



Atena
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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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(Organizers)



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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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identifying the location, as well as in the transfer of this data to the responsible sectors. Studies show that due to the long working hours, these workers may experience the presence and/or evolution of vocal disorders, linked to excessive use of the voice in their service. In addition, due to the Covid-19 pandemic and the need for these professionals to continue working in person, there is a concern that they will be infected in their work activities. **Objective:** To identify whether there is a relationship between the symptoms of Covid-19 and the voice quality of life of telemarketers at an emergency call center. **Methods:** Observational, descriptive, analytical, cross-sectional and quantitative study, with the participation of 46 telemarketers from an emergency service center in João Pessoa. Participants answered a form containing 157 questions prepared by the researchers, using questions adapted from the Voice Profile of the Telemarketing Operator and a Voice Quality of Life questionnaire, via Google Forms. Results: It was found in participants with symptoms of Covid-19, vocal symptoms of hoarseness, voice failure, weak voice and tiredness when speaking, as well as lower values for voice quality of life. **Conclusion:** Thus, there was a relationship between the symptoms of Covid-19 and the voice quality of life of emergency telemarketers. **KEYWORDS:** Voice, Worker's health, COVID-19.

ABSTRACT: The emergency call operator mediates and collects information, through telephone calls, relevant to the applicant, in

1 | INTRODUCTION

Voice professionals are those who use vocal production as a primary tool of work and need the maintenance of their vocal quality to perform their functions (CIELO; RIBEIRO; HOFFMANN, 2015). Among these professionals, we highlight telemarketers, who mediate, through telephone calls, the user's access to a given information/service (FERREIRA et al., 2008).

Among the teleservice sectors, it is worth mentioning the category of emergency call operators, responsible for capturing information from the requester, identifying the location and nature of the emergency, as well as transmitting the information to the responsible teams (firefighters, military police, civilian or medical team), aiming to ensure the resolution of the situation (BUREAU OF LABOR STATIST, 2013). Generally, these professionals have specific training (firefighters, military police or civilian police) and must fulfill a workload of 12 hours a day, interspersed with two consecutive rest days (SANTOS et al., 2016).

Given the long working day and the constant work stress, teleoperators can obtain the presence and/or the evolution of vocal disorders linked to the excessive use of the voice, which can negatively affect the quality of life of these individuals and collaborate to the development of possible dysfunctions, such as musculoskeletal body pain related to work or postural changes by repeated actions (mouse use, typing, phone use) (CONSTANCIO et al., 2012; MEDEIROS, 2019).

Added to this, with the pandemic arising from SARS-CoV-2 or Covid-19, there have been remarkable changes regarding the way workers act. According to studies (ISER et al., 2020; BRAZIL et al., 2021), this virus causes, in those infected, the appearance of several symptoms such as: dry cough, hoarseness, fever, mild dyspnea, sore throat, among others, becoming a great risk to workers in general. In this context, many countries have adopted sanitary measures aiming to reduce the percentage of infection, among which social distancing has been emphasized. In Brazil, in the first half of 2020, the Ministry of Health (MS) defined the criteria for isolation and quarantine, the closing of secondary establishments, and the use of some Personal Protective Equipment (PPE). With this, most of the services were reformulated to occur in a virtual way (home office) (BRAZIL, 2020).

However, the assistance category of emergency teleoperators continued to work in person, following protection measures stipulated by the MH and adopted by the institution against Covid-19. However, it is still possible that they are contaminated during their work activities. Thus, the study sought to identify whether there was a relationship between Covid-19 symptoms and the voice quality of life of telemarketers in an emergency call center, aiming to understand whether there are impacts that have a relevant influence on the lives of participants.

2 | METHODS

This is an observational, descriptive, analytical, cross-sectional, quantitative study. The research was approved by the Ethics and Research with Human Beings Committee of the Health Sciences Center of the Federal University of Paraíba (UFPB) on October 23, 2014, under process number 0532/14 and CAAE:36516514.0.0000.5188, approved on May 28, 2021. All participating teleoperators signed the Informed Consent Form (ICF) before being submitted to the procedures regarding the research, in accordance with the recommended by resolution 466/12 of the National Research Ethics Committee (CONEP).

This study was carried out with a sample of forty-six (46) emergency teleoperators working at the Integrated Police Operations Center (CIOP). This sample was defined by the following parameters: the teleoperators must agree to participate in all the stages of the study; they must not be on leave or away from their jobs and/or under speech therapy follow-up. Thus, from 58 teleoperators initially, 10 professionals were excluded for not meeting these criteria.

As for the sample characterization, the participants had been working in this center for about 6.93 (± 6.37) years, and most of them were active and receptive (67.40%; $n=31$), male (63.00%; $n=29$), with a mean age of 38.98 (± 8.63).

As for the collection procedures, at first we contacted the CIOP coordinator and explained the research proposal to the teleoperators. Subsequently, the TCLE was presented and filled out for the continuity of the collection. Then, a form developed by the researchers on GoogleForms was used and applied for data collection, using questions adapted from the questionnaire Perfil Vocal do Operador de Telemarketing (PVOT) by Santos et al. (2016) and using their own questionnaire of Quality of Life in Voice (QVL), validated by Gasparini and Behlau (2009), to investigate the before and during the pandemic of these individuals. The answers of 46 workers to these forms were analyzed, following the eligibility criteria. The collection occurred between the months of August to September 2020.

The survey form included 157 questions, referring to sociodemographic characteristics, teleworker activity, working conditions before and during the pandemic, and vocal conditions before and during the pandemic, vocal symptoms and laryngopharyngeal sensations.

Moreover, these 157 questions included questions adapted from the Voice-Related Quality of Life (V-RQOL) questionnaire (HOGIKYAN; SETHURAMAN, 1999) adapted and validated for Portuguese as Quality of Life in Voice (QVL) (GASPARINI; BEHLAU, 2009), which investigates the perception that the individual has of their vocal quality and their reactions to voice changes. The QVL includes 10 items covering 2 domains: socioemotional (questions 4, 5, 8 and 10) and physical (questions 1, 2, 3, 6, 7 and 9), as well as the global aspect (all questions). Each question has a scale to evaluate the severity of the problem,

expressed as follows: 1= it never happens and is not a problem; 2= it happens a little and is rarely a problem; 3= it happens sometimes and is a moderate problem; 4= it happens a lot and is almost always a problem; 5= it always happens and is really a bad problem. After scoring each domain, they have values that, after standardization, range from zero to one hundred, with a cutoff value of 91.25. Values above the cutoff point reflect better voice quality of life, while more below the cutoff point, show greater limitations imposed by the voice problem (BEHLAU et al., 2016).

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) software, version 20.0. The data were tabulated in a digital spreadsheet and analyzed descriptively, through measures of frequency, absolute and relative, and measures of central tendency. We also performed inferential analysis using Pearson's chi-square test, in order to associate the moment and the presence of symptoms related to Covid-19 with vocal aspects, and the paired parametric T-Student test for independent data, to compare the quality of life in teleoperators with and without Covid-19 symptoms. The significance level adopted was 5%.

3 | RESULTS AND DISCUSSION

The sample of this study is composed of 46 individuals, characterized mostly by males (n=29; 63.00%) when compared to females (n=17; 37.00%), with a mean age of 38.98 (± 8.63).

Most of the emergency room teleoperators had no symptoms of Covid-19 (n=24; 52.20%), having been tested (n=25; 54.30%) serologically (n=21; 45.70%) by the facility (n=22; 47.80%) and received a negative result (n=19; 41.30%). Despite this, positive results (n=6; 13.00%) for Covid-19 were also found among this sample, which may be an indication of the possibility of contagion within the establishment.

It was found that although teleoperators with Covid-19 symptoms did not notice changes in their voice, there was the presence of vocal symptoms such as hoarseness, voice failure, weak voice, and tiredness when speaking, with a significant difference between the two groups (with and without Covid-19 symptoms), given that Pearson's Chi-square Test showed a significance ($p < 0.005$) important for the study.

Variables	SYMPTOMS OF COVID				p-value
	YES		NO		
QVL total	96,44	4,35	99,34	1,13	0,008*
QVL emotional	53,61	10,88	60,85	2,82	0,008*
QVL physicist	77,41	7,25	82,23	1,88	0,008*

Test t-Student for independent data; significance $p < 0.005^*$.

Table 1 - Comparison of mean QVL in emergency teleoperators during the pandemic, with and without symptoms of COVID.

Source: João Pessoa, 2020.

Analyzing the data regarding the means of QVL during the pandemic, a significant difference was identified in the domains (socioemotional, physical and global) of QVL, with the p-value for each domain equal to 0.008. Moreover, it was found that the QVL values of teleoperators with Covid-19 symptoms were low for all domains, being the socioemotional the one with the lowest value (53.61%; SD=10.88).

In the sample analysis, it was noticed that 22 teleworkers (47.80%) marked the item “yes” for the “presence of symptoms and diagnosis of Covid-19 in emergency teleworkers”, even though less than half of the sample tested positive for the virus, allowing to understand that with the current circumstances, there was an increase in self-perception of vocal symptoms in these workers, which may be associated with their excessive vocal effort as a compensatory strategy for the continuous use of EPIs.

Cabral (2020) states that the use of the mask causes an attenuation between 5 to 12 dB in the intensity of speech sound, especially in the frequencies between 2,000 and 7,000 Hz responsible for the discrimination of phonemes, which causes a tendency to raise the pitch of the voice, aiming to circumvent the feedback impediment. Thus, the presence of vocal symptoms in teleoperators who do not present Covid-19 may be associated with the exacerbated use of the speech apparatus in an attempt to facilitate the transmission of the message during the execution of their functions.

Moreover, the number of participants who tested positive ($n=6$; 13.00%) for the Covid-19 virus, despite the low number, still shows as an alarming data for the continuity of the work of these workers, since the current literature, there is a high rate of infection in closed places, with a transmission rate of one infected person for up to 2 or 3 healthy people (MEDEIROS, 2020).

In those teleworkers who had Covid-19 symptoms, responses about voice symptoms were identified with a higher frequency of “sometimes” and “rarely” compared to those who did not have Covid-19 symptoms. The presence of hoarseness was mentioned by 7 individuals with symptoms of the coronavirus, or 31.80% of the professionals, through the answer “sometimes”. There was also the existence of this vocal complaint in the frequency

of “rarely” in 6 participants (27.30% of teleoperators).

Moreover, the presence of a weak voice “sometimes” and “rarely” was found more often in participants with Covid-19 symptoms than those without these symptoms. Thus, the study showed a predominance of the vocal symptoms of hoarseness, voice failure, dry cough, weak voice, and tiredness when speaking, in participants with Covid-19 symptoms compared to those asymptomatic for this virus, agreeing with the study by Santos et al. (2016) who identified the prevalence of hoarseness, thick voice, and weak voice symptoms in emergency teleoperators and with the findings of Silva et al. (2016) who found among the most referred vocal symptoms, also those of hoarseness, voice failure, and weak voice, for voice professionals - although both studies did not dimension the Covid-19 issue as the present research did.

With the worldwide pandemic, coming from Covid-19, researchers sought to investigate more about the impacts caused by the virus to human beings, since this pathogen brings several symptomatology and pathophysiological, emotional and social sequelae to the individual (SILVA et al., 2021). Specifically in the area of voice, there has been seen the need for research on the relationship between the symptoms developed by the virus and the impact on vocal production, since this virus affects the respiratory system and therefore tends to affect the phonatory system.

Lechien et al. (2020) conducted a study seeking to measure the prevalence of vocal disturbance in European patients with mild to moderate Covid-19 and the clinical characteristics of dysphonic patients. Data (clinical and epidemiological) were collected from 702 patients from 19 European hospitals. Their study exposed, among other findings, that vocal disturbance can be found in $\frac{1}{4}$ (one quarter) of patients with mild to moderate Covid-19 condition. These findings support the idea that the virus can also cause damage to the phonation system.

Analyzing the QVL of teleworkers, it was found that those with Covid-19 symptoms had a lower mean score compared to those without symptoms, indicating a worsening in the voice quality of life of these individuals. The most impaired QVL domain was the socioemotional one, present in the self-perception of teleoperators with and without Covid-19, being more expressive in those with the virus. It is known that the emotional issue is a determining factor for the proper functioning of the body, which can, in the presence of emotional imbalances arising from social, work or personal situations, cause the onset of dysfunctions that affect the quality of life of these individuals.

4 | CONCLUSION

Since those with Covid-19 symptoms showed a more intense presence of vocal symptoms such as hoarseness, voice cracking, weak voice, and tiredness when speaking

when compared to those not infected with the virus. In addition, we observed values below the ideal mean regarding the QVL of telecommuters with the presence of Covid-19 symptoms in all domains, being the emotional one the one with the lowest score for the infected ones. The data found in the research reinforce the importance of further studies with this public and the need for interdisciplinary action that must happen with emergency teleoperators in the city of João Pessoa.

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