemic, a rapidly spreading respiratory syndrome. Since then, several measures by the World Health Organization (WHO) have been taken to prevent the spread of this virus, including social distancing. This fact brought as the main impact to the ASSEVOX project the impossibility of carrying out the actions (workshops, screening and attendance) in person. As a result of these various changes, the project had to reinvent itself and adapt to the new reality, using digital platforms to continue developing its activities and contributing, more than ever, to society and the academic community. In addition, the project, which was previously aimed only at teachers, expanded its target audience to all voice professionals (teachers, telemarketers, digital influencers, actors, singers, telejournalists and others) and thus came to be called Vocal Advisory Program for Voice Professionals (ASSEVOX).

According to this new appearance, ASSEVOX showed itself to have solid foundations and an excellent potential to adapt to new situations. In this period, we idealized to make our *Instagram* profile a digital magazine, containing information accessible to voice professionals and the entire community. Through meetings, we create content, develop means of interaction and broaden our view of the most diverse forms of health promotion. With this, we continue with our scientific initiation projects, discuss book chapters, participate in open classes and regional events, publish scientific articles and, above all, drive our dreams!

Currently, we had the project "Analysis of the effects of a distance vocal health program for teachers in the state of Paraíba" approved in the Universal Demand Notice n° 09/2021, promoted by the Foundation for Research Support of the State of Paraíba (FAPESQ), which brings unprecedented insofar as there are no other proposals in force in the state with the purpose of assisting and supporting the essential professional for the development of our society, such as the teacher. issues related to the health and quality of life of several educators in the state, especially those who do not have the financial possibilities or conditions to be accompanied by a professional speech therapist.

This *e-book* is part of a beautiful journey full of challenges. A path traveled with dedication, responsibility and union. Therefore, we invite you, the reader, to know a little more about the work performed by the ASSEVOX group over these 10 years.

I wish you a good read and that this work is an inspiration for all those who wish to tread the paths of university extension, teaching and research.

PRESENTATION

This *e-book* entitled “**Professional Voice: Integrated Teaching, Research and University Extension Practices**” is the result of an extension project called “Vocal Advisory Program for Voice Professionals” (ASSEVOX), which has been developed since the year of 2012 with the support of the public notice for the Extension Scholarship Program (PROBEX) of the Federal University of Paraíba (UFPB), whose main objective is to promote vocal health and prevent voice disorders in the most diverse professionals who depend on it to perform their work.

In this work, 14 chapters were gathered that explain from the experience of students and teachers who participated in the voice advisory program, to themes related to the prevention of voice disorders, vocal health promotion and around expressiveness. In them, there are studies about teachers, telemarketers, telejournalists and digital influencers. The purpose of this e-book is to expand the knowledge of undergraduate, graduate and Speech-Language Pathology professionals, as well as all those interested in studying voice professionals. In addition, we hope to encourage and drive the development of research through the vision and experiences of a university extension.

It is important to highlight that this work is composed of results of scientific initiation research and experiences around the ASSEVOX university extension. The chapters were prepared by students (undergraduate and graduate students) and by professional researchers from UFPB and other institutions (UNIPÊe PUC-SP) who, in a responsible and qualified way, proposed to explain their studies with current and relevant themes for the scientific community and society as a whole.

We wish you a great read!


Maria Fabiana Bonfim de Lima-Silva
Aline Menezes Guedes Dias de Araújo
Patrícia Brianne da Costa Penha
Gabriella Lucena Feitosa
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RELATIONSHIP BETWEEN VOCAL AND STRESS SYMPTOMS IN EMERGENCY TELEOPERATORS

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ABSTRACT: Among voice professionals, telemarketers stand out for being exposed to environmental, organizational and individual risk factors that can impact their voice quality.

Objective: To verify whether there is a relationship between aspects of stress and vocal symptoms in telemarketers at an emergency care center. **Methods:** This study was approved by

the Ethics Committee for Research with Human Beings, under process number 0532/14. The same was carried out at the Integrated Center for Police Operations (CIOP) and it is a descriptive, observational, transversal and quantitative study. The sample consisted of 32 telemarketers of both sexes. These answered the Job Stress Scale questionnaire and the Telemarketing Operator Vocal Profile questionnaire. The data obtained were tabulated and analyzed using the free software R. **Results:** There were no correlations between stress and self-reported vocal symptoms by emergency call center operators. However, it was found that males were the most affected by stress and the most reported auditory and sensory vocal symptoms were: hoarseness, voice failure, dry cough, throat clearing and dry throat. **Conclusion:** There were no correlations between stress and self-reported vocal symptoms. However, most telemarketers presented stress and symptoms of voice disorder, which indicates the need to implement an interdisciplinary team consisting of a speech therapist, psychologist and physiotherapist to prevent and early detect disorders that may affect the communication of the telemarketer. emergency.

KEYWORDS: Voice, Telemarketing, Stress, Voice disorders.

1 | INTRODUCTION

In the current days, the teleoperator has been increasingly valued within companies, being responsible for direct communication with

the customer/user, either to provide information, sales or even to solve problems. Thus, the voice and image of the company becomes the voice of the teleoperator (BERTACHINI et al., 2000).

Among the voice professionals, teleoperators gain prominence for being exposed to multifactors that can generate or contribute to the development of vocal disorders. These risk factors for vocal health can be of environmental origin (such as intense voice use, sudden temperature change, too hot or cold environment, carpets, air conditioning, dust, smoke and noise in the environment), organizational (work-related stress, need for a greater number of breaks, unsatisfactory relationship with management, colleagues, and customers) and individual (age, gender, alcoholism, allergies, among others) (FERREIRA et al., 2018).

Bureau of Labor Statist (2013) point out that the duty of the emergency call operator is to define the important information of the requester, provide the location, as well as the nature of the emergency and pass on this information to the responsible sectors (fire department, military or civil police or even the medical team), who will go to the site of the incident to keep abreast of the situation and resolve it.

Therefore, the way this professional's work is organized can be quite rigid, exposing him/her to risks of voice-related diseases or bodily harm. Thus, teleoperators may present daily stress, often caused by the dynamics and characteristics of this profession, where they are subject to situations of tension, anxiety, nervousness and agitation (DASSIE-LEITE et al., 2011).

The main factor that can trigger vocal imbalance is psychological stress. Such factor, can affect one or more segments of the speech apparatus and cause vocal disorders even after the resolutions of psychological problems (PINHO, 1993). Stress responses contain states of apathy, fatigue, dissatisfaction, anxiety or even psychosomatic disorders of high severity (PENA et al., 2011).

A study conducted by Boone (1996), analyzed complaints from teleoperators regarding their voice, and found that they most often reported symptoms such as hoarseness, fatigue when speaking, loss of voice at the end of the work day, shortness of breath, constant coughing, pain when speaking and swallowing.

In addition, these voice professionals may present negative vocal signs and symptoms in different degrees, which may cause discomfort and compromise the performance in the profession (VILKMAN, 1996). The vocal disorders may involve alterations in the larynx, preventing the fulfillment and expression of the individual's functional needs (LEHTO, 2006; FERREIRA et al., 2008).

Considering the high rates of stress and vocal symptoms present in the context of these professionals, the phonoaudiological performance, in turn, may help them by performing guidelines and promoting new knowledge through programs of vocal health and

well-being, in order to prevent voice disorders and provide improvements in the quality of care (BERALDIN et al., 2005). Together with the psychologist, this may act in the selection and training of teleoperators with the aim of avoiding possible attacks of communication and psychological issues that can manifest themselves directly in the voice.

Given the above, the present study aimed to verify whether there is a relationship between the aspects of stress and the vocal symptoms self-reported by teleoperators of an emergency call center.

2 | METHODS

The research is characterized as descriptive, observational, cross-sectional, and quantitative. It was approved on May 28, 2021 by the Ethics Committee on Human Research of the institution of origin, under process number 0532/14 (CAAE:36516514.0.0000.5188). The study was conducted in an Integrated Police Operations Center (CIOP) that receives urgency and emergency calls to 190, 193, and 197.

First, a preliminary contact was made with the person responsible for the Integrated Center to allow the dissemination of the research at the site. With the acceptance of the teleoperators, all of them signed the Informed Consent Form (TCLE), giving permission to conduct and disseminate the research and its results, in accordance with Resolution MS/CNS/CNEP No. 466/12, of December 12, 2012.

The sample was composed of 32 teleoperators, civil and military police officers and civil firemen who worked as teleoperators in the institution where the research was conducted. All participants had a working day of 12 hours a day and 48 hours off. The eligibility criteria were: teleoperators working for at least 6 months in the profession, of both genders, between 18 and 60 years old, who were not on leave or with respiratory system problems. The questionnaires were applied in the institution itself, according to the teleoperators' available schedules. These occurred from Monday to Friday, in the morning and afternoon, from September 2018 to March 2019.

To conduct the study, the questionnaire "Vocal Profile of the Telemarketing Operator" (PVOT) (SANTOS et al., 2016) was applied, which includes 63 questions that address: personal data, functional situation, physical environment of the company and vocal aspects. In addition, we also applied the Job Stress Scale (JSS) questionnaire (THEORELL; KARASEK, 1996), which was translated and validated into Portuguese by Alves et al. (2004). The JSS has three dimensions: demand, control, and support, and aims to understand the causes of stress in the work environment, as well as psychosocial and stressful factors.

The data were tabulated in Microsoft Office Excel program (version 2016), performed descriptive and inferential analysis using R software (version 3.2.5). In the descriptive analysis, the absolute and relative frequency of the variables gender, auditory and sensory

symptoms were analyzed, the mean age and length of profession were extracted, as well as the mean, median, first quartile, third quartile and standard deviation for the demand, control and support dimensions of the JSS questionnaire.

In the inferential analysis, we used the Mann-Whitney test to analyze the relationship between gender and the JSS questionnaire items (a 10% significance level was adopted), and Spearman's Correlation test, to check the relationship between the scores of the JSS dimensions and the auditory and sensory vocal symptoms (a 5% significance level was adopted).

3 | RESULTS AND DISCUSSION

Teleoperators are exposed to several risk factors that may favor the development or worsening of voice disorders, and among them are emotional aspects such as stress. Such factor can be caused by the dynamics and characteristics of the profession. Thus, the present study aimed at verifying if there is a relationship between the stress aspects and the vocal symptoms self-reported by the teleoperators of an emergency call center.

In this study 32 teleoperators of both genders participated, being the majority women (53.13%; n=17). When compared with the study of Santos et al. (2016), also conducted with emergency call operators, it was found that there was a disagreement, because there is usually a predominance of males in this position and in this study, it was observed that most were women. This finding may be related to the increased demand for women in the call center sector.

The average age of teleoperators was 39.96 years (SD=8.13), similar to other studies in the area (DASSIE-LEITE; LOURENÇO; BEHLAU, 2011; SANTOS et al., 2016). According to Behlau, Azevedo and Pontes (2001), the period of greatest vocal efficiency is between 25 and 45 years and with advancing age, it is expected that there is a reduction of this efficiency due to structural changes in the larynx due to aging.

The mean time in the profession was 7.70 years (DP=5.86). In parallel to these findings, a study by Rechenberg et al. (2011), found that the average time of profession of emergency teleoperators was less than 2 years, while in the study of Constancio et al. (2012), the average time of performance was one to five months. Thus, in this study, we observed a longer time of profession which may further corroborate the emergence or worsening of vocal disorders when associated with the time in exposure to risk factors.

All teleoperators who participated in the study had a daily workload of 12 hours, followed by 48 hours off (n = 32). It is worth noting that the workload limit for teleworkers must be 6 hours a day, including breaks. In addition, the weekly limit of 36 hours must be respected, according to the understanding of art. 384 of the CLT. (BEIRITH ADVOGADOS, 2018).

From the data obtained by the PVOT it is possible to conclude that, in the sample studied, 25.00% (n = 8) have already missed work due to voice alterations, 62.50% (n = 20) reported always being satisfied with their voice and 62.50% (n = 20) have never received guidance or participated in any vocal training.

	Present		Absent	
	n	%	n	%
Symptoms vocals auditory				
Hoarseness	8	25,00	24	75,00
Loss of voice	2	6,25	30	93,75
Voice cracking	7	21,88	25	78,12
Shortness of breath	5	15,62	27	84,38
Thin voice	1	3,12	31	96,87
Thick voice	5	15,62	27	84,38
Voice varying between thick and thin	4	12,50	28	87,50
Weak voice	6	18,75	26	81,25
Sensory vocal symptoms	2	6,25	30	93,75
Sand in the throat	5	15,62	27	84,38
Ball in throat	2	6,25	30	93,75
Cough	6	18,75	26	81,25
Dry cough	6	18,75	26	81,25
Coughing with phlegm	0	0,00	32	100
Pain when speaking	0	0,00	32	100
Pain when swallowing	2	6,25	30	93,75
Difficulty swallowing	1	3,12	31	96,87
Burning throat	3	9,37	29	90,62
Secretion	4	12,50	28	97,50
Dry throat	10	31,25	22	68,75
Tiredness when speaking	3	9,37	29	90,62
Straining when speaking	3	9,37	29	90,62

Table 1 – Frequency and percentage of auditory and sensory symptoms self-reported by telemarketers.

Source: João Pessoa, 2019.

Regarding auditory vocal symptoms, it was verified in Table 1 the predominance of hoarseness (25.00%; n = 8) and voice failure (21.88%; n = 7). When comparing these data with the study of Santos et al. (2016), it was found that the participating teleoperators also reported in greater evidence the symptoms of hoarseness and voice failure.

In this study, hoarseness was the most frequent vocal symptom reported by teleoperators, a finding similar to other studies conducted with the same population (CHRISTMANN et al, 2010; ARAÚJO, 2013; SANTOS et al., 2016). The emergence of this symptom is related mainly to the intensive use of the voice that results in an overload of the phonator, affects the configuration of the vocal tract and the way the vocal folds function (CHRISTMANN et al., 2010; AMORIM, 2011).

In the study by Amorim et al. (2011), a perceptual-auditory evaluation was performed to verify the vocal behavior of teleoperators before and after working hours. The results showed that tension, asthenia, roughness, murmur and instability were similarly evidenced before and after the working day. Thus, one can understand the importance of a perceptual-auditory assessment in addition to the voice evaluation, and relate them to the vocal symptoms referred by teleoperators when entering and leaving the service.

Regarding vocal sensorial symptoms, we noticed in greater evidence a dry throat (31.25%; n = 10), hawking (18.75%; n = 6) and dry cough (18.75%; n = 6) (Table 1). These findings were similar to those found in the study by Ferreira et al. (2008), which identified the presence of dry throat/mouth, hawking and tiredness when talking. Thus, one can understand that the results of this study may be associated with the intense use of the voice, a very present characteristic in the reality of these professionals.

Dimensions JSS	Min	Q_{1/4}	Median	Media	Q_{3/4}	Máx	DP
Demand	11,00	15,75	17,00	16,68	18,00	20,00	2,29
Control	16,00	18,00	20,00	19,59	21,00	23,00	1,94
Support	12,00	18,00	21,00	20,12	22,00	24,00	2,56

Legend: Min: Minimum; Q1/4: First quartile; Q3/4: Third quartile; Max: Maximum; SD = Standard Deviation.

Table 2 - Descriptive of the demand, control, and support dimensions of the Job Stress Scale questionnaire. Source: João Pessoa, 2019.

Regarding the scores of the dimensions of the JSS questionnaire, the Support dimension had the highest average with 20.12 (DP = 2.56) points per subject, followed by the Control dimension (MD = 19.59; SD = 1.94) and finally, Demand (MD = 16.68; DP = 2.29) (Table 2).

Items	Test statistics	p-value
a) How often do you have to do your work tasks very quickly?	84,00	0,02*
i) In your work, do you have to repeat the same tasks many times?	102,00	0,06*
l) Can you choose WHAT to do in your work?	179,00	0,03*

Mann-Whitney test * $p \leq 0.1$.

Table 3 - Comparison of Job Stress Scale items among male teleworkers. Source: João Pessoa, 2019.

Comparing the items of the JSS questionnaire according to gender, it was possible to observe that such comparison showed significant results in the items speed at work, task repetition and lack of autonomy for males (Table 3). This finding indicates that they have a greater disposition to stress and may be even more susceptible to developing voice disorders.

Studies with other voice professionals, verified that situations of contradictory or discordant demands, lack of autonomy and the high demand at work, can be generating sources of stress (GIANNINI et al., 2012; SOUZA et al. 2013; CORREIA et al., 2019). Thus, it is worth emphasizing the importance of actions aimed at providing the teleworker and the employer with strategies to reduce stress in the work environment, such as reducing the workload, more breaks for rest, favoring an adequate acoustic environment, appropriate furniture, comfortable personal equipment (headsets) and the provision of convenient strategies for good relationships between managers, colleagues and customers/users (FERREIRA, 2008).

Variables	Demand		Control		Support	
	p-value	R	p-value	R	p-value	R
Vocal Symptoms	0,650	0,083	0,285	-0,194	0,934	-0,015

Spearman's correlation test = $p\text{-value} \leq 0.05$; Legend: $r = \rho$.

Table 4 - Correlation between JSS dimensions and self-reported vocal symptoms. Source: João Pessoa, 2019.

When performing Spearman's Correlation Test between the scores of the JSS dimensions and the auditory and sensory vocal symptoms, no correlation was observed between these variables in the sample studied (Table 4).

However, in view of the data exposed by the study, it was observed that it is essential to raise the awareness of the administration and management of the place for the implementation of an interdisciplinary team composed of a speech therapist, a psychologist and a physiotherapist. This team can act in the prevention and early detection of vocal, psychological and physical disorders in emergency teleoperators, which will promote a better quality of life and performance at work.

4 | CONCLUSION

No correlations were observed between stress and vocal symptoms self-reported by emergency teleoperators. However, it was found that males were the most affected by stress as a result of the need for speed at work, task repetition and lack of autonomy. The most frequently mentioned auditory and sensory vocal symptoms were hoarseness, voice failure, dry cough, hawking and dry throat. Most teleoperators presented symptoms of voice disorder and stress, which points to the need of implementing an interdisciplinary team composed of speech therapist, psychologist and physiotherapist to prevent and detect early, the disorders that may affect the communication of the emergency teleoperator.

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