Original Article

Artigo Original

Analysis of aspects of quality of life in teachers' voice after discharged: longitudinal study

Análise dos aspectos de qualidade de vida em voz em professores após alta fonoaudiológica: estudo longitudinal

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Keywords

Voice
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ABSTRACT

Purpose: To evaluate the long-term effects of voice therapy on the life quality of teachers who were discharged or abandoned the voice therapy for dysphonia. **Methods:** This was a longitudinal study based on analysis of assessments with teachers of municipal schools in Belo Horizonte, who were referred to voice therapy and were discharged or abandoned the speech-language therapy for more than six months. A total of 33 teachers in the discharged group and 20 teachers in the abandoned group were contacted by phone and invited to participate in the study by answering the Voice activity and participation profile, which was forwarded to the researchers and sent via letter. **Results:** At the moment of the pre speech therapy, the discharged and abandoned groups were homogeneous, except in relation to daily communication parameter. Comparing the discharged group in the pre and post speech-language therapy, it was showed improvements in social communication parameter as well as in the total score. The discharged group presented worsening in self-perception parameter when comparing the average values in the post therapy and current moments, and the group abandoned presented worsening in work, social communication and total score when comparing to the average values in the pre therapy and current moments. The discharged and abandoned groups differ in the present moment in all investigated parameters. **Conclusion:** Speech-language therapy for dysphonia have long term positive effects on life quality and voice of teachers who were soon discharged from the therapy and in a period of two years on average. Teachers who have abandoned treatment and did not obtain improvement in the voice showed negative impact in life quality and voice in a time of 2 years and 2 months on average.

Descritores

Voz
Distúrbios da voz
Docentes
Fonoaudiologia
Qualidade de vida

RESUMO

Objetivo: Avaliar os efeitos em longo prazo da fonoterapia na qualidade de vida de professoras que receberam alta ou abandonaram o tratamento fonoaudiológico para disfonia. **Métodos:** Tratou-se de um estudo longitudinal baseado na análise das avaliações realizadas com docentes da rede municipal de ensino de Belo Horizonte, encaminhados para fonoterapia, que tiveram alta ou abandonaram o tratamento fonoaudiológico há mais de seis meses. Participaram 33 professoras no grupo alta e 20 no grupo abandono que foram contatadas, por meio de ligações telefônicas, e convidadas a responder ao protocolo Perfil de participação em atividades vocais, enviado e reencaminhado às pesquisadoras por meio de carta. **Resultados:** No momento pré-fonoterapia, os grupos alta e abandono eram homogêneos, exceto em relação ao parâmetro comunicação diária. Na comparação do grupo alta nos momentos pré e pós-fonoterapia observou-se melhora no parâmetro comunicação social e no escore total. O grupo alta apresentou piora no parâmetro autopercepção na comparação das médias nos momentos pós-fonoterapia e atual, e no grupo abandono houve piora nos parâmetros trabalho, comunicação social e no escore total na comparação das médias pré-fonoterapia e atual. Os grupos alta e abandono apresentaram diferença no momento atual em todos os parâmetro pesquisados. **Conclusão:** O tratamento fonoterápico para professoras disfônicas impacta positivamente na qualidade de vida relacionada à voz, logo após a alta e em um seguimento de dois anos em média. Em professores que abandonaram o tratamento, e consequentemente não obtiveram melhora do quadro vocal, o impacto na qualidade de vida e voz se torna mais negativo em um seguimento de 2 anos e 2 meses em média.

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INTRODUCTION

Quality of life has been considered to be an indicator in clinical analyses, assessing the physical and psychosocial impacts caused by dysfunctions, inabilities or conditions of the individual[1].

Information on quality of life has also been used to assess the efficiency, efficacy and impact of some treatments on groups of patients with several conditions[2]. In the health field, its improvement is an expected outcome after assistance practices[3].

In the past few years, the voice of the teacher has been a subject of attention for the Speech Language Pathologist, especially due to the evidence that amongst voice professionals, they are considered to be the ones, with more risk to develop vocal changes associated to its abusive use under unfavorable conditions[4,5], thus generating worse quality of life.

The signs and symptoms presented by the dysphonic teacher (roughness, fatigue, slurred speech, burning and among others) reflect on the reduction of social interactions, loss of work days, difficulties to communicate also in social life, negative interferences in the realization of the work, expressed by learning difficulties of students, as well as economic, personal and social losses[6].

Vocal rehabilitation represents one of the possibilities to change this scenario, once it is a known fact that teachers benefit from Speech Language Pathology and Audiology therapy, presenting satisfactory results[5,7,8].

Vocal therapy is a treatment that demands behavioral changes and requires the active participation of the patient, with the performance of exercises and changes and/or elimination of behaviors that could harm the voice. For this reason, patients abandoning therapy is a common phenomenon[9,10], which is also explained by economic matters and access to treatment (difficulties with transportation)[11]. Even after being discharged from treatment, it is important that the patient maintain the vocal pattern obtained with therapy, thus enabling the social and professional uses of voice in teaching. In this sense, keeping an adequate vocal behavior is essential in order to prevent new vocal issues.

The published literature shows that patients submitted to speech therapy for dysphonia present vocal stability after six months to two years of follow-up[12-14]. In a study that analyzed the presence of vocal and/or physical symptoms and the self-perception of voice, in a group of 39 teachers of municipal schools by means of a semi-structured interview, a low presence of vocal and/or physical symptoms was observed among the professionals, and most of the participants reported positive vocal self-perception, so no relation between time of discharge and the studied variables was observed[15]. However, we did not find studies in national literature analyzing in detail the long-term results of the speech language pathology and audiology treatment in the quality of life associated to the voice of dysphonic teachers.

Therefore, it is important to search for reliable information concerning the teachers, who were discharged from treatment in order to analyze how the voice was adapted to the ergonomic conditions and work organization afterwards.

The objective of this study was to assess the long-term effects of speech therapy on the quality of life associated to the voice of teachers, who were discharged from treatment or those, who abandoned therapy for dysphonia.

METHODS

This study was part of a research project approved by the Research Ethics Committee of Universidade Federal de Minas Gerais (UFMG), number ETIC 482/08.

It is a longitudinal study conducted from June to October 2011, with teachers of municipal schools of Belo Horizonte, Minas Gerais, assisted at the Outpatient Voice Clinic of the Speech Language Pathology and Audiology Service in Hospital das Clínicas/UFMG, who were discharged or abandoned the speech language treatment.

Inclusion criteria were as follows: being a female teacher in a municipal school assisted at the outpatient voice clinic after being referred by the medical experts of the City Hall in Belo Horizonte; having been discharged or abandoning speech therapy for at least six months; having fulfilled the voice activity and participation profile (VAPP) at the beginning of the treatment, at the time of discharge and for at least six months after discharge or abandonment; and agreeing to participate in the study. Exclusion criteria were as follows: belonging to a different professional category other than teaching; and having undergone speech therapy in another service.

VAPP[16] is a self-assessment vocal questionnaire composed of 28 questions, divided into the following parameters: self-perception of the changes in vocal quality and the effects of such change on work, on daily communication, on social communication and on the expression of emotions. VAPP was chosen because of its easy applicability and because it provides a better description of the degree of functional incapacity[13,17].

In the selected period, 245 teachers from municipal schools were assisted. Out of these, 195 teachers met the inclusion criteria adopted for this research.

Teachers were contacted by phone and invited to participate in the research by answering the VAPP, which was sent and forwarded to the researchers by letter, together with the signed informed consent to participate in the research. Because of the outdated telephone numbers, it was not possible to reach 11 teachers; 116 teachers agreed to participate in the research.

After sending the letters, only 36 teachers answered, so another telephone call was necessary, as well as to send the letters again. At the end of the stipulated date for data collection, 55 teachers had answered the questionnaire, and two teachers did it incorrectly. Therefore, there were two following groups:

- Discharge group: This group composed of 33 teachers, who underwent the speech language pathology and audiology treatment and were discharged;
- Abandonment group: This group composed of 20 teachers, who abandoned the speech language pathology and audiology treatment before being discharged.

Therefore, for data analysis, VAPP protocols were filled in the outpatient voice clinic in two moments as follows: in the

first evaluation and at therapy discharge for the participants in the discharge group, besides the ones answered from home and sent by the mail for data analysis. In order to ensure the quality of the protocols in the latter situation, when the researchers called to invite the participants, they instructed them on how to answer the protocol and asked if there were any doubts.

Statistical data analysis was conducted with the statistical software Statistical Package for the Social Sciences (SPSS), version 17.0. At first, there was a descriptive data analysis with measures of central tendency and dispersion. Afterwards, the Wilcoxon parametric test was used for dependent samples, and the Mann-Whitney non-parametric test was used for independent samples. A 95% confidence level was considered.

RESULTS

The age of the teachers in the discharge group ranged from 30–60 years old (mean: 44.27; standard-deviation [SD]: 8.83), and in the abandonment group, from 33–64 years old (mean: 43.00; SD: 7.00), with no statistical difference (p=0.681). As to time of teaching, the discharge group presented mean value of 20.86 years, while for the abandonment group it was 16 years, without statistical difference between them (p=0.107).

The otolaryngology diagnosis (ORL) of the 33 participants in the discharge group showed 12 cases of glottic cleft (36.4%), eight vocal cord nodules (24.2%), seven edemas (21.2%), five cysts (15.2%) and one Reinke's edema (0.3%), characterizing 16 cases of functional dysphonia (50%) and 16 cases of organofunctional dysphonia (50%). For the 20 teachers in the abandonment group, the distribution of the ORL diagnosis was as follows: seven cases of vocal cord nodules(35%), five glottic clefts (25%), four edemas (20%), two cysts (10%) and two cases of dyskinesia of vascular origin (10%), being nine cases of functional dysphonia (45%) and 11 cases of organofunctional dysphonia (55%).

Considering the number of speech-therapy sessions, the groups presented different means. In the abandonment group, the number of sessions ranged from one to eight (mean: 3.0; SD: 2.7), and in the discharge group, from 8–29 (mean: 14.9; SD: 5.5).

For the discharge group, follow-up time between therapy discharge and filling the VAPP questionnaire ranged from six to 49 months (mean: 24.6; SD: 11.8), and the time equal or superior to 12 months corresponded to 30 teachers (90.9%), while three (9.1%) teachers filled it in less than 12 months.

Considering the abandonment group, follow-up time between therapy abandonment and filling the VAPP questionnaire ranged from ten to 47 months (mean: 26.9; SD: 12.8), with time ≥12 months corresponding to 18 teachers (90%); two (10%) teachers filled in the questionnaire in less than 12 months.

At the immediate pre-therapy moment, the discharge and the abandonment groups were homogeneous, with a difference only in relation to the daily communication parameter (Table 1).

When comparing the discharge groups in immediate pre- and post-therapy moments, it was possible to observe improvement in the social communication parameter (p=0.029) and in total score (p=0.018) (Table 2). This group presented worse self-perception parameter (p=0.001), considering the means in the immediate post-therapy and current moments (Table 3).

There were worse values in the following parameters: work (p=0.014), social communication (p=0.002) and total score (p=0.042), when comparing the means in the abandonment groups in pre-therapy and current moments (Table 4).

The discharge and abandonment groups presented differences at the current moment for all of the researched parameters, showing worse quality of life associated to voice in the abandonment group (Table 5).

DISCUSSION

The analysis of the quality of life protocol VAPP in both the discharge and abandonment groups shows that speech therapy for dysphonia has positive long-term effects on the quality of life of teachers, who concluded treatment, and a negative one for those who abandoned it, with a follow-up time of two years, in average.

Table 1. Comparison of the means in the parameters of the voice activity and participation profile in the pre-therapy moment in the discharge and abandonment groups

Parameters	Group	Mean±SD	p-value
Self-perception	Abandonment	2.37±3.019	0.782
	Discharge	1.72±2.562	
Work	Abandonment	5.70±7.923	0.614
	Discharge	5.81±7.992	
Daily communication	Abandonment	21.89±21.568	0.036*
	Discharge	14.22±22.152	
Social communication	Abandonment	1.72±2.117	0.458
	Discharge	3.29±4.640	
Emotion	Abandonment	8.77±10.164	0.376
	Discharge	7.17±10.128	
Total	Abandonment	40.52±37.277	0.206
	Discharge	32,18±39,335	

*Significant values (p≤0.05) – Mann Whitney Test
Caption: SD = standard deviation

Table 2. Comparison of the means in the parameters of the voice activity and participation profile of the discharge group in the immediate pre- and post-therapy moments

Parameters	Moment	Mean±SD	p-value
Self-perception	Pre	1.72±2.562	0.151
	Post	0.77±1.060	
Work	Pre	5.81±7.992	0.228
	Post	4.11±6.675	
Daily communication	Pre	14.22±22.152	0.217
	Post	8.61±14.532	
Social communication	Pre	3.29±4.640	0.029*
	Post	1.14±1.707	
Emotion	Pre	7.17±10.128	0.079
	Post	3.97±5.497	
Total	Pre	32.18±39.335	0.018*
	Post	18.59±25.188	

*Significant values (p≤0.05) –Wilcoxon Test
Caption: SD = standard deviation

Table 3. Comparison of the means in the parameters of the voice activity and participation profile in the discharge group in immediate post-therapy and current moments

Parameters	Moment	Mean±SD	p-value
Self-perception	Post	0.77±1.060	0.001*
	Current	2.33±2.572	
Work	Post	4.11±6.675	0.188
	Current	7.66±10.744	
Daily communication	Post	8.61±14.532	0.198
	Current	14.24±22.762	
Social communication	Post	1.14±1.707	0.303
	Current	2.64±7.031	
Emotion	Post	3.97±5.497	0.116
	Current	8.47±15.581	
Total	Post	18.59±25.188	0.063
	Current	35.34±51.041	

*Significant values (p≤0.05) – Wilcoxon Test
Caption: SD = standard deviation

Table 4. Comparison of the means in the parameters of the voice activity and participation profile in the abandonment group in pre-therapy and current moments

Parameters	Moment	Mean±SD	p-value
Self-perception	Pre	2.37±3.019	0.073
	Current	3.93±2.374	
Work	Pre	5.70±7.923	0.014*
	Current	12.92±10.722	
Daily communication	Pre	21.89±21.568	0.191
	Current	31.2±28.536	
Social communication	Pre	1.72±2.117	0.002*
	Current	7.03±7.859	
Emotion	Pre	8.77±10.164	0.085
	Current	15.71±15.983	
Total	Pre	40.52±37.277	0.042*
	Current	70.78±60.046	

*Significant values (p≤0.05) – Wilcoxon Test
Caption: SD = standard deviation

Table 5. Comparison of the means in the parameters of the voice activity and participation profile in the current moment of the abandonment and discharge groups

Parameters	Group	Mean±SD	p-value
Self-perception	Abandonment	3.93±2.374	0.016*
	Discharge	2.33±2.572	
Work	Abandonment	12.92±10.722	0.03*
	Discharge	7.66±10.744	
Daily communication	Abandonment	31.2±28.536	0.006*
	Discharge	14.24±22.762	
Social communication	Abandonment	7.03±7.859	0.001*
	Discharge	2.64±7.031	
Emotion	Abandonment	15.71±15.983	0.019*
	Discharge	8.47±15.581	
Total	Abandonment	70.78±60.046	0.012*
	Discharge	35.34±51.041	

*Significant values (p≤0.05) – Mann Whitney Test
Caption: SD = standard deviation

It is reasonable to suppose that patients, who underwent the treatment until discharge, and as a result, reach the vocal and behavioral improvements proposed by the therapy, present better quality of life in relation to voice. On the other hand, those patients, who did not continue with the adequate therapy thus, abandon it in the middle, present worse quality of life in relation to voice, when compared to the group that remained until therapy discharge.

The observed mean age was of approximately 40 years old for both the groups, which is similar to other studies with the population of teachers[18,19]. Time of teaching did not prove to be associated with adhesion or abandonment of speech language pathology and audiology treatment.

It is important to point out that groups had no differences as to age, gender, profession and ORL diagnosis, because the variables of professional vocal use[20] and age[20] are factors that can influence the perception of quality of life in relation to voice. Concerning the ORL diagnosis[21], published literature shows that this aspect does not influence the perception of quality of life in relation to voice.

Groups were different concerning the number of performed therapy sessions. The discharge group presented the average of 14.9 sessions, which is higher than the international clinical practice, which points to six to ten sessions[22]. National studies that define the number of vocal therapy sessions are still scarce.

In the pre-therapy moment, the discharge and abandonment groups were homogeneous in relation to the impact on quality of life associated to voice, except when considering the daily communication parameter, with a negative impact on the abandonment group, when compared to the discharge group (Table 1).

The published literature indicates that patients, who concluded vocal therapy presented lower values in the index of disadvantages of voice[23] and in VAPP[24], when compared to individuals, who abandoned the treatment. Such differences in the results can be justified by methodological issues associated to sample size, however, despite this limitation, our results are relevant because it is a longitudinal study on the long-term results of vocal therapy, and studies of this nature are still scarce.

The significant improvement in the social communication parameter (p=0.029) and in the total score (p=0.018) (Table 2) in the discharge group after vocal therapy indicates the important role of voice in the process of socialization of people[25], who can avoid communication situations because of changes in vocal quality. Therefore, the speech language pathology and audiology treatments has provided improvements in the quality of life associated to voice and in the communication process involving social aspects.

The positive impact on quality of life and voice observed in the results of VAPP parameters in the discharge group (Table 3) may be associated with the awareness of this group concerning voice problems and its correct production[26,27] and to the greater adhesion to vocal therapy orientations for dysphonia[15]. Vocal therapy may have provided more proper and healthy vocal production, generating positive results in the quality of life of these individuals.

Another research[13] also demonstrated that patients, who were discharged from vocal therapy presented significant change in long-term total and subtotal scores of VAPP. The improvement presented in quality of life is an expected result

after the treatment[3], indicating the efficacy of vocal therapy for dysphonic teachers.

The discharge group presented worse self-perception parameter (p=0.001) in the comparison of means in post-therapy and current moments (Table 3). Such result may be associated to the fact that knowing more about the voice, which can be accomplished with vocal therapy, can favor the self-perception of vocal changes. Another factor that can also be associated to such findings is the presence of a possible insecurity from the teachers, who have been discharged from treatment, generated by the lack of speech language pathology and audiology follow-up. Further studies are necessary to better understand such results.

The comparison of means from the abandonment group pre-therapy and current moments showed worse parameters of work (p=0.014), social communication (p=0.002) and total score (p=0.042) (Table 4). For teaching, the voice is one of the main instruments used in the profession, so it should be healthy, efficient and effortless, besides being interesting and clear, in order to guarantee the students' attention[28]. Therefore, dysphonia has a negative impact on the performance and the work of the teacher in the classroom[25].

Studies conclude that voice problems do not only affect teachers in the professional scope, but they may also have a negative impact on daily communication, social communication and emotions[29]. It is important to understand that for not continuing the speech language pathology and audiology treatment and consequently, not presenting improvement in the dysphonic condition, the vocal change in this group may be a factor that had a negative impact on the quality of life associated to voice.

Studies demonstrated that the worse the vocal self-perception, the worse the impact on the quality of life of the individual[29,30]. Such statement corroborates the observed results, in which the abandonment group presents worse self-perception of the voice and the other parameters of the quality of life protocol associated to voice in the pre-therapy moment (Table 1), with worse long-term results (Table 4), thus generating worse quality of life when compared to the discharge group (Table 5).

Vocal therapy for dysphonia has positive effects on the quality of life of teachers in the long term, thus positively influencing the social and professional communication skills of teachers. On the other hand, by observing the results, individuals, who did not undergo the speech language pathology and audiology treatments, because they abandoned it, had negative impacts on the quality of life associated to voice. Such results demonstrate that the benefits of vocal therapy for dysphonic teachers are provided not only immediately after treatment, but they also bring long-term positive results.

One of the difficulties of longitudinal studies is the high abandonment rate, which makes the number of assessed individuals inferior to the initial research plan; and time of assessment, because the possibility to determine standardized patterns between them is very difficult. Further studies with more participants and more homogeneous individuals in relation to time of longitudinal follow-up are required for the better understanding of the impact of vocal therapy on the quality of life and voice of dysphonic teachers.

CONCLUSION

Vocal therapy for dysphonia has long-term positive effects on the quality of life and voice of teachers, who were discharged from a speech language pathology and audiology treatment. Vocal therapy for dysphonic teachers has a positive impact on the quality of life associated to the voice of teachers, right after discharge and in a two-year follow-up, in average. Among teachers, who abandoned treatment and consequently, did not obtain improvements in the vocal condition, the impact on the quality of life and voice becomes more negative in a two year and two months follow-up, in average.

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**JMF and NFC were responsible for data collection and tabulation; LCT collaborated with collection and tabulation, and supervised data collection; IBB and MARS followed-up the collection and collaborated with data analysis; ACCG was in charge of the project and study design, as well as the general orientation of the execution steps and elaboration of the manuscript.*

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