Relationship between occupational data, symptoms and voice evaluation of teleservice operators

Relação entre dados ocupacionais, sintomas e avaliação vocal de operadores de telesserviços

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ABSTRACT

Purpose: To relate data regarding gender, age and length of time on the job with voice symptoms and the results of vocal evaluation of teleservice operators. **Methods:** A quantitative retrospective analysis was carried with 404 medical records regarding periodic evaluations of employees from bank institutions with owned headquarters contained in the files of a company of occupational medicine, 259 women, 145 men, with ages between 18 and 53 years (mean 30.48). The study had a descriptive exploratory design. **Results:** Women presented greater quantity of voice symptoms (mean 1.69) and voice alterations (n=33; 12.7%) than men (mean 1.12; n=6; 4.1%). No difference was found between the amount of voice symptoms and the auditory-perceptive evaluation when related to age and length of time on the job. Employees with neutral voices (n=365; 90.35%) presented lesser symptoms (1.41) than employees with non-neutral voices (n=39; 9.65%; mean 2.21). Thirty-four (87.2%) of the 39 employees with non-neutral quality of voice presented laryngopharyngeal resonance, and 21 (53.8%) presented low pitch. Operators with moderate voice alteration presented increased loudness when compared to the operators with discreet alteration. **Conclusion:** Women present greater rate of voice symptoms and disorders. There is no relationship between the increase of age and length of time performing teleoperator functions with the increase of the number of symptoms and vocal alterations. Alterations of pitch, loudness and resonance are related to alterations on the quality of voice.

Keywords: Voice; Voice quality; Voice disorders, Occupational diseases; Answering services

INTRODUCTION

The speech language therapy practice with teleservice operators and the search for improvement in occupational health are gaining space and projection in our country over the last years, due to expansion of this segment in the labor market. It was recently approved Appendix II of Regulatory Norm (RN) 17 about teleservice work, which enacts that all operating and managing workers must receive training that provides learning the work-related illnesses, as well as their causes and effects that may be related to the vocal duties[1].

According to the Brazilian Association of Teleservices ("Associação Brasileira de Teleserviços - ABT), in recent years the sector has achieved 235% growth, becoming one of the largest employers in the country. The main contractor is the sector of financial services and 25.4% of companies have over five hundred workstations. Most operators are females (76.8%) and time of training before beginning work is generally 4.4 weeks. Approximately 74% of these workers have the secondary level of education and 22% are university graduates[2].

The teleservice operator generally belongs to a young population, aged between 20 and 40, who has just completed high school or is attending college[3]. Currently, some companies have invested in their own call centers and have adopted career plans to the operators. This means that older professionals are already in the market, with more time in the function and, in many cases, with higher education.

Company-owned call centers, in general, provide better working conditions and better salary to the telemarketers. However, research does not explain or differentiate these professionals according to their place of work (owned or outsourced call centers)[4,5].

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In this study, it is believed that this differentiation is crucial, because the working conditions can be directly related to the vocal health of the operator. Therefore, it is not possible to have a generalized profile of this group of professionals. During the speech language therapy session at the stage of diagnosis, it is essential to understand the realities and specific needs of the organization. The physical environment requires a thorough analysis, since it may determine the success of a teleservice center or be the major generator of problems[2]. Therefore, this research is justified and becomes relevant, since it contributes to the discussion about the role of speech language therapy with teleservice operators.

Companies have sought excellence in quality of services for clients, as well as quality of life for the telemarketer. Currently, teleservice is an area of much value, as a proper communication with the client can contribute to build the good image of the company. The telemarketer, without the aid of body and facial communication, depends exclusively on the voice to captivate the client and achieve the proposed goal[6].

In a recent study, a survey of twenty-five thousand vocal assessments was conducted by a company of occupational health and it was concluded that teleservices operators have more voice disorders in periodic examinations than in admission examinations[7]. In an international study, it was concluded that the operator has twice the chance to present one or more vocal symptoms than those who do not perform this function[8]. This may occur due to the fact that these professionals know very little about the professional use of voice, using negative habits frequently (such as lack of proper hydration and insufficient vocal rest)[5,9].

Studies show some of the probable factors related to occupational voice disorders, such as inadequate ergonomic conditions, poor room acoustics, excessive voice demand, improper vocal habits, stress and mental exhaustion[10-14]. Thus, there are studies that show the importance of vocal training activities for operators[15,16]. A recent study assessed the occurrence of vocal symptoms before and after an eight-week vocal training program to teleservice operators. Participants were compared to a control group, composed of operators who did not attend the training, but also answered a questionnaire on the occurrence of vocal symptoms on both occasions. The authors concluded that there was no reduction of symptoms in the experimental group after training; however, the control group (untrained) had a higher number of symptoms after eight weeks, indicating that the training program can be helpful in preventing the accumulation or exacerbation of vocal symptoms[17].

Some of the vocal symptoms and complaints most referred by the operators are vocal fatigue, throat discomfort, throat clearing and hoarseness, which may cause laryngeal alterations or enhance the possibility of vocal destabilization[8,10]. In addition, a tense vocal production, hypernasal resonance, pharyngolaryngeal resonance and high intensity levels can cause the client to have a negative impression of the operator[18]. Therefore, getting to know better the profile of teleservice operators may contribute to design the speech language therapy's role with these professionals and to create specific vocal health programs for different groups, according to their needs.

The goal of the present study was to relate occupational data referring to gender, age and length of time in the function with voice symptoms and perceptual voice analysis of teleservice operators, employees of bank institutions' owned call centers, considering that the environment and work conditions can be directly related to the development of voice symptoms and disorders.

METHODS

This study was approved by the Ethics Committee of the Centro de Estudos da Voz – CEV (No. 0215/07). It is a retrospective analysis of 404 charts referring to periodical evaluations of employees of bank institutions with owned call centers, which appeared in the archives of a occupational medicine company. The study had quantitative analysis and a descriptive exploratory design. The director of the company provided informed consent. All research was in accordance with the *Resolução Brasileira do Conselho Nacional de Saúde.*

As inclusion criteria, the charts should be related to teleservice operators of bank institutions' owned call centers, with complete data of identification, age, time in the function, relation of vocal signs and symptoms and data of perceptual assessment of voice. All operators should have at least six months in the function. The vocal assessment should have been conducted by the speech therapist employed in the occupational medicine company, with proven experience in Voice (voice specialist or master degree). We excluded charts with incomplete information and also from individual working as lead operators or supervisors, and operators of outsourced call centers).

In each chart, there was a relation of the ten most frequent symptoms reported by voice professionals, and the operators could mark as many options as they considered necessary, according to their complaints. The options included hoarseness, voice loss, pain or burning to speak, fatigue or effort to speak, dry throat, throat clearing, burning in the chest or stomach, neck and shoulders tension, rhinitis or allergies, laryngitis, pharyngitis or sinusitis.

Regarding the perceptual evaluation, we analyzed the following parameters: voice quality, voice type, degree of disorder, resonance, pitch and loudness. The evaluation data were statistically compared with data from signs and symptoms, age and time in the function. For statistical analysis, we used the nonparametric tests of Mann-Whitney and Kruskal-Wallis for comparing two variables, and Chi-square to see if the two variables and their levels had statistical dependence. We adopted a significance level of 0.05.

RESULTS

The results show that females had a greater number of vocal symptoms (1.69) than males (1.12), with statistical difference ($p<0.001$). In addition, there were differences when comparing variables of gender and voice quality ($p=0.005$), with more females with non-neutral voice quality (altered voice) than males (Table 1).

There was no relation between number of symptoms, age, time in the function and data from perceptual assessment (Ta-

Table 1. Relation between gender and number of symptoms/voice quality

Gender	Symptoms		Voice quality		
	Average	p-value	Neutral (N)	Non-neutral (N)	p-value
Female	1.69	<0.001*	226	33	0.005*
Male	1.12		139	6	

* Statistically significant (p≤0.05) – Mann-Whitney Test

Table 2. Relation between symptoms/voice quality and age/time in the function

	Symptoms			Voice quality		
Age	Average	N	p-value	Neutral	Non-neutral	p-value
18 to 25	1.47	136		120	16	
26 to 30	1.43	108		102	6	
31 to 35	1.44	66	0.805	62	4	0.139
36 to 40	144	48		43	5	
over 41	1.8	46		38	8	
Time (years) in the function	Average	N	p-value	Neutral	Non-neutral	p-value
up to 1	1.41	109		100	9	
1.1 to 3	1.38	149		134	15	
3.1 to 5	1.77	56	0.157	51	5	0.13
5.1 to 10	1.38	58		55	3	
over 10	1.94	32		25	7	

Kruskal-Wallys and Chi-Square tests (p≤0.05)

ble 2). Therefore, the results show that there is neither higher frequency of vocal symptoms, nor greater number of altered voices in workers with a more advanced age or with longer time in the function.

The results also show the comparison between the amount of reported symptoms and data from the perceptual assessment of voice (Table 3).

It is observed that employees with voices considered neutral have lower number of vocal symptoms than employees with voices considered non-neutral, with statistical tendency for differences between the groups. However, there was no relation between the number of symptoms and the degree of voice disorder of employees with non-neutral voice quality. Thus, operators with mild and moderate degree of voice disorder have similar amount of voice symptoms.

We also obtained correlations of data on perceptual assessment. The parameter voice quality (with the degree of disorder) was related to the parameters pitch, loudness and resonance (Table 4).

Regarding the comparison between pitch and resonance, we observed that most of the 39 employees with non-neutral voice quality had pharyngolaryngeal resonance and more than half had low pitch. The table also shows that most of the operators with moderate degree of voice disorder had high loudness, which was not observed with operators with mild degree of disorder.

Table 3. Relation between the average number of symptoms and voice quality/degree of disorder

	Symptoms	
Voice quality	Average	p-value
Neutral	1.41	0.002*
Non-neutral	2.21	
Degree of disorder	Average	p-value
Mild	2.41	0.421
Moderate	1.75	

* Statistically significant (p≤0.05) – Mann-Whitney Test

DISCUSSION

The first studies involving teleservice operators focused on the analysis of the vocal profile of this population[3,5,8,11]. However, this segment has expanded the market for speech therapists and it is important to develop further research so that we can work more properly with these workers.

Some of the results with significant difference in this study corroborate the literature. Women had more symptoms and thus more voice disorders than men[19]. However, it is important to say that this data is also related to women's predisposition to develop lesions due to physiological posterior triangular gap[20].

The number of symptoms reported by operators is lower than the numbers indicated in other studies, as well as the number of altered vocal assessments[7,9]. The results for this kind of investigation may vary greatly due to the various types of teleservice operations, with different requirements, environmental conditions and risk factors for occupational health. We must consider that the results of this study reflect the profile of teleservice operators working in companies-owned call centers and with career plan.

Operators with voice disorders have more symptoms than operators with no disorders. Still, the average of symptoms for both genders was low when compared to the average of the general population, which may suggest that the operator

Table 4. Relationship between voice quality and pitch/resonance and between degree of voice disorder and loudness

	Voice quality		
Resonance	Non-neutral	Neutral	p-value
	n	n	
Balanced	2	353	<0.001*
Laryngopharyngeal	34	4	
Hyponasal	2	7	
Hypernasal	1	1	
	Voice quality		
Pitch	Non-neutral	Neutral	p-value
	n	n	
Normal	17	344	<0.001*
Low	21	19	
High	1	1	
	Degree of voice disorder		
Loudness	Mild	Moderate	p-value
	n	n	
Normal	24	8	<0.026*
Low	0	3	
High	3	1	

* Statistically significant (p≤0.05) – Chi-Square Test

needs a tougher vocal tract and a balanced vocal production to stay longer in the function/position.

People with more time in the function did not show increased symptoms or voice disorders than operators with less time. These results are different when compared to a study relating admission and periodic vocal evaluations of teleservice operators[7]. The authors, however, have investigated the entire population of teleservice operators met at an occupational medicine company, with very diverse profiles.

The fact that older operators with more time in the function do not have increased voice symptoms may be considered a very important factor for them to keep their jobs for a long period of time. This allows us to discuss the work on teleservice, which has been regarded as a temporary job and now seems to be providing opportunities for professional growth.

Regarding the perceptual assessment, operators with non-neutral voice quality had increased loudness, pharyngolaryngeal resonance and low pitch. These perceptual characteristics can provide important data on possible candidates do develop voice disorders, and should be considered during the speech therapist evaluation, even though there is not a change in voice quality itself.

The perceptual data reinforce the importance of research to identify characteristics which may be precursors of future vocal problems, such as the study that found there is an increase in fundamental frequency of voice during the operator's work day. This may suggest an increased laryngeal tension, a risk factor to develop dysphonia[21]. The positive relation among the variables (resonance and pitch x voice quality and loudness x degree of disorder) allows us to infer that isolated changes of these parameters could be precursors of voice problems. Accordingly, early identification could be crucial to maintaining vocal health of operators.

CONCLUSION

Teleservice operators of bank institutions with owned call centers have low occurrence of symptoms and voice disorders. There is no relation between advancing age and increasing time in the function with increased rates of symptoms and voice disorders. Operators with non-neutral voice quality (altered) have a higher number of vocal symptoms. Changes in pitch, loudness and resonance are related to changes in voice quality.

The results support the inference that the perceptual data may be important to identify possible candidates to develop vocal problems throughout their professional careers. For confirming such hypothesis, further research is needed, with better controlled variables and with data regarding the diagnosis of voice disorders of the operators. The present study shows different results compared to other studies, fact that reinforces the idea that the workplace may play a crucial role in the development of symptoms and voice disorders. Therefore, teleservice operators must be evaluated on their differences and diversities, so that we can have a more accurate diagnosis of these workers.

RESUMO

Objetivo: Relacionar dados referentes a gênero, idade e tempo na função com os sintomas vocais e os resultados da avaliação vocal de operadores de telesserviços. **Métodos:** Foi realizada análise retrospectiva e quantitativa de 404 prontuários referentes a avaliações periódicas de funcionários de instituições bancárias com centrais próprias constantes no arquivo de uma empresa de medicina ocupacional, 259 mulheres, 145 homens, com idades entre 18 e 53 anos (média 30,48). O estudo teve caráter exploratório descritivo. **Resultados:** Mulheres apresentam maior quantidade de sintomas vocais (média 1,69) e alteração de voz (n=33; 12,7%) do que homens (média 1,12 e n=6; 4,1%). Não houve diferença entre quantidade de sintomas vocais e dados da avaliação perceptivo-auditiva quando relacionados à faixa etária e tempo na função. Funcionários com vozes neutras (n=365; 90,35%) apresentaram menor número de sintomas (1,41) que funcionários com vozes não neutras (n=39, 9,65%, média 2,21). Dos 39 funcionários com qualidade vocal não-neutra, 34 (87,2%) apresentaram ressonância laringo-faríngea e 21 (53,8%) apresentaram *pitch* agravado. Operadores com alteração vocal de grau moderado (n=12; 2,97%) apresentaram maior ocorrência de *loudness* aumentada em relação aos operadores com alteração discreta. **Conclusão:** Mulheres apresentam maiores índices de sintomas e alteração de voz. Não há relação entre o avanço da idade e maior tempo na função do teleoperador com o aumento do número de sintomas e alterações vocais. Alterações de *pitch*, *loudness* e ressonância têm relação com alterações de qualidade vocal.

Descritores: Voz; Qualidade da voz; Distúrbios da voz; Doenças profissionais; Serviços de atendimento

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