Original Article

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Communication competence and voice activity participation profile in teachers from the Brazilian Federal District with and without voice handicap

Competência na comunicação e perfil de participação em atividades vocais de professores do Distrito Federal com e sem desvantagem vocal

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ABSTRACT

Purpose: To verify the self-evaluation of communication competence and the participation in vocal activities by teachers with and without voice handicap. **Methods:** A sample calculation was done to represent the 34.749 teachers of SEEDF. There were 111 teachers from different levels of teaching (infant, elementary and high school) in this study. The VHI-10 protocol, with a cutoff score of 7,5, was used to classify the teachers into two groups: a risk vocal group and a nonrisk vocal group. The teachers answered the SACCom protocol for the self-evaluation of communication competence and the VAPP protocol for the mensuration of how much a vocal problem constraints and limits different vocal activities. The results were analyzed and compared between both groups. **Results:** The risk vocal group presented lower scores of self-perception of communication competence in comparison to the non-risk vocal group (p=0,011) and higher values in every VAPP domain over the non-risk teachers group (p<0,001). Teachers with VAPP results above the cutoff values for the total score, additional activity limitation and participation restriction also obtained lower values in the SACCom (p=0.022; p<0.001; p=0.034). **Conclusion:** Teachers with vocal handicap evaluated themselves as less competent in their communication and faced higher limitations and restrictions in vocal activities. Teachers with limitations and restrictions in vocal activities also presented a worse self-assessment concerning communication competence.

Keywords: Voice; Communication; Faculty; Surveys and questionnaires; Self-testing

RESUMO

Objetivo: verificar a autopercepção da competência na comunicação e a autopercepção da participação em atividades vocais entre professores com e sem desvantagem vocal. **Métodos**: para definição do tamanho da amostra, foi realizado cálculo amostral de modo que representasse os 34.769 professores da Secretaria de Estado de Educação do Distrito Federal. Participaram da pesquisa 111 professores de diferentes níveis de ensino (infantil, fundamental e médio). O protocolo Índice de Desvantagem Vocal 10, com nota de corte de 7,5, foi utilizado para classificar os professores em dois grupos: grupo com desvantagem e grupo sem desvantagem vocal. Os professores responderam ao protocolo Teste de Autoavaliação de Competência Comunicativa (TACCom) para autoavaliação da competência na comunicação e ao protocolo Perfil de Participação e Atividades Vocais (PPAV) para mensuração do quanto um problema de voz restringe e limita diferentes atividades vocais. Os resultados foram analisados e comparados entre os dois grupos. **Resultados**: os professores do grupo com desvantagem apresentaram menores escores de autopercepção da competência na comunicação que os professores sem desvantagem (p=0,011). O grupo com desvantagem vocal apresentou maiores valores em todos os domínios do PPAV em comparação com o grupo de professores sem desvantagem (p<0,001). Os professores com resultados do PPAV acima dos valores de corte para os escores Total, pontuação de limitação das atividades e pontuação de restrição de participação também apresentaram menores valores no TACCom (p=0.022; p<0,001; p=0.034). **Conclusão**: professores com desvantagem vocal autoavaliaram-se como menos competentes em sua comunicação e referiram maior limitação e restrição em atividades vocais. Professores com limitação e restrição em atividades vocais também apresentaram pior autoavaliação em relação à competência na comunicação.

Palavras-chave: Voz; Comunicação; Docentes; Inquéritos e questionários; Autoteste

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INTRODUCTION

Teaching is a social activity, and communication is essential to the teachers' occupation, as interlocutors interact and meaning is constructed using language[1,2].

Communication is currently one of the most valued professional and interpersonal skills. Communication-competent people can use speaking and listening behaviors, including verbal and nonverbal language (voice, gestures, and facial expressions), to emit, convey, receive, and understand messages effectively. Hence, a competent communicator can use many skills – e.g., capturing and maintaining the listener's attention; influencing others with communication; making people remember their statements; letting others speak without interrupting them; having interlocutors receive their suggestions, criticisms, and feedback well; paying attention to the interlocutor's verbal and nonverbal information; showing genuine interest in what is said; memorizing other people's facts and characteristics and using them actively at opportune communication moments; and receiving criticism, suggestions, and feedback well[3].

Voice plays a central role among the teachers' resources. It is through voice that educators express their ideas and emotions and transmit their knowledge[1]. The voice carries the most information in a message, making it greatly important in relationships. It can also be transformed to indicate the speaker's position and convey meaning. Therefore, teachers must have good vocal quality and use coherent and precise information so that students understand the verbal and emotional message[1,2].

Teachers are known for their high vocal demands and report more voice problems than the general population[4]. Such problems compromise their classroom performance, generate noise in information transmission, and negatively influence the use of oral expression resources, hindering communication[2,4]. Furthermore, changed voices tend to impact listeners negatively, impairing the speaker's social and professional performance[5]. Thus, vocal impairment affects the quality of life and leads to physical, emotional, social, and professional limitations and impediments[5,6].

Self-assessment questionnaires have been widely used to understand a person's perspective on their health problem because they complement the clinician's view and provide important data on the treatment progress[7,8]. Considering how much a voice problem can compromise the speaker's quality of life and impair their communication[5,6], it is necessary to understand how the teachers' self-perception of voice handicap relates to their communication competence and voice activity participation.

This study aimed to verify the relationship between self-reported voice handicap and self-perceived communication competence and voice activity participation among teachers, considering their great vocal demand and high occurrence of vocal disorders.

METHODS

This study was approved by the Human Research Ethics Committee of the Health Sciences Education and Research Foundation, Brazil (CEP – FEPECS), under evaluation report number 4.717.370. This descriptive, cross-sectional, observational study applied questionnaires, and all teachers signed an informed consent form to participate in the research.

The sample size was calculated based on the total number of teachers in the State Department of Education of the Federal District (SEEDF), Brazil. Data from the 2020 Federal District School Census, available on the official SEEDF website, informed a population size of 34,769 teachers. The calculation used the sample size calculator available on the Survey Monkey platform, with a 95% confidence level and a 10% margin of error. The sample calculation resulted in at least 96 teachers.

Participants were selected through non-probabilistic convenience sampling. The convenience criterion made it possible to contact principals and schools near the evaluator, initially via email and/or telephone calls. Principals signed an authorization form, officializing and consenting to the participation of teachers from their schools in the research.

The inclusion criteria were as follows: being a SEEDF teacher, being over 18 years old, and currently working as a teacher. Those on leave and/or whose position had been redefined were excluded from the sample.

Data were collected during the COVID-19 pandemic when classes were held remotely online. Hence, part of the data was collected electronically by emailing an invitation letter and an email address to access the online survey form. The other part of the data was collected in person at the schools, through protocols given to the teachers, after resuming in-person classes. It is important to point out that the interviewer was not present as they filled out the questionnaires in either collection format; they only delivered and collected the questionnaires from the teachers at the schools. Thus, 122 teachers volunteered to participate in the survey, 11 of whom were excluded for not meeting the inclusion criteria, totaling a sample of 111 teachers from nine schools in four regional education districts of the Federal District. Teachers responded to the following instruments: medical history survey and sample characterization questionnaire and protocols, the Voice Handicap Index 10 (VHI-10), Self-Assessment of Communication Competence (SACCom), and Voice Activity and Participation Profile (VAPP). Data were collected between June and November 2021.

The medical history survey and sample characterization questionnaire had questions related to sex, age, teaching level (preschool, elementary school, middle school, and high school), length of professional experience, presence or absence of vocal complaints, and, if so, a space for describing the complaint. The researcher analyzed the complaints according to the symptoms reported and grouped them into seven categories: symptoms of changes in vocal quality, symptoms of vocal fatigue and effort, symptoms of breathy voice, symptoms of loss of vocal range frequency, symptoms of lack of vocal frequency control, symptoms of lack of vocal intensity control, and symptoms of unpleasant sensations during emission[6].

The teachers then answered the VHI-10 to measure their perception of voice handicap[9]. The protocol has 10 questions, each with a 5-point scale, with 0 corresponding to never and 4, to always. The final score is obtained by the simple sum of the points, ranging from 0 to 40 points – individuals with scores above 7.5 can be considered as similar to dysphonia[7]. Thus, teachers with scores equal to or above 7.5 perceived a voice handicap and were classified as the group with a voice handicap (GWH). Teachers with scores below 7.5 did not perceive a voice handicap and were classified as the group with no voice handicap (GNH).

The teachers self-assessed communication skills by responding to the SACCom, which has 19 yes/no questions on aspects of speaking and listening. The final score is based on a specific calculation spreadsheet provided by the authors, with results between 0 and 100 points – the higher the score, the better the self-assessment of communication skills[10].

They also answered the VAPP to measure how much a voice problem affects, restricts, and limits different social voice activities. It has 28 questions, subdivided into five dimensions: self-perception of the intensity of the vocal problem, effects on the job, effects on daily communication, effects on social communication, and effects on emotion. The maximum total score for the protocol is 280 points, summing all question scores – 10 points for self-perception of the intensity of the vocal problem, 40 points for effects on the job, 120 points for effects on daily communication, 40 points for effects on social communication, and 70 points for effects on emotion. The study also calculated the activity limitation score (ALS) (difficulties imposed on activities) and the participation restriction score (PRS) (reducing or avoiding activity participation when it involves voice use). ALS is calculated by summing the scores of the 10 even questions on the job, daily communication, and social communication (questions 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20), and the PRS is calculated by summing the scores of the 10 odd questions of these same aspects (questions 3, 5, 7, 9, 11, 13, 15, 17, 19, and 21), with maximum values of 100 points each[5]. Considering the particularities of teaching, the study used the cutoff of the total score and additional ALS and PRS scores specific to teachers, as follows: Total: 14.6; ALS: 1.65; PRS: 1.35[11].

The VHI-10 was chosen to define the groups because it has greater efficiency, sensitivity, and specificity than the VAPP and it is an excellent classifier in discriminating individuals with and without vocal changes(7,12). Furthermore, the VAPP is more efficient for dysphonic individuals in general but should be associated with other instruments when used for a specific population, such as teachers[12].

The VHI-10, SACCom, and VAPP scores were analyzed to verify whether the presence of voice handicap had a different impact on communication competence and voice activity participation in the two groups of teachers (GWH and GNH). The VAPP results (based on the cutoff points for the total, ALS, and PRS scores) were also associated with the SACCom scores to verify whether activity limitation and restriction were associated with a worse self-perception of communication competence.

The data were analyzed descriptively and inferentially using SPSS 25.0 software. The inferential analysis of the association between the nominal qualitative variables (sex, teaching level, complaints, and category of complaints) used Pearson's chi-square test. The inferential analysis of the comparison between non-normal quantitative SACCom and VAPP variables in relation to two independent groups (GWH and GNH) used the Mann-Whitney test.

Fisher's exact association test verified the relationship between the nominal qualitative VHI-10 and VAPP variables. The analyses between the non-normal quantitative SACCom variables and the nominal qualitative VAPP variables were performed using the Mann-Whitney comparison test.

RESULTS

The study included 111 SEEDF teachers – 83 (74.77%) females and 28 (25.22%) males –, with a mean age of 41 years (SD = 9.35). Their mean length of teaching experience was 13 years (SD = 8.56), most frequently teaching elementary school (n = 55; 49.55%), followed by middle school (n = 34; 30.63%), preschool (n = 14; 12.61%), and high school (n = 8; 7.21%).

Vocal complaints were present in 37.84% (n = 42) and absent in 62.16% (n = 69) of teachers. Among the 42 teachers with complaints, 28 (66.66%) reported changes in vocal quality; 19 (45.23%) reported unpleasant sensations during emission; 15 (35.71%) reported fatigue and vocal effort; and six (14.28%) reported a loss of intensity control. No teacher reported complaints that could be associated with the breathy voice, loss of vocal range frequency, or loss of voice frequency control.

Regarding the characterization of the sample, 77 (69.36%) of the 111 subjects did not perceive voice handicap and were classified as GNH, whereas 34 (30.63%) perceived handicap and were classified as GWH

There was no difference between the two groups regarding age, length of service, sex, or teaching level. However, they differed regarding the presence of complaints – GWH was associated with complaints regarding voice use, and GNH was associated with the absence of such complaints ($p < 0.001$) (Table 1).

The SACCom results analysis showed that GWH had lower scores for self-perceived communication competence than GNH, with a significant difference ($p = 0.011$) (Table 2). As for the VAPP and VHI results, GWH had higher scores than GNH in all VAPP domains and in ALS and PRS ($p < 0.001$) (Table 2). Moreover, GWH was associated with the subjects whose Total, ALS, and PRS scores were above the cutoff, and GNH was associated with those whose Total, ALS, and PRS scores were below the cutoff ($p < 0.001$) (Table 3). The subjects with Total, ALS, and PRS scores above the cutoff were respectively classified as affected, with limitation, and with restriction, whereas those whose scores were below the cutoff were classified as unaffected, without limitation, and without restriction.

Individuals whose total VAPP, ALS, and PRS scores were above the cutoff had lower SACCom scores, while those with these scores below the cutoff had higher values in the same test, with differences between subjects ($p = 0.022$; $p < 0.001$; $p = 0,034$) (Table 4).

DISCUSSION

Voice problems can harm an individual's life in several aspects, compromising their social and emotional relationships, their daily communication needs, and their professional practice[5]. Since the role of a teacher demands oral communication with intense voice use, it is essential to understand how self-reported voice handicap relates to communication competence and voice activity participation.

Most teachers in this study sample were females, confirming the predominance of women among teachers[4,12-14]. Their mean age and length of service were also similar to those found in the literature[4,5,14,15].

The presence of self-reported complaints in this study was similar to that found in another one with elementary school teachers,

Table 1. Association between sample characterization variables and the groups of teachers

Variables	Group				Total		X^2	DF	p-value
	No handicap		With handicap						
	n	%	n	%	n	%			
Sex									
Females	56	50.45	27	24.32	83	74.77	0.559	1	0.455
Males	21	18.91	7	6.3	28	25.22			
Total	77	69.36	34	30.63	111	100			
Teaching level									
Preschool	12	10.81	2	1.8	14	12.61	4.39	3	0.222
Elementary school	40	36.03	15	13.51	55	49.54			
Middle school	21	18.91	13	11.71	34	30.63			
High school	4	3.6	4	3.6	8	7.2			
Total	77	69.36	34	30.63	111	100			
Voice complaints									
Yes	13	11.71	29	26.12	42	37.83	46.93	1	<0.001*
No	64	57.65	5	4.5	69	62.16			
Total	77	69.36	34	30.63	111	100			

*Statistically significant values ($p < 0.005$); X^2 = Pearson's chi-square test; DF = degrees of freedom; < = less than
Subtitle: n = absolute frequency; % = relative frequency

Table 2. Description of communication competence and profile of voice activity participation per group of teachers

Variables	Mean	SD	Minimum	Maximum	Q_1	Median	Q_3	p-value
SACCom								
GNH	88.88	10.57	65.30	100.00	79.20	90.40	100.00	0.011*
GWH	82.19	13.53	50.60	100.00	71.48	85.70	92.18	
Intensity of the voice problem								
GNH	1.06	1.82	0.00	9.00	0.00	0.00	1.50	<0.001*
GWH	4.71	2.47	0.00	9.00	2.00	5.00	7.00	
Social communication								
GNH	0.51	1.90	0.00	11.00	0.00	0.00	0.00	<0.001*
GWH	8.12	9.32	0.00	33.00	0.00	4.50	16.25	
Effects on the job								
GNH	0.71	1.50	0.00	7.00	0.00	0.00	1.00	<0.001*
GWH	11.76	9.91	0.00	33.00	2.75	9.50	16.75	
Daily communication								
GNH	1.97	4.37	0.00	28.00	0.00	0.00	2.00	<0.001*
GWH	34.79	31.03	0.00	109.00	11.00	21.50	64.50	
Emotion								
GNH	1.40	4.48	0.00	28.00	0.00	0.00	0.00	<0.001*
GWH	21.50	19.44	0.00	63.00	4.00	17.00	33.75	
Total VAPP								
GNH	5.66	10.66	0.00	53.00	0.00	1.00	6.50	<0.001*
GWH	80.88	66.05	1.00	224.00	24.75	65.00	141.50	
ALS								
GNH	0.18	0.39	0.00	1.00	0.00	0.00	0.00	<0.001*
GWH	21.70	23.40	2.00	83.00	5.75	11.00	25.25	
PRS								
GNH	0.08	0.28	0.00	1.00	0.00	0.00	0.00	<0.001*
GWH	21.32	22.82	2.00	91.00	4.00	14.00	27.00	

*Statistically significant values ($p < 0.001$) – Mann-Whitney test; < = less than
Subtitle: SACCom = Self-Assessment of Communication Competence; VAPP = Voice Activity and Participation Profile; ALS = activity limitation score; PRS = participation restriction score; SD = standard deviation; Q_1 = quartile 1; Q_3 = quartile 3; GWH = group with voice handicap; GNH = group with no voice handicap

which found a prevalence of complaints in 39.7% of the sample[16]. Two other studies identified reports of vocal complaints in 63.3% and 54% of the samples[14,17], results higher than those of the present study. The differences in the prevalence of vocal complaints among teachers demonstrate the variability in the literature, which may be related to different work settings and organization.

Most teachers with vocal complaints in this study reported symptoms of changes in vocal quality, followed by symptoms

Table 3. Association between variables of voice activity participation according to the cutoff scores and the groups of teachers

	GWH		GNH		Total		p-value
	n	%	n	%	n	%	
Total VAPP							
Affected	30	27.02	8	7.20	38	34.23	p<0.001*
Not affected	4	3.60	69	62.16	73	65.76	
Total	34	30.63	77	69.36	111	100	
ALS							
With limitation	31	27.92	25	22.52	56	50.45	p<0.001*
No Limitation	3	2.70	52	46.84	55	49.54	
Total	34	30.63	77	69.36	111	100	
PRS							
With restriction	28	25.22	13	11.71	41	36.93	p<0.001*
No restriction	6	5.40	64	57.65	70	63.06	
Total	34	30.63	77	69.36	111	100	

*Statistically significant values – Fisher's exact test; < = less than

Subtitle: n = absolute frequency; % = relative frequency; GWH = group with voice handicap; GNH = group with no voice handicap; VAPP = Voice Activity and Participation Profile; ALS = activity limitation score; PRS = participation restriction score

Table 4. Association between variables of voice activity participation according to cutoff scores and communication competence

VAPP	SACCom							
	Mean	SD	Minimum	Maximum	Q_1	Median	Q_3	p-value
Total								
Affected	82.9	13.6	50.6	100	72.2	85.8	93.5	0.022*
Not affected	88.9	10.4	65.9	100	79.9	90.4	100	
ALS								
With limitation	82.8	12.9	50.6	100	73.1	84.6	92.2	<0.001*
No limitation	91	9.16	69.5	100	86.8	94.2	100	
PRS								
With restriction	83.4	13.3	50.6	100	73.4	86.6	94.2	0.034*
No restriction	88.8	10.6	65.3	100	80.1	90.4	100	

*Statistically significant values (p < 0.05) – Mann-Whitney's comparison test; < = less than

Subtitle: SACCom = Self-Assessment of Communication Competence; VAPP = Voice Activity and Participation Profile; ALS = activity limitation score; PRS = participation restriction score; SD = standard deviation; Q_1 = quartile 1; Q_3 = quartile 3

of vocal fatigue and effort, and lack of vocal intensity control. A previous study also observed a higher prevalence of symptoms related to changes in vocal quality, identifying hoarseness as the main symptom in 43.3% and weak voice in 30% of the teachers[14]. In other studies, symptoms of vocal tract discomfort (e.g., throat clearing and dry throat) were reported more frequently than those associated with vocal quality[16,18]. These findings point to the multiplicity of symptoms in the development of a voice problem. Hence, it is necessary to approach symptoms related to vocal quality and proprioceptive vocal tract discomfort. It is worth noting that the teachers in this study did not mention symptoms of breathy voice and lack of frequency control. The lack of responses in these two aspects is probably due to the lack of prior auditory and voice training for teachers to perceive these vocal nuances.

Regarding voice handicap (verified with the VHI-10 to separate the GWH and GNH), the group's mean age and length of service were similar for both groups, agreeing with other studies with teachers[5,8,18].

Furthermore, there was no difference between males and females regarding the presence of a voice handicap, which differs from other studies. Research with Kuwaiti teachers found higher VHI scores for females, indicating a worse quality of life for women[19]. A similar result was found in another study with Chinese teachers diagnosed with vocal changes, finding that women self-reported a worse quality of life through the VHI-10 and Voice-Related Quality of Life[20]. A study with dysphonic individuals concluded that awareness of the vocal problem did not differ between sexes, although women reported a greater voice handicap than men before starting voice therapy[21]. According to the authors, the worst impact of vocal problems on women's quality of life may be related to social obligations and the demands of caring for children and family members imposed on them, causing them to neglect their own health, which in turn delays the search for diagnosis, despite having noticeably more severe symptoms[21]. Thus, future research on the impact of a voice problem on quality of life should also consider aspects of the subjects' gender roles.

Despite the particularities and various demands of voice use and communication at different teaching levels, this study found no association between this difference and the presence of a voice handicap. Hence, it differed from the study with Kuwaiti teachers, which found a greater voice handicap among those in elementary education[19]. Thus, the findings in the literature and in this study point to the lack of consensus regarding the

presence of voice handicap and its link with the teachers' age, sex, and teaching level.

Complaints were the only factor associated with the perception of voice handicap, as GWH was associated with the presence of complaints and GNH with their absence. A study with teachers with vocal complaints and a diagnosis of behavioral dysphonia found a mean VHI score above the estimated cutoff for individuals without a voice handicap[14]. Another study found a similar result, as teachers with vocal complaints had more vocal symptoms, a greater voice handicap, and a worse voice-related quality of life[8]. Studies validating the VHI-10 for different languages, including the one for Brazilian Portuguese, also found significant differences in the presence of perceived voice handicap between groups with and without vocal complaints[7,9]. Thus, the association between voice complaints and worse a voice handicap is expected and agrees with the results found in the literature.

It is worth mentioning that the VHI-10 validation studies[7,9] were carried out in individuals diagnosed as dysphonic and non-dysphonic, legitimizing its validity to affirm that vocal problems can affect the individual's life. However, despite the relationship between teachers' vocal complaints and their worse perception of quality of life, some teachers may have voice complaints but not a voice handicap. This may be associated with how they deal with their health-illness process, with difficulty approaching the voice symptoms and changes that they may feel or have during their professional life. Thus, they may be insensitive to their own suffering, distorting how they perceive, feel, interpret, understand, adapt to, and deal with everyday experiences, likely enhanced by how the teaching-learning process is organized[22,23].

Given this complexity and considering that the VHI-10 assesses not only physiological but also social and emotional aspects, it cannot be stated that individuals with vocal complaints necessarily perceive themselves as having a voice handicap. Thus, vocal complaints are expected to relate to a greater perception of voice handicap, even though this association cannot be generalized.

GWH teachers self-assessed their communication competence as lower than GNH teachers. In addition, teachers with activity limitations and restrictions also had lower SACCom scores. A study with university professors concluded that those who were vocally healthy and had better interpersonal communication skills self-assessed with greater communication competence[24]. This leads us to conclude that voice handicaps and voice activity limitations and restrictions are associated with a worse self-assessment of communication competence in teachers – i.e., teachers with voice handicaps feel more harm and interference in their communication.

Besides social and cultural aspects, voice problems have significant impacts on the teacher's professional performance. They restrict linguistic and emotional expressions, making the voice less motivating and pleasant, and harming teachers and students, who no longer have favorable learning conditions[2,25]. Moreover, teachers' dysphonia can negatively influence the use of oral expression resources, compromising communication and negatively interfering with students' understanding of the message[26]. On the other hand, voice complaints do not prevent them from performing their duties; rather, they tend to cope with vocal symptoms by changing/adapting classroom strategies[4], impairing the quality of teaching and the students' learning experience.

Most speech-language-hearing studies on communication aimed to understand expressiveness, investigating the speakers' use of verbal, vocal, and nonverbal resources[27,28]. Thus, the actions recently developed by speech-language-hearing pathologists are aligned with these professionals' needs, as they began addressing teachers' voices in the context of communication[28].

It is greatly important to understand how to improve the expressiveness of occupational voice users. Using expressive resources in harmony with the verbal message helps convey the message and have others understand the speech. On the other hand, limited mastery of these skills is insufficient to develop communication competence because communication requires listening and empathy to share ideas, emotions, and thoughts with other people[3,28]. Few studies have aimed to understand how teachers evaluate their own communication and expressiveness and how they perceive themselves as listeners.

GWH participants in this study perceived the vocal impact on daily activities more than those from GNH. They felt greater effects on the intensity of the vocal problem, the job, daily communication, social communication, and emotion – the effects on daily communication and emotion were the most perceived by handicapped teachers.

A study with teachers compared the scores of the self-assessed Voice-Related Quality-of-Life, VHI, and VAPP and found that the worse the self-perceived degree of the voice problem, the worse the scores of the three protocols, with the following mean scores: Total VAPP: 87.8; severity of the problem: 4.9; effects on the job: 13.8; effects on daily communication: 37.7; effects on social communication: 7.3; and effects on emotions: 24.3[12]. Teachers also felt greater effects of voice problems on daily communication and emotion – data similar to those found in the present study, confirming the strong relationship between voice and performance in activities focused on communication. A study with teachers with and without vocal complaints showed that those with complaints had a mean total VAPP score of 79.50 points and greater limitation than teachers without vocal complaints[29] – a result similar to that found in this study. Therefore, the VAPP scores in the GWH of this study were similar to those found in the literature in individuals with vocal complaints.

Regarding voice activity limitation and restriction, GWH teachers had mean ALS and PRS scores above the cutoff, while GNH teachers had mean scores below the cutoff. The VAPP validation study in Brazil with teachers with vocal complaints had higher mean scores (37.9 for ALS and 31.1 for PRS), demonstrating greater limitation than restriction in performing professional and other daily activities[5]. The present study found no difference between the two scores, indicating that teachers with a voice handicap feel equally limited and restricted in performing their work and social functions – i.e., they have difficulties and reduce or avoid participating in activities that involve voice use.

A study found that teachers reported being more prone to reducing activities or interactions and missing more work days due to vocal problems than non-teachers[4]. In addition, teachers consistently ascribed vocal signs and symptoms to their occupation and indicated that vocal dysfunction limits their ability to perform certain tasks at work. In contrast, although teachers admitted that voice problems prevented them from performing certain job tasks, most reported that they did not seek help and did not take time off work to recover[4]. These findings reflect the teachers' work culture, considering voice problems as expected and inherent to their routine.

Therefore, teachers need voice and communication skills training to raise their awareness of the importance of voice for communication, as they are related aspects. They must also be encouraged to reflect on how vocal impairment can limit their activities, interfere with effective communication, and hinder students' understanding and attention[8]. Protecting and developing the quality of their voice - and, therefore, their communication – provide students with better learning conditions, and teachers are given control over their oral communication, improving their personal and work relationships and their quality of life.

The results in the literature and the present study show that the perceived voice handicap is associated with a worse self-assessment of communication competence and lower participation in daily voice activities. Instruments should be used in cases of vocal complaints to investigate the self-perception of voice handicap and communication competence and their impact on voice activities. It is also recommended that actions to promote teachers' health approach vocal quality, expression resources, and the listening skills necessary to develop communication competence.

Regarding the study limitations, it is necessary to consider that the data collection method (partly in person and partly through an online questionnaire) may have influenced the results, since the responses obtained through the two formats may have differed. Some questions may be difficult to understand, and questions cannot be clarified when the questionnaire is applied online. Moreover, respondents are more likely to know all the questions in advance and be better "prepared" for what they think is the "desirable answer". On the other hand, there is a greater guarantee of anonymity and a lower risk of the interviewer influencing or even defrauding the responses since participants answer online questionnaires by themselves[30].

Another point to consider as a possible bias is that the data were collected at two different times – firstly, during online classes and, later, after in-person classes resumed. This may have influenced the responses since the self-assessment of communication competence can be analyzed differently when comparing virtual with in-person communication.

Lastly, the convenience sampling may have interfered with the results since there was no representation per region. Therefore, the results cannot be generalized to the entire population of teachers because the sample refers to those of a specific system.

CONCLUSION

Teachers with voice handicaps self-assessed their communication competence as lower and reported greater voice activity limitations and restrictions. Teachers with such limitations and restrictions also self-assessed their communication competence as worse.

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