DOI: 10.1590/2317-1782/20152014144

Original Article

Artigo Original

Characteristics of voice and personality of patients with vocal fold immobility

Características vocais e de personalidade de pacientes com imobilidade de prega vocal

Anna Alice Figueirêdo de Almeida[1]
Luana Ramos Fernandes[2]
Elma Heitmann Mares Azevedo[1]
Renata Serrano de Andrade Pinheiro[3]
Leonardo Wanderley Lopes[1]

Keywords

Behavior
Personality
Voice
Dysphonia
Larynx
Vocal cords

ABSTRACT

Purpose: To examine the voice and personality characteristics of patients diagnosed with organic dysphonia secondary to vocal fold immobility. **Methods:** The study comprised patients of both genders, attending the Clinic School of Speech Therapy of the Federal University of Paraíba, with otorhinolaryngological diagnosis of vocal fold immobility and speech therapy diagnosis of dysphonia. The self-assessment of voice was measured through a Vocal Screening Protocol and Voice Symptoms Scale (VoiSS), the voice was collected for auditory-perceptive evaluation, and the Factorial Personality Battery (FPB) was used. Descriptive statistical analysis was performed to determine the frequency, mean, and standard deviation of the studied variables. **Results:** Eight patients participated in the study, of both genders, with average age of 40.4±16.9 years. The more frequent risk factors were the personal ones (4.7±2.1). In the VoiSS, the patients presented a higher average in the limitation score (34.1±15.7). From the auditory–perceptive evaluation, moderate intensity of vocal deviation was obtained, with predominant vocal roughness (57.7±25.2). In the FPB, the patients had an average higher than the cutoff scores in neuroticism (3.8±1.4) and accomplishment (5.2±1.0). **Conclusion:** The predominant vocal parameter was roughness. The patients referred to a few risk factors that compromise the vocal behavior and presented the neuroticism and realization factors as a highlight in their personality. Thus, individuals with vocal fold immobility show personality characteristics that may be a reflection of their voice disorder, not a factor that determines their dysphonia.

Descritores

Comportamento
Personalidade
Voz
Disfonia
Laringe
Prega Vocal

RESUMO

Objetivo: Averiguar as características vocais e de personalidade de pacientes com diagnóstico de disfonia orgânica secundária à imobilidade de prega vocal. **Métodos:** O estudo foi composto por pacientes de ambos os gêneros, atendidos na Clínica Escola de Fonoaudiologia da Universidade Federal da Paraíba, com diagnóstico otorrinolaringológico de imobilidade de prega vocal e fonoaudiológico de disfonia. Mensurou-se a autoavaliação da voz por meio de um Protocolo de Triagem Vocal e Escala de Sintomas Vocais (ESV), coletou-se a voz para a avaliação perceptivo-auditiva e aplicou-se a Bateria Fatorial de Personalidade (BPF). Realizou-se análise estatística descritiva para averiguar a frequência, média e desvio padrão das variáveis estudadas. **Resultados:** Participaram 8 pacientes, de ambos os gêneros, com a idade média de 40,4 ±16,9 anos. Os fatores de risco mais presentes foram os pessoais (4,7±2,1). Na ESV, os pacientes apresentaram maior média no escore de limitação (34,1±15,7). A partir da avaliação perceptivo-auditiva, obteve-se intensidade do desvio vocal moderada com qualidade vocal predominantemente rugosa (57,7±25,2). Na BFP, os pacientes tiveram médias maiores que o ponto de corte nos fatores neuroticismo (3,8±1,4) e realização (5,2±1,0). **Conclusão:** O parâmetro vocal predominante foi rugosidade. Os pacientes citaram poucos fatores de risco que comprometem o comportamento vocal e apresentaram os fatores neuroticismo e realização como destaque em sua personalidade. Assim, indivíduos com imobilidade de prega vocal demonstram características de personalidade que podem ser reflexo do seu distúrbio de voz, e não um fator que determine a sua disfonia.

Correspondence address:
Anna Alice Figueirêdo de Almeida
Departamento de Fonoaudiologia, Centro de Ciências da Saúde, Universidade Federal da Paraíba Cidade Universitária, Campus I, Castelo Branco, João Pessoa (PB), Brasil, CEP: 58051-900.
E-mail: anna_alice@uol.com.br

Received: 09/09/2014

Accepted: 02/21/2015

CoDAS 2015;27(2):178-85

Study carried out in the Integrated Laboratory of Voice Studies, Department of Speech Language Pathology and Audiology, Universidade Federal da Paraíba – UFPB – João Pessoa (PB), Brazil.
(1) Department of Speech Language Pathology and Audiology, Center of Health Sciences, Universidade Federal da Paraíba – UFPB – João Pessoa (PB), Brazil.
(2) Speech Language Pathology and Audiology Course, Center of Health Sciences, Universidade Federal da Paraíba – UFPB – João Pessoa (PB), Brazil.
(3) Graduate in Cognitive and Behavioral Neurosciences, Universidade Federal da Paraíba – UFPB – João Pessoa (PB), Brazil.
Conflict of interests: nothing to declare.

INTRODUCTION

Voice is influenced by gender, age, physical structure, overall health, and psychosocial factors, such as personality and emotion; all those are involved in vocal production[1].

Dysphonia is an alteration in vocal production that can have slight to several symptoms, originated or aggravated by environmental and behavioral factors, and which may onset a voice disorder of functional, organofunctional, and organic nature[2].

The immobility of vocal folds is included in this classification and it occurs by affecting the vagus nerve, more specifically one of its branches, the laryngeal nerve. Vocal fold immobility is a term that denotes the failure in performing voluntary muscle movements, due to mechanical fixation or neurological impairment. The vocal fold may present itself with reduced mobility of completely stand still, unilateral or bilateral, which will depend in the location of the injury[3,4].

Regardless the kind, the impact on vocal quality varies from a slight to an intense vocal deviation intensity, resulting in losses in the professional, emotional, and social life of the individual[5].

The term personality receives innumerous definitions throughout the literature[6]. They are mentioned to be unique characteristics of each individuals, distinguishing those from others through consistent patterns of feelings, thoughts, and behaviors. Usually it includes aspects such as emotion, sociability, reactivity, energy, and interaction with the environment[7,8].

It is noteworthy that little is known of the relation between personality and voice. A study stands out[9] in this direction where authors analyzed the relation between personality and different vocal disorders, though all genesis are related to vocal behavior. It was observed that individuals with functional dysphonia had an introvert, reactive to stress, alienated, and unhappy profile, whereas patients with vocal nodules were described as socially dominant, reactive to stress, aggressive, and impulsive[9].

Thus, it is noticeable how much the personality may influence in the etiology of voice disorders, especially when it is related to the vocal behavior of the speaker. However, it is not known whether the voice disorder of organic origin may bring on an impact on personality. Therefore, this study intended to verify the vocal characteristics of the individuals with organic dysphonia secondary to vocal fold immobility.

METHODS

It was a descriptive, field and quantitative research of observational and cross-sectional nature. This study was evaluated and approved by the Ethics Committee on Human Research of the Health Sciences Center of the Federal University of Paraíba (UFPB), protocol No. 39145/12.

The sample consisted of eight patients, which were selected from all patients who attended to voice care in the Clinical School of Speech Therapy of the UFPB, since August 2012 to February 2014, with otorhinolaryngological diagnosis corresponding to unilateral vocal fold immobility. All participants signed the informed consent.

Patients were selected according to the following inclusion criteria determined for this study:

1. Diagnosis of organic dysphonia secondary to unilateral immobility of the vocal fold; and
2. Not having medical diagnosis of other neurological or genetic diseases or any other comorbidity that would affect cognition, communication, and voice.

The patients were invited to take part in the research, moment at which they were explained about the objectives of the study and the instruments to be used. After receiving all necessary information, the patients signed the informed consent and, up next, answered to the instruments used in the research. At last, a voice sample was recorded.

During data collection, instruments were used to cover vocal and psychological measurements of the participants in the research.

The vocal parameters were measured from the self-evaluation and auditory–perceptive evaluation of the voice. We chose to use the Vocal Screening Protocol (VSP) used in the Integrated Laboratory of Voice Studies of the Speech Language and Audiology Department of the UFPB, besides the Voice Symptoms Scale (VoiSS).

The VSP was developed by speech language therapists, experts on voice. It involves personal data, vocal auditory and sensorial vocal symptoms, and a list of risk factors to voice, which are subdivided into organizational, environmental, and personal factors (Appendix 1).

The organizational factors comprised five possibilities: related to prolonged working hours, high number of listeners, activities accumulation, service time, and excessive vocal demand. The environmental factors correspond to nine items: referring to background noise, low humidity, ergonomic factors, poor acoustics, pollution, stressful environment, inter-speakers distances, dust and mold, and inadequate equipment.

The personal factors are 21 components, listed as follows: smoking, speaking a lot, speaking a lot on the telephone, speaking above the noise, yelling often, intense social life, self-medication, drinking, speaking loud, speaking with effort, speaking in public, often cheering in sports stadiums, constant coughing, inadequate rest, use of drugs, speaking fast, speaking too high/low pitched, making impressions (actors, singers), singing off key, insufficient hydration, and inadequate nutrition. The results were obtained through the simple sum of the question scored by the participants of the study. All risk factors were summed and only the risk, environmental, organizational, and personal factors were summed separately. The higher the number of risk factors, the higher the chance of the dysphonia being related to the vocal behavior.

The VoiSS verifies how the patient evaluates their own voice and the presence of the vocal symptoms described by them. It has 30 questions and 3 domains: limitation (15 questions), emotional (8), and physical (7), which are sensitive to individuals with vocal complaints. The answers to the questions range between "never," "rarely," "sometimes," "often," and "always"[10].

The answers were scored from 0 to 4, according to the frequency of the occurrence. In this scale, individuals with

dysphonia present the following reference values: total score, 49.4; limitation score, 30.1; emotional score, 8.8; and physical score, 10.4. Thus, values above this mean show the perception to the individual as for the impact and presence of symptoms due to dysphonia in their lives.

In addition to the self-evaluation protocols, a voice sample was also collected with the emission of the sustained vowel /e/ in the most natural way possible.

The recordings were collected in a silent location by a one-way professional headset microphone, by Logitech, and recorded in the FonoView® software (CTS Hardware, version 4.6 h), with a sampling rate of 44100. They were also stored in a HP® computer.

After collecting the voice samples, they were evaluated through a consensus between three speech language therapists, experts in voice, and trained for such. Thus, the judges were oriented to identify an intensity of the vocal deviation of some emission parameters for each patient through the Visual Analog Scale (VAS).

The VAS has a line of 100 mm, horizontal, where the evaluator is oriented to mark the amount of sensation caused by the voice at that moment. Each millimeter corresponds to a deviation degree, the scale offers 100 degrees of possibilities[11]. The VAS adopted involved the parameter of overall degree (OD), roughness (R), breathiness (B), tension (T), and instability (I). The closest to 100, the highest the vocal deviation.

The intensity of the vocal deviation was marked by the VAS and, afterwards, was categorized as follows: 0–35.5 mm = normal variability; 35.6–50.5 mm = slight-to-moderate intensity of deviation; 50.6–90.5 mm = moderate-to-intense; and 90.6–100 mm = intense[11].

The personality was measured using the Factorial Personality Battery (FPB), a psychological instrument developed for the evaluation of personality from the model of the Five Great Factors: extroversion, socialization, realization, neuroticism, and openness. It has 126 questions, where the individual should point out, in a scale from 1 to 7, how much each item describes them.

The statements involve the following dimensions: extroversion, socialization, realization, neuroticism, and openness, as well as their respective subcategories/facets, with the objective of assessing the personality characteristics of the participants[6].

According to the literature[6], scores above 3.2 in the neuroticism factor, 4.3 in the extroversion factor, 5.4 in the sociability factor, 4.9 in the realization factor, and 4.6 in the openness factor show that these individuals have exacerbated characteristics in their personality.

In the sequence, all data referring to the research were engaged in a digital spreadsheet in the Microsoft® Excel 2011 data platform. Subsequently, the descriptive statistical analysis was performed to determine the frequency, mean, and standard deviation of the variables studied. The software used was the Statistical Package for the Social Sciences (SPSS), version 13.0.

RESULTS

From a total of 468 patients of the Clinic School of Speech Therapy of the UFPB seen until February 2014, this study comprised eight patients, of both gender, 50% (n=4) females, mean age of 40.4±16.9 years and all of them diagnosed with organic dysphonia secondary to the unilateral vocal fold immobility (Chart 1). Then, the results were exposed based on the descriptive statistical analysis.

In Table 1, the cutoff point, the mean and the standard deviation of risk factors, the VoiSS scores, and the auditory–perceptive evaluation of the patients with vocal fold immobility are distributed.

In relation to the risk factors, the overall mean was 7.3±3.9, for the organizational factors the mean was 1.0±1.3, for the environmental factors the mean was 1.6±1.5, and for the personal factors were the most often present ones, with a mean of 4.7±2.1.

The VoiSS presented the following values: mean 48.5±21.2 in the total score, 34.1±15.7 in the limitation score, 6.2±5.7 in the emotional score, and 6.6±4.1 in the physical score.

The auditory–perceptive evaluation showed a mean in the overall degree of 62.2±19.7, roughness of 57.7±25.2, breathiness of 53.1±9.0, instability of 30.2±16.9, and tension of 27.3±28.3.

In Table 2, the cutoff point, the mean, and the standard deviation are exposed in relation to the factors and facets of the FPB.

The score means were as follows: neuroticism = 3.8±1.4; extroversion = 4.0±1.1; sociability = 5.2±1.8; realization = 5.2±1.0; and openness = 3.7±1.7.

Chart 1. Description of sociodemographic characteristics and laryngeal report of patients with organic dysphonia secondary to vocal fold immobility

Initials	Age	Gender	Etiology of the paralysis	Location of the paralysis	Affected vocal fold
AGF	25	Male	Idiopathic	Paramedian	Left
PJS	34	Male	Idiopathic	Paramedian	Left
JFS	22	Female	Idiopathic	Paramedian	Right
JMM	47	Female	Idiopathic	Paramedian	Right
GDGC	50	Female	Idiopathic	Paramedian	Right
DCPCS	65	Male	Heart surgery	Paramedian	Left
PHBA	22	Male	Idiopathic	Paramedian	Right
ELSL	58	Female	Heart surgery	Paramedian	Left

Table 1. Cutoff point, mean, and standard deviation of risk factors for the voice, in the Voice Symptoms Scale and auditory–perceptive evaluation of patients with organic dysphonia secondary to vocal fold immobility

Variables	Cutoff point	Mean (SD)
Number of risk factors	35.0	7.3 (3.9)
Number of organizational factors	5.0	1.0 (1.3)
Number of environmental factors	9.0	1.6 (1.5)
Number of personal factors	21.0	4.7 (2.1)
Number of Voice Symptoms Scale	**49.4**	48.5 (21.2)
Number of limitation	30.1	34.1 (15.7)
Number of emotional	8.8	6.2 (5.7)
Number of physical	10.4	6.6 (4.1)
Auditory–perceptive evaluation		
Number of overall degree	35.5	62.2 (19.7)
Number of roughness	35.5	57.7 (25.2)
Number of breathiness	35.5	53.1 (9.0)
Number of instability	35.5	30.2 (16.9)
Number of tension	35.5	27.3 (28.3)

Table 2. Cutoff point, mean, and standard deviation of findings in the Factorial Personality Battery

Variables	Cutoff point	Mean (SD)
Neuroticism	3.2	3.8 (1.4)
N1. Vulnerability	3.4	3.7 (1.7)
N2. Instability	3.6	3.6 (1.5)
N3. Passivity	3.4	4.3 (1.1)
N4. Depression	2.3	3.5 (1.4)
Extroversion	4.3	4.0 (1.1)
E1. Communication level	4.2	3.7 (1.1)
E2.Audacity	3.6	3.2 (1.0)
E3. Dynamism	4.7	4.5 (1.6)
E4. Social interactions	4.8	4.3 (1.6)
Sociability	5.4	5.2 (1.8)
S1. Kindness	5.5	5.7 (1.0)
S2. Pro-sociability	5.5	5.0 (1.1)
S3. Trustu in people	4.7	4.1 (1.1)
Realization	4.9	5.2 (1.0)
R1. Competence	5.1	5.5 (1.4)
R2. Ponderation	4.9	5.7 (1.0)
R3. Effort	4.7	4.8 (1.1)
Openness	4.6	3.7 (1.7)
A1. Openness to ideas	4.5	4.0 (1.0)
A2. Liberalism	4.8	4.3 (1.0)
A3. Search for novelty	4.6	2.0 (1.6)

DISCUSSION

Only 1.7% patients attending the Clinic School of Speech Therapy of the UFPB had otorhinolaryngological diagnosis of unilateral vocal fold immobility; this factor may be attributed to the focus of the service offered in this location because it is not a reference for this demand of patients, which may have limited the sample of this study.

In addition to the previously exposed fact, it is important to mention a current epidemiological study[12] that approached the prevalence of laryngeal diseases and informed that 4.6% of the population had laryngeal diagnosis compatible with the vocal fold immobility, either unilateral or bilateral paralysis or paresis of the vocal fold. Thus, it may be verified that there is no high prevalence of this laryngeal diagnosis in the population in general.

The patients with unilateral immobility of the vocal fold referred to having only 20.9% risk factors to the voice, which represents less than one-third of the 35 risk factors listed. The most frequent were the personal ones, such as too high or too low pitched speech, speaking with effort, and coughing.

It is known that the abusive vocal behavior is not the genesis of organic dysphonias. The account of these risk factors may be attributed to the attempt of the patient with vocal fold immobility to supply the vocal demand, leading to the onset of compensations such as the vocal effort during emission, coughing, approximation of the vestibular folds, and the constriction of the laryngeal vestibule[13,14], intensifying the vocal symptoms by the effort of the laryngeal muscles.

Numerous risk factors are attributed to the vocal fold immobility, such as central and peripheral nervous systems disorders, the latter being the most common one, besides aging, neck trauma, head and/or chest, intubation, diabetes mellitus, hypertension, surgical injuries, cancer, heart diseases, toxic, metabolic, inflammatory, and idiopathic which affect the vagus nerve, some of its branches or both[4,15,16].

As seen, many are the diseases that may affect the vagus nerve and, consequently, the activities that require the laryngeal functions: breathing, protection, and phonation.

The vagus nerve is originated in the nuclei located in the bulb and extends from the brain stem to the abdomen, originating the superior and inferior laryngeal nerve, named recurrent laryngeal right and left nerve, responsible for supplying all the intrinsic laryngeal muscles but the cricothyroid muscle, innervated by the external superior laryngeal nerve[15-17].

Therefore, the vagus nerve and its ramifications may undergo some injuries at any part of its pathway, resulting in the vocal fold immobility; however, the left recurrent laryngeal nerve has higher chance of being injured, due to its longer pathway[18]. This way, the vocal fold immobility may present very distinct symptoms depending on the location of the lesion in the vagus nerve.

However, it is necessary that the professional goes beyond the organic matters involved in vocal production and also obtains knowledge of the psychosocial aspects of the voice for the understanding of the multiple factors involved in dysphonia.

In clinical practice, the self-evaluation and vocal self-perception is of great value because it allows us to observe what the individuals themselves see in their own voice, allowing the understanding of vocal alteration and its social impact, as well as its disadvantages due to dysphonia[19].

The patients with organic dysphonia secondary to vocal fold immobility were observed to have a mean score of limitation above the average of the population with dysphonia[10]. Therefore, these individuals have the perception of the disadvantage due to dysphonia, especially in activities that require the use of voice, such as speaking on the phone, feeling tired to speak, and difficulties in speaking harshly or yelling, which end up impairing their communication.

This fact may be attributed to the difficulty of the patient in coordinating breathing and speech, by the presence of the glottal gap due to the position of the immobilized vocal fold, occurring, in this way, a higher escape of air during phonation, overloading the vocal tract and, thereby, restricting the activities that demand the use of voice, that is, by its anatomical and physiological limitations in general.

Vocal fatigue or tiredness to speak is a common complaint, due to vocal abuse or a vocal disorder, as in the vocal fold immobility[20].

The vocal deviation degree of patients with vocal fold immobility depends on the position of the paralyzed vocal fold, on the atrophy and laxity of the vocal fold, as well as on the surpassing of the healthy vocal fold and the constriction of the larynx[18].

In bilateral vocal fold immobility, the voice is characterized as high pitched, because of the paramedian position of both vocal folds, and the individual may have respiratory problems due to pneumonia and frequent aspirations[4,15]. In the unilateral immobility of the vocal fold, the patient may evolve with pneumophonoarticulatory incoordination, weak voice, increase of effort to speak, vocal fatigue, roughness, reduction of intensity and vocal extension, increase of fundamental frequency, little projection, tension, maximum time of reduced phonation, breathiness, and dysphagia[4].

Breathiness and the inability of communication are referred to as one of the main losses reported by the patients with unilateral immobility of the vocal fold[18].

The breathy voice is a result from the inefficient closure of the vocal folds, causing escape of the air that modifies the vocal quality[21], resulting in a negative impact on communication for requiring higher vocal effort during speech.

However, the roughness is mentioned as one of the most common symptoms between patients with vocal fold immobility; however, 35% of these patients may have no symptoms[15,18], an so it may be considered as just a symptom of a greater involvement.

The immobilized vocal fold may take different positions, from median to lateral, which will differentiate their coaptation mode and the degree of the symptoms[22]. Such fact is important to direct the treatment, which may be surgical or by speech language therapy[18].

In a study carried out through the survey of medical charts and larynx and voice exams of male patients diagnosed with unilateral vocal fold immobility, there was a predominance of roughness and breathiness, followed by harshness and tension with intensity of the moderate-to-intense vocal deviation[18].

The same result was observed in this study presented from the auditory–perceptive evaluation. Prevalence could be observed between patients with vocal fold immobility with roughness followed by breathiness, both with moderate intensity of vocal deviation, consistent with the clinical condition presented and with the literature consulted.

This fact comes from the position of the paralyzed vocal fold, that is, the difficulty for glottal closure, which interferes negatively in the vibration of the vocal folds. The greater the glottal incompetence, the greater the vocal limitations of the patient[4,18].

Thus, the importance of the speech language therapy was emphasized to achieve better vibration of the vocal folds and appropriate glottal closure, free of unnecessary vocal adjustments, which will reflect in longer vocal emission, with less effort and lower risk of aspiration.

Besides the vocal impact, the vocal disorder also interferes in the social, emotional, and functional areas, restricting daily activities and social participation, due to speech intelligibility[23,24].

Vocal limitation caused by immobility of the vocal fold leads to stress and anxiety among individuals, due to the sensation of failure and frustration, as a result of the difficulty on performing their daily tasks.

Voice and stress have a clear relationship due to the muscles of the larynx being sensible to stress, resulting in anxiety, irritability, impatience, frustration, and depression; thus, the reaction of the individual to stress may vary according to their personality characteristics[9,25].

Studies involving personality are gaining increasing importance in science; with this, the factorial model of personality based on the great five factors is fundamentally valuable for allowing the possibility of describing personalities[26].

Each individual has their own characteristics of personality. Personality traits distinguish individuals from one another; however, these traits are stable in each person and may summarize, predict, and explain the courses of action of each individual. In general, people are influenced by motivational, affective, behavioral, and environmental aspects[26].

The patients with vocal fold immobility were observed to have scores close to the cutoff point for neuroticism and achievement; therefore, these patients have these personality characteristics and/or traits.

The high degree of neuroticism is associated to depression and anxiety. This trait is related to individuals who tend to experience intense living and emotional suffering, giving out little emphasis to the positive aspects of the fact, which usually create problem for themselves[6]. This fact is of little impact on the communication of the individual, considering that anxiety interferes in body language, speech, and voice, increasing vocal symptoms[27]. Anxiety may overload the vocal trait, leading to the production of a voice distant from its natural patterns.

Thus, anxiety and stress may cause vocal symptomatology because they contribute to physiological changes in the body. The opposite may also happen. The vocal alterations may cause stress, depression, and frustration; therefore, the diagnosis of dysphonia may be intimately related to anxiety[27,28]. In case of patients with vocal fold immobility, these personality characteristics may be a reflex of their communication limitations.

Within the facets of the neuroticism trait, we may highlight vulnerability, instability, passivity, and depression.

The high degree of realization is found among motivated, organized, punctual, enthusiastic, and persevering people, who plan their goals and are dedicated to work. The realization lever is an important component in the developing of various activities and contexts[6,26].

This finding is an important and very useful piece of information for speech language therapy because, in general and due to their limitations, these individuals tend to be active, motivated, and persevering in the pursuit of their goals, which may influence positively in their evolution during speech language therapy.

It is noteworthy that, within realization traits, the aspects of competence and effort are highlighted; among those, the aspect of ponderation was in evidence, which means patients with vocal fold immobility are careful in relation to what they say and/or do and tend to control their impulsiveness when dealing with problems, evaluating carefully the possible consequences of their actions, such as the careful choice of words and caution with the contents of the speech[6].

Kindness was also highlighted as a facet within the sociability trait; thus, patients with vocal fold immobility, in general, are thoughtful, kind, and are used to treating others well[6].

Considering this, the limitation caused by the vocal fold immobility may impact on personality, which may have interfered negatively on the productivity of these individuals, resulting in depression, stress, and anxiety, which, in this case, may be a reflex of the vocal disorder.

The elevation of personality traits of neuroticism and realization among patients with vocal fold immobility assisted at the Clinic School of Speech Therapy of the UFPB reflects the intensity of such characteristics in their personalities.

Recognizing the characteristics of the patients with vocal fold immobility helps preventing the behavior alterations that bring risks to health, which will help the professional in dealing with such events, seeing the individual as a whole, beyond the physical matters involved in the pathology.

This way, it is understandable that the studied patients with vocal fold immobility have a personality pattern that is believed as being a reflex of their voice disorder and not a unique exacerbated behavioral pattern affecting vocal production or influencing on determining dysphonia and on how to deal with such a situation. This fact is expected in the organic dysphonias that are independent of the vocal behavior. The other way around occurs in organofunctional and functional dysphonias, which may be triggered by abusive vocal behavior.

However, it is stated in the literature that, regardless being a functional or organic dysphonia, the individuals with dysphonias have strong psychological stress[29,30].

Given the importance of knowing the vocal and personality characteristics of these individuals, the continuity of this study is proposed with a larger sample to ensure the deepening of knowledge on this theme, which is still scarce in the literature.

CONCLUSION

The patients with organic dysphonia secondary to vocal fold immobility report few risk factors, a fact that does not influence vocal behavior; they have means above the reference values for dysphonics in the limitation score of the VoiSS and present moderate intensity of vocal deviation, with roughness as the predominant vocal characteristic.

As for the personality, these individuals have above average scores for the factors of neuroticism and realization. Thus, it is suggested that individuals with vocal fold immobility show personality characteristics that may be a reflex of their voice disorder, and not a risk factor that determines, meaning predicts, their dysphonia.

**AAFA, LRF, EHMA, RSAP, and LWL helped designing and developing the work, particularly, LRF and RSAP in collection, tabulation, and interpretations of the data; EHMA and LWL were responsible for the interpretation of the data and the writing of the article; AAFA was responsible for the conception, the design of the study, the statistical analysis, orientation, and final review of the article.*

REFERENCES

1. Cielo CA, Beber BC, Maggi CR, Korbes D, Oliveira CF, Weber DE, et al. Disfonia funcional psicogênica por puberfonia do tipo muda vocal incompleta: aspectos fisiológicos e psicológicos. Estud Psicol (Campinas). 2009;26(2):227-36.
2. Marçal CC, Peres MA. Self-reported voice problems among teachers: prevalence and associated factors. Rev Saude Publica. 2011;45(3):503-11.
3. Pinto JA, Godoy LBM, Marquis VWPB, Sonego TB, Leal CFA. Bilateral vocal fold immobility: diagnosis and treatment. Braz J Otorhinolaryngol. 2011;77(5):594-9.
4. Gama ACC, Faria AP, Bassi IB, Diniz SS. Alteração de mobilidade de prega vocal unilateral: avaliação subjetiva e objetiva da voz nos momentos pré e pós-fonoterapia. Rev CEFAC. 2011;13(4):710-8.
5. Kasama ST, Brasolotto AG. Percepção vocal e qualidade de vida. Pró-Fono R Atual Cient. 2007;19(1):19-28.
6. Nunes CHSS, Hutz CS, Nunes MFO. Bateria Fatorial de Personalidade (BFP): Manual Técnico. São Paulo: Casa do Psicólogo; 2010.
7. Trentini LCM, Hutz CS, Bandeira DR, Pereira T, Gonçalves MTA, Thomazoni R. Correlações entre a EFN - Escala Fatorial de Neuroticismo e o IFP - Inventário Fatorial de Personalidade. Aval Psicol. 2009;8(2):209-17.
8. Figueiró MT, Martins LNR, Leite LRC, Ziliotto JM, Bacha MM. Traços de personalidade de estudantes de Psicologia. Psicólogo inFormação. 2010;14(14):13-28.
9. Roy N, Bless DM, Heisey D. Personality and voice disorders: a multitrait-multidisorder analysis. J Voice. 2000;14(4):521-48.
10. Moreti F, Zambon F, Oliveira G, Behlau M. Equivalência cultural da versão brasileira da *Voice Symptom Scale* – VoiSS. J Soc Bras Fonoaudiol. 2011;23(4):398-400.
11. Yamasaki R, Leão SHS, Madazio G, Padovani M, Azevedo R, Behlau M. Correspondência entre escala analógico-visual e a escala numérica na avaliação perceptivo-auditiva das vozes. In: XVI Congresso Brasileiro de Fonoaudiologia; 2008; Campos do Jordão, São Paulo.
12. Cohen SM, Kim J, Roy N, Asche C, Courey M. Prevalence and causes of dysphonia in a large treatment-seeking population. Laryngoscope. 2012;122:343-8.
13. Mangilli LD, Amoroso MRM, Nishimoto IN, Barros APB, Carrara-de-Angeles L. Voz, deglutição e qualidade de vida de pacientes com alteração de mobilidade de prega vocal unilateral pré e pós-fonoterapia. Rev Soc Bras Fonoaudiol. 2008;13(2):103-12.
14. Schwarz K. A voz e a configuração laríngea de pacientes do sexo male, com paralisia unilateral de prega vocal, pré e pós-medialização [tese]. Porto Alegre: Universidade de Federal de Rio Grande do Sul; 2010.

15. Garcia MM, Dadalto GB, Moura MVT. Avaliação por imagem da paralisia de pregas vocais. Radiol Bras. 2009;42(5):321-6.
16. Mota LAA, Cavalho GB, Brito VA. Complicações laríngeas por intubação orotraqueal: revisão da literatura. Int Arch Otorhinolaryngol. 2012;16(2):236-45.
17. Rivera AY, Landeros L, Pamplona MC, Rojas JAS, Calleros HMP, Dolci GEF. El papel de la electromiografía laríngea em laparálisis de cuerda vocal. Gac Méd Méx. 2008;144(4):303-8.
18. Schwarz K, Cielo CA, Steffen N, Jotz GP, Becker J. Voz e posição de prega vocal em homens com paralisia unilateral de prega vocal. Braz J Otorhinolaryngol. 2011;77(6):761-7.
19. Gama ACC, Bicalho VS, Valentim AF, Bassi IB, Assunção AA. Sintomas relacionados à voz e sua produção e autopercepção vocal após alta do tratamento fonoaudiológico: estudo prospectivo. Distúrb Comum. 2010;22(3):201-11.
20. Faria AP. Alteração de mobilidade de prega unilateral: avaliação subjetiva e objetiva da voz nos momentos pré e pós-fonoterapia [monografia]. Belo Horizonte: Universidade Federal de Minas Gerais; 2009.
21. Rosa JC, Cielo CA, Cechella C. Função fonatória em pacientes com doença de Parkinson: uso de instrumento de sopro. Rev CEFAC. 2009;11(2):305-13.
22. Biase N, Pontes P, Nóbrega JAM, Biase S. Paralisia do músculo cricoaritenóideo lateral: relato de caso como contribuição ao estudo da anatomia funcional da laringe. Rev Bras Otorrinolaringol. 2003;69(1):121-6.
23. Rechenberg L, Goulart BNG, Roithmann R. Impacto da atividade laboral de teleatendimento em sintomas e queixas vocais - estudo analítico. J Soc Bras Fonoaudiol. 2011;23(4):301-7.
24. Ricarte A, Oliveira G, Behlau M. Validação do protocolo Perfil de Participação e Atividades Vocais no Brasil. CoDAS. 2013;25(3):242-9.
25. Park K, Behlau M. Sinais e sintomas da disfunção autônoma em indivíduos disfônicos. J Soc Bras Fonoaudiol. 2011;23(2):164-9.
26. Silva IB, Nakano TC. Modelo dos cinco grandes fatores da personalidade: análise de pesquisas. Aval Psicol. 2011;10(1):51-62.
27. Almeida AAF, Behlau M, Leite JR. Correlação entre ansiedade e performance comunicativa. Rev Soc Bras Fonoaudiol. 2011;16(4):384-9.
28. Costa DB, Lopes LW, Silva EG, Cunha GMS, Almeida LNA, Almeida AAF. Fatores de risco e emocionais na voz de professores com e sem queixas vocais. Rev CEFAC. 2013;15(4):1001-10.
29. Millar A, Deary IJ, Wilson JA, Mackenzie K. Is an organic/functional distinction psychologically meaningful in patients with dysphonia? J Psychosom Res. 1999;46(6):497-505.
30. Krischke S, Weigelt S, Hoppe U, Kollner V, Klotz M, Eysholdt U, et al. Quality of life in dysphonic patients. J Voice. 2005;19(1):132-7.

Appendix 1. Vocal Screening Protocol (VSP)

DATE: _____ / _____ / _____ **Speech Language Therapist:**_____

I) Personal Identification

Name: _____ Age: _____ Date of Birth.:_____/_____/

Place of birth: _____ State: _____ Gender: F ( ) M ( )

Marital status: _____ Schooling level: _____ Occupation: _____

Work shift: _____ Work load: _____

Address: _____

Contact (telephone / e-mail): _____

Referred by: _____Tel.: _____ Informer: _____Relationship: _____

II) Complaint and duration

1) Reason of consultation /duration: _____

_____

2) Previous history of the dysphonia

How did the voice problem start (abruptly, gradually)?

_____

_____

3) Vocal symptoms

Auditory	*Sensorial / kinesthetic*
( ) roughness	( ) fatigue when speaking
( ) monotone voice	( ) discomfort when speaking
( ) voice instability	( ) effort to speak
( ) voice changes over time	( ) "choke" in the throat
( ) difficulties to reach high pitches	( ) dry throat
( ) difficulties to reach low pitches	( ) sore throat
( ) difficulties in projecting the voice	( ) tension in the neck
( ) difficulties to speak low	( ) horseness/throat clearing
( ) failure in voice	( ) unproductive cough
( ) vocal change in the same day	( ) mucus formation
( ) Presence of air in the voice	( ) acid taste in the mouth
( ) Constant voice loss	( ) pain to swallow

Do the symptoms above worsen during the end of the Day/week? ( ) yes ( ) no

4) Risk factors

a) Organizational	*c) Personal*
( ) Long work hours	( ) Smoking
( ) Accumulation of activities	( ) Drinking
( ) Excessive voice demand	( ) Use of drugs
( ) High number of listeners	( ) Speaking a lot
( ) Time of service	( ) Speaking loud
	( ) Speaking fast
b) Environmental	
( ) Background noise	( ) Speaking a lot on the phone
( ) Poor acoustics	( ) Speaking with effort
( ) Interspeaker distance	( ) Speaking too high/low pitched
( ) Low humidity of the air	( ) Speaking above the noise
( ) Pollution	( ) Speaking in public
( ) Dust and mold	( ) Making impressions (actors, singers)
( ) Ergonomic factors	
( ) Stressful environment	( ) Yelling with frequency
( ) Inappropriate equipment	( ) Cheering with frequency
	( ) Singing off key
	( ) Intense social life
	( ) Constant coughing
	( ) Insufficient hydration
	( ) Self-medication
	( ) Inappropriate rest
	( ) Inappropriate diet