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Drama students with and without vocal complaint: vocal health and hygiene data, symptoms and voice handicap

Estudantes de teatro com e sem queixa de voz: dados sobre saúde e higiene vocal, sintomas e desvantagem vocal

Keywords

Art
Speech, Language and Hearing
Sciences
Protocols
Health Promotion
Voice

Descritores

Arte
Fonoaudiologia
Protocolos
Promoção da Saúde
Voz

ABSTRACT

Purpose: To gather information about vocal health and hygiene, voice symptoms, and voice handicap from drama students with and without vocal complaints. **Methods:** A total of 57 drama students participated of this study. They were divided into two groups: no vocal complaints group (NCG), with 39 students; and with vocal complaints group (WCG), with 18 students. The participants answered to three self-assessment protocols: 1. Vocal Health and Hygiene Questionnaire (VHHQ), 2. Voice Symptom Scale (VoiSS); and 3. Voice Handicap Index (VHI-10). **Results:** No difference was observed between groups related to the knowledge of vocal health and hygiene. The drama students from the WCG presented higher scores, more voice symptoms in all subscales of the VoiSS, and more voice handicap, e.g., higher VHI-10 scores than the NCG. The more knowledge on vocal health and hygiene (VHHQ total score) was followed by less voice symptoms, which represents lower scores in the VoiSS total score and, in emotional domain, and it was only perceived voice handicap (VHI-10 total score) in the NCG. **Conclusion:** There was no difference in knowledge of vocal health and hygiene among drama students with and without vocal complaints. However, drama students with vocal complaints presented more voice symptoms and reported greater perception of voice handicap, which was negatively correlated with knowledge of vocal health and hygiene.

RESUMO

Objetivo: Obter informações sobre saúde e higiene vocal, sintomas vocais e desvantagem vocal de estudantes de teatro com e sem queixa de voz. **Método:** Participaram da pesquisa 57 alunos de teatro que foram divididos em dois grupos: grupo sem queixa vocal (GSQ), composto de 39 alunos; grupo com queixa vocal (GCQ), composto de 18 alunos. Os participantes responderam a três protocolos de autoavaliação: 1. Questionário de Saúde e Higiene Vocal (QSHV); 2. Escala de Sintomas Vocais (ESV); 3. Índice de Desvantagem Vocal (IDV-10). **Resultados:** Não houve diferenças entre os grupos quanto aos conhecimentos de saúde e higiene vocal. Os estudantes de teatro do GCQ apresentaram maiores escores, mais sintomas vocais em todos os domínios do instrumento ESV e mais desvantagem vocal percebida no IDV-10 que os do GSQ. Quanto maior foi o conhecimento em saúde e higiene vocal (domínio total do QSHV), menores foram os sintomas vocais nos domínios emocional e total (ESV), e a desvantagem vocal foi percebida (domínio total do IDV-10) apenas no GCQ. **Conclusão:** Não houve diferença quanto ao conhecimento sobre saúde e higiene vocal entre alunos de teatro com e sem queixa vocal. Contudo, os alunos de teatro com queixa vocal apresentaram mais sintomas vocais e referiram percepção de mais desvantagem vocal, aspectos esses que se correlacionaram negativamente com o conhecimento sobre saúde e higiene vocais.

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Received: December 19, 2018

Accepted: April 19, 2019

Study conducted at Centro de Estudos da Voz – CEV - São Paulo (SP), Brasil.

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Financial support: nothing to declare.

Conflict of interests: nothing to declare.



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INTRODUCTION

Theater actors often have to work in inadequate environmental, acoustic, physical and psychological conditions, such as: presence of dust or mold where the rehearsal and performance takes place, no sound amplification, uncomfortable clothing and use of other equipment. These conditions may cause allergies and limit body and facial movements, shoulder girdle and mandibular movements, which will compromise the vocal quality. The statement “the show must go on”, that is, nothing can stop the show from happening, leads the actor to work even under adverse conditions, thus, this can impact his overall health and lead to laryngeal changes⁽¹⁾.

Although the importance of the speech language pathologist therapy is known, it usually happens in cases of emergency. The actors work hard to give their best performance, and usually this hard work requires too much of their body and voice energy. Thus, muscular tension due to the fast-changing dynamics of a gentle and delicate movement to a violent and grotesque movement added to the lack of knowledge of their body’s capabilities leads to health problems⁽²⁾.

Many studies were performed aiming to understand the actors voice profile and the issues related to his vocal health and occupational voice demands. A study⁽³⁾ analyzed the vocal complaints and symptoms of 48 professional theater actors to identify the importance of aspects related to vocal health in this population. The study outcomes showed that 83.33% of the theater actors underwent vocal training, 29.2% had difficulties to coordinate speech and breathing and 35% had difficulties to maintain their vocal quality in daily demands. Still according to this previous study⁽³⁾, more than half of the analyzed theater actors reported that such changes started in the beginning of their careers. The authors concluded that, although the actors underwent training and orientation regarding their occupational voice, most of these actors had complaints related to vocal use, especially due to physical conditions of the work environment.

Another study⁽⁴⁾ aimed to identify and compare aspects related to the professional practice of 30 professional theater actors and 30 drama students with no professional experience. The evaluated items were related to the occupational voice demands, vocal habits, vocal care, health habits and work environmental conditions. The group with the professional theater actors presented more occurrence of hoarseness, vocal abuse, bad vocal habits and had more rehearsing time in unhealthy places with poor ventilation and presence of dust. The only habit found to be more common in the drama students’ group was drinking cold beverages. On the other hand, the professional group had significantly higher number of individuals with no difficulty to perform a scene and who performed vocal warm-up exercises. The authors concluded that both groups had bad habits related to vocal health and both were exposed to inadequate work environment.

Another research with 40 drama students⁽⁵⁾ observed that 52.5% had another profession and were taking drama lessons in order to become a professional actor. In addition, their most common strategy for voice care was drinking water. Considering the participants of this previous study, 87.5% never underwent

vocal training, 70% did not like their recorded voice, 65% had some kind of allergy, 65% would continue to use their regular voice even when they were sick, 65% would eat before going to bed, 65% had the habit of drinking cold beverages, 50% usually drank less than two liters of water per day and 47% usually spoke very loudly; thus, according to the authors, they had higher risk to develop dysphonia. The authors concluded that the drama students had vocal abuse and were not aware of their vocal health.

Data from these previous studies show that Brazilian professional actors often work in environmental physical conditions that are unsuitable to guarantee healthy voice use. In addition, bad vocal habits and bad hygiene habits are observed in these professionals from the moment they begin their studies.

Considering what was previously mentioned, it would be important to understand if Brazilian drama students, with and without vocal complaints, are different when perceiving voice symptoms and voice handicap and what are their knowledge of voice care. These data can help the speech language pathologist to elaborate specific actions and better address the needs of drama students; thus, better prepare them for the occupational voice demands they will face throughout their career.

Hence, the aim of the present study was to obtain information about vocal health and hygiene, voice symptoms, and voice handicap from drama students with and without voice complaints.

METHODS

This is a cross-sectional and quantitative research. It was accepted by the Committee for Ethics in Research of Prevent Senior under the protocol number 2.016.415.

The participants of this study were personally recruited by the researcher. All participants received an explanation about the study, read and signed the informed consent form; one copy was given to the researcher and another to the participant.

Inclusion and exclusion criteria were established in order to define the final sample for further analysis. The inclusion criteria were drama students, males and females, with at least 18 years old, with or without vocal complaints. The exclusion criteria were drama students who had already performed vocal rehabilitation. All participants answered a questionnaire with demographic information such as: identification data, student training, work and health information, presence or not of vocal complaints, vocal habits and self-evaluation of the voice on daily use of the speech and on rehearsal or performance (excellent, very good, good, reasonable and bad). This questionnaire was used in order to identify if the participant fulfilled the inclusion criteria.

A total of 57 drama students fulfilled the inclusion criteria and were divided into two groups: with no vocal complaints group (NCG) - 39 drama students, 21 males and 18 females (average of 29.56 ± 12.38 years old); with vocal complaints group (WCG) - 18 drama students, five males and 13 females (average of 28.11 ± 8.94 years old). The groups had no difference regarding sex (Table 1) and age (Table 2). However, WCG participants have been participating in amateur theatre for a longer time ($p = 0.005$) and have been performing rehearsals more times per week ($p = 0.022$) than the NCG.

Table 1. Nominal qualitative variables characterization from participants of the groups with and without vocal complaints

| Variables and categories | NCG | | WCG | | Total | | p-value |
|--|-----|-------|-----|-------|-------|-------|---------|
| | n | % | n | % | n | % | |
| Sex | | | | | | | |
| Male | 21 | 36,84 | 5 | 8,77 | 26 | 45,61 | 0,066 |
| Female | 18 | 31,58 | 13 | 22,81 | 31 | 54,39 | |
| Voice demand | | | | | | | |
| PER | 0 | 0 | 0 | 0 | 0 | 0 | 0,758 |
| LNVD | 26 | 45,61 | 13 | 22,81 | 39 | 68,42 | |
| HVD | 12 | 21,05 | 5 | 8,77 | 17 | 29,82 | |
| RET | 1 | 1,75 | 0 | 0 | 1 | 1,75 | |
| Received guidance on professional voice use | | | | | | | |
| No | 15 | 26,32 | 8 | 14,04 | 23 | 40,35 | 0,668 |
| Yes | 24 | 42,11 | 10 | 17,54 | 34 | 59,65 | |
| Had class regarding the basic concepts of the professional voice use | | | | | | | |
| No | 12 | 21,43 | 8 | 14,29 | 20 | 35,71 | 0,348 |
| Yes | 26 | 46,43 | 10 | 17,86 | 36 | 64,29 | |
| Participated in amateur theater before studying | | | | | | | |
| No | 18 | 31,58 | 6 | 10,53 | 24 | 42,11 | 0,362 |
| Yes | 21 | 36,84 | 12 | 21,05 | 33 | 57,89 | |
| Other activity with voice demand | | | | | | | |
| No | 19 | 33,93 | 7 | 12,5 | 26 | 46,43 | 0,436 |
| Yes | 19 | 33,93 | 11 | 19,64 | 30 | 53,57 | |
| Sings | | | | | | | |
| No | 25 | 44,64 | 10 | 17,86 | 35 | 62,5 | 0,460 |
| Yes | 13 | 23,21 | 8 | 14,29 | 21 | 37,5 | |
| Use of sound amplification | | | | | | | |
| No | 24 | 42,86 | 13 | 23,21 | 37 | 66,07 | 0,503 |
| Yes | 14 | 25 | 5 | 8,93 | 19 | 33,93 | |
| Daily use of speech | | | | | | | |
| Excellent | 4 | 7,02 | 3 | 5,26 | 7 | 12,28 | 0,727 |
| Very good | 14 | 24,56 | 4 | 7,02 | 18 | 31,58 | |
| Good | 16 | 28,07 | 8 | 14,04 | 24 | 42,11 | |
| Reasonable | 5 | 8,77 | 3 | 5,26 | 8 | 14,04 | |
| Bad | 0 | 0 | 0 | 0 | 0 | 0 | |
| Rehearsal or performance | | | | | | | |
| Excellent | 2 | 3,51 | 0 | 0 | 2 | 3,51 | 0,697 |
| Very good | 10 | 17,54 | 7 | 12,28 | 17 | 29,82 | |
| Good | 16 | 28,07 | 6 | 10,53 | 22 | 38,6 | |
| Reasonable | 10 | 17,54 | 4 | 7,02 | 14 | 24,56 | |
| Bad | 1 | 1,75 | 1 | 1,75 | 2 | 3,51 | |

Pearson chi-square test; $p < 0.05$

Caption: NCG = with no vocal complaints group; WCG = with vocal complaints group; PER = performers; LNVD = low or no voice demand; HVD = high voice demand; RET = retired; n = number of participants; % = percentage of participants

Table 2. Quantitative variables characterization from participants of the groups with and without vocal complaints

| Variable | NCG | | | | | WCG | | | | | p-value |
|---|---------|-------|------|--------|-------|---------|-------|------|--------|-------|---------|
| | Average | SD | Q25 | Median | Q75 | Average | SD | Q25 | Median | Q75 | |
| Age | 29.56 | 12.38 | 2.00 | 5.50 | 21.50 | 28.11 | 8.94 | 8.00 | 18.00 | 22.00 | 0.657 |
| For how many years have you been in amateur theater | 13.28 | 18.01 | 1.5 | 4.5 | 14.5 | 18.87 | 30.84 | 1.00 | 8.00 | 18.00 | 0.005* |
| How many plays have you participated | 7.46 | 7.21 | 1.00 | 3.00 | 11.00 | 7.22 | 9.56 | 2.00 | 15.00 | 25.00 | 0.258 |
| How many times per week do you rehearse | 2.00 | 1.33 | 1.00 | 1.50 | 3.00 | 3.08 | 1.68 | 2.00 | 3.00 | 3.00 | 0.022* |
| How many hours per week do you rehearse | 6.95 | 7.28 | 2.50 | 9.00 | 22.50 | 7.67 | 7.66 | 8.00 | 16.00 | 25.00 | 0.862 |
| For how many years have you been doing another activity with voice demand | 14.49 | 11.79 | 2.00 | 5.00 | 18.50 | 16.37 | 19.27 | 3.00 | 6.00 | 12.00 | 0.016* |
| How many hours per day do you perform another activity with voice demand | 5.85 | 6.20 | 2.00 | 6.50 | 21.50 | 9.17 | 8.48 | 3.00 | 11.00 | 24.00 | 0.452 |
| How often do you use your singing voice | 20.28 | 30.24 | 3.00 | 9.50 | 21.50 | 21.38 | 25.89 | 3.00 | 9.00 | 23.00 | 0.305 |

T- test and Mann-Whitney test; * $p < 0.05$

Caption: NCG = with no vocal complaints group; WCG = with vocal complaints group; SD = standard deviation; Q25 = first quartile; Q75 = third quartile

Fifty percent of the NCG and 61.11% of the WCG reported having another activity with voice demand; the WCG reported doing this activity for more years than the NCG ($p = 0.016$).

The participants who fulfilled the inclusion criteria also answered to three questionnaires: the Vocal Health and Hygiene Questionnaire (VHHQ); the Voice Symptom Scale (VoiSS) and the Voice Handicap Index reduced version (VHI-10). The questionnaires were applied personally by one of the authors.

The Brazilian validated VHHQ⁽⁶⁾ has 31 items to assess the participants knowledge of vocal health and hygiene. For each item the individual must say if it is positive, negative or has no influence on vocal health. The questionnaire score goes from 0 to 31; higher scores indicate more knowledge of vocal health and hygiene. The questionnaire threshold to identify the risk to develop vocal problem is 23 points, lower scores indicate higher risk⁽⁶⁾.

The VoiSS has been validated to Brazilian Portuguese⁽⁷⁾. It is a self-evaluation tool with 30 statements that should be analyzed according to its frequency of occurrence. The participants answer each statement as: never, occasionally, some of the time, most of the time or always. Next, the answers were converted into a Likert scale from 1 (never) to 4 (always) and the score was calculated considering the VoiSS total score and the score of each subscale: impairment, emotional and physical. The simple sum of the answers gives the questionnaire score for each subscale. The threshold to identify individuals at risk to develop a vocal problem is 16 points for the total score; for each subscale the thresholds are: impairment = 11.5 points, emotional = 1.5 points and physical = 6.5 points⁽⁷⁾. Scores above the thresholds indicate more risk to develop a voice disorder.

The VHI-10 has also been validated to the Brazilian Portuguese⁽⁸⁾. It has 10 questions that evaluates vocal handicap in daily activities. The participants had to select the answer that best explained their voice and its effect on their daily routine using a five-point scale: never, almost never, sometimes, almost always and always. As in the VoiSS questionnaire, the answers were converted into a Likert scale from 0 to 4. Next,

the VHI-10 total score was calculated based on the simple sum of the answers. Scores above 7.5 points⁽⁸⁾ indicates higher risk to develop a voice problem.

Data from the questionnaire with demographic information were considered to characterize the study sample. The participants were categorized according to their occupational voice demand as: vocal performers (PER), high voice demand (HVD), low or no voice demand (LNVD) and retired (RET)⁽⁹⁾.

The questionnaires used in the present study were calculated according to the guidelines of each one. The data were analyzed using the Statistica 13.0 software. The significance level was set at 5% ($p < 0.05$) for all inferential analysis. The Shapiro-Wilk test was used to test for normal distribution. The T-Test was used to compare two independent groups with normal distribution; the Mann-Whitney Test was used to analyze non-normal variables and ordinal qualitative variables.

The Pearson's Chi-square test was used to analyze qualitative nominal variables. The Spearman Correlation was used to analyze non-normal quantitative variables; according to Landis and Koch⁽¹⁰⁾ guidelines: 0.00 to 0.20 = slight; 0.21 to 0.40 = fair; 0.41 to 0.60 = moderate; 0.61 to 0.80 = substantial; 0.81 to 1.00 = almost perfect.

RESULTS

Table 3 shows no difference between groups regarding knowledge of vocal health and hygiene ($p = 1.000$). Regarding the self-evaluation protocols, drama students from the WCG had higher scores for the VoiSS impairment subscale ($p = 0.019$), the VoiSS emotional subscale ($p < 0.001$), the VoiSS physical subscale ($p = 0.001$), the VoiSS total score ($p < 0.001$) and the voice handicap index ($p = 0.002$)

Considering actors from the WCG, that is, the actors with vocal complaints, the VHHQ total score presented substantial negative correlation with the VoiSS emotional subscale ($p = 0.003$) and moderate negative correlation with the VoiSS total score ($p = 0.031$) and the VHI-10 ($p = 0.012$) (Table 4).

Table 3. Analysis regarding the knowledge of vocal health and hygiene, voice signs and symptoms, and vocal handicap from participants with and without vocal complaints

| Protocol | Scale | Group | Average | SD | Q25 | Median | Q75 | p-value |
|----------|------------|-------|---------|-------|-------|--------|---------|---------|
| VHHQ | Total | NCG | 24.20 | 5.55 | 22.00 | 25.00 | 28.00 | 1.000 |
| | | WCG | 23.27 | 7.23 | 19.00 | 26.00 | 28.00 | |
| VoiSS | Impairment | NCG | 12.51 | 6.34 | 7.00 | 12.00 | 18.00 | 0.019* |
| | | WCG | 18.22 | 8.59 | 13.00 | 17.50 | 22.00 | |
| | Emotional | NCG | 0.79 | 1.21 | 0.00 | 0.00 | 1.00 | <0.001* |
| | | WCG | 6.11 | 5.86 | 2.00 | 5.00 | 8.00 | |
| | Physical | NCG | 6.28 | 4.43 | 3.00 | 6.00 | 8.00 | 0.001* |
| | | WCG | 10.33 | 4.41 | 8.00 | 10.00 | 12.00 | |
| Total | NCG | 19.58 | 9.41 | 12.00 | 21.00 | 26.00 | <0.001* | |
| | WCG | 34.66 | 16.52 | 25.00 | 33.50 | 42.00 | | |
| VHI-10 | Total | NCG | 2.87 | 2.82 | 1.00 | 2.00 | 4.00 | 0.002* |
| | | WCG | 8.38 | 7.57 | 3.00 | 5.50 | 14.00 | |

Mann-Whitney test; * $p < 0.05$

Caption: NCG = with no vocal complaints group; WCG = with vocal complaints group; SD = standard deviation; Q25 = first quartile; Q75 = third quartile; VHHQ = Vocal Health and Hygiene Questionnaire; VoiSS = Voice Symptom Scale; VHI-10 = Voice Handicap Index with 10 items

Table 4. Spearman correlation between knowledge of vocal health and hygiene and the self-evaluation protocols from participants with and without vocal complaints

| Protocol | Scale | VHHQ | | | |
|----------|------------|--------|---------|--------|---------|
| | | NCG | | WCG | |
| | | r | p-value | r | p-value |
| VoiSS | Impairment | 0.170 | 0.300 | -0.399 | 0.101 |
| | Emotional | 0.261 | 0.108 | -0.650 | 0.003* |
| | Physical | -0.185 | 0.259 | -0.384 | 0.116 |
| | Total | 0.092 | 0.576 | -0.510 | 0.031* |
| VHI-10 | Total | 0.225 | 0.168 | -0.580 | 0.012* |

Spearman Correlation; *p < 0.05

Caption: NCG = with no vocal complaints group; WCG = with vocal complaints group; r = spearman correlation; VHHQ = Vocal Health and Hygiene Questionnaire; VoiSS = Voice Symptom Scale; VHI-10 = Voice Handicap Index with 10 items

DISCUSSION

Data from the literature show there are many Brazilian drama students⁽⁵⁾ that have vocal abuse and are not aware of vocal health. In addition, some theater actors have complaints related to voice use, which is possibly due to vocal abuse and unawareness of vocal health, which are observed since the beginning of their career⁽³⁾. Although the literature shows lack of knowledge of vocal health and hygiene in some Brazilian drama students, to the best of our knowledge, there are no studies that analyzed if there is any difference between students with and without vocal complaints regarding their knowledge of vocal health and hygiene, presence of voice symptoms and voice handicap. Such data are important to help the speech language pathologist to elaborate specific actions in order to better prepare the theater actors for the high voice demand they will face throughout their career. Thus, the present study aimed to gather information about vocal health and hygiene, voice signs and symptoms and voice handicap from drama students with and without vocal complaints.

In the present study, the theater actors occupational voice demand and the characterization of their professional profile (Tables 1 and 2) did not have an influence on the presence of vocal complaint. On the other hand, information related to the amount of time and frequency of voice use, such as how many performances in amateur theatre, perform another activity with voice demand and have more rehearsals per week (Table 2), seem to influence the presence of vocal complaint in the WCG.

It is noteworthy that, although the participants of the present study are still students, they use their voice in amateur theatre and also in other activities; in addition, the voice demand seems to influence the presence of vocal complaints. However, not only the occupational voice demand of the theater actors will influence the presence of vocal complaints; the presence of the complaint will be higher when this high occupational voice demand is added to the voice demand of rehearsal activities and, it seems that drama students do not have adequate training and resistance for these demands, which leads to vocal complaints.

Moreover, the literature shows that drama students have high voice demand during their training, when they have to prepare performances⁽⁴⁾. To the best of our knowledge, there

are no studies that address to students, however, studies with theater actors show that the high voice demand due to the actors' exhaustive routines, from rehearsal to performance, requires them to have a strong voice resistance to guarantee a good performance throughout the season^(1,4,11).

Therefore, although they are still only drama students, they already need to have vocal training to maximize their vocal potential and increase vocal resistance. Also, in specific cases, symptoms related to inefficient or inappropriate voice use must be addressed⁽³⁾. It is hypothesized that this will give the students proper vocal resistance to perform, regardless of their voice demand. The students' demographic information showed that they already have a voice demand similar to a professional actor, although they still did not start their professional education. Many studies with professional actors show that they undergo vocal training and vocal warm-up, however, this training is usually guided by a singing teacher or a vocal coach. Such professionals are not commonly aware of the vocal tract physiology during the exercises^(3,4). Generally, this reality makes the students unprepared for his voice demand, also for amateur performance during his training period.

In addition, data from the literature show that rehearsal and performance places are not always suitable for the actors' needs. The reason for this embraces several factors, such as poor environmental and acoustic conditions added to lack of proper vocal training which may lead to inadequate vocal adjustments; these adjustments may increase vocal effort and cause vocal disorders^(3,4). This is one of the reasons why laryngeal hyperfunction is prevalent in this population⁽¹²⁾.

No influence was observed between receiving guidance on professional voice use and having classes regarding basic concepts of the professional voice use and the presence of vocal complaint (Table 1). For both groups, most of the participants received guidance on the professional voice use and had knowledge of voice care. These data are in accordance with the VHHQ outcome of both groups, that were the same (Table 3). On the other hand, the VHHQ average score was above 23 points for both groups⁽⁶⁾, thus, the drama students were not at risk to develop vocal problems⁽⁶⁾. Therefore, the presence of vocal complaints is not dependent on the level of knowledge of vocal health and hygiene.

Previous study with professional theater actors also observed presence of vocal complaints despite vocal training and guidance⁽³⁾. Thus, it seems that, although the actors are aware of vocal health and hygiene, their major concern is with their body and acting and not with vocal aspects such as source-filter balance and coordination between breathing and speaking^(3,4).

Although actors have knowledge and awareness of vocal health and hygiene, this does not mean they will apply this knowledge on a daily basis, resulting in vocal abuse and incorrect use of the voice^(4,5). In addition, when there is a high voice demand, the vocal resistance is not enough to guarantee good vocal performance and absence of vocal complaints. There is a consensus in the literature that the professional voice use requires adequate vocal training to guarantee good vocal resistance, especially in cases where good voice quality is needed⁽¹³⁻¹⁶⁾.

Still regarding the present study sample characteristics, there were no differences between students with and without vocal complaint considering their voice self-assessment in daily use and during rehearsal or performances (Table 1); overall, drama students perceived their voice as good. Previous study showed that professional actors do not have an accurate perception of their own voice and that their perceptions are different from the perceptions of other voice professionals⁽³⁾. Such data is relevant, because if the actor cannot accurately identify signs of vocal deviation, he will not seek treatment and, therefore, will have a higher risk of increasing vocal complications and have vocal plasticity restriction, which will make it harder to portray the character.

Drama students with vocal complaints had higher self-perception scores in all scales and subscales, regarding voice symptoms and voice handicap (Table 3). In addition, the voice handicap score⁽⁸⁾ and the voice symptoms score⁽⁷⁾ of students with vocal complaints are above the thresholds, therefore, they are at risk to develop a voice disorder.

Thus, it can be noticed that the presence of vocal complaints brings more voice handicap for drama students. Additionally, students without vocal complaints have high scores of voice symptoms which indicates risk to develop voice disorders. These data show that presence of vocal complaints affects the lives of drama students, thus, they have limitations in their daily lives.

The presence of vocal complaints may interfere with good performance and limit professional performance, also in the amateur theatre⁽⁵⁾, once acting requires good voice quality and vocal plasticity. Thus, aspects related to the theater actor well-being should be considered to improve the actor's quality of life and the surrounding audience⁽³⁾.

There was no difference regarding the vocal knowledge between students with and without vocal complaints, however, for drama students with vocal complaints, the lower the knowledge of vocal health and hygiene, the higher the presence of voice symptoms (for the VoiSS total score and emotional subscale) and voice handicap (Table 4); as demonstrated in the substantial and moderate correlations. Thus, although knowledge of vocal health and hygiene is not an important factor to differentiate drama students with vocal complaints from drama students without vocal complaints, it is noteworthy that, when students have vocal complaints, lower knowledge of vocal health and hygiene will indicate more voice symptoms and more voice handicap.

The outcomes of the present study indicate that the factors related to the voice demand of drama students seem to influence the presence of vocal complaints. However, for students with vocal complaints, more knowledge of vocal health indicates lower frequency of voice symptoms and perceived voice handicap.

The present study data reinforce the need to provide adequate vocal training to guarantee a good professional vocal performance, especially for students; thus, when they begin to act professionally, they will be better prepared for the voice demand they will face throughout their career. Educational actions must

be developed since the beginning of the drama students' course and before they begin acting, not only professionally, but also as amateur actors.

The results of the present study are in accordance with the literature that highlights the importance of the speech language pathologist work with theater actors in order to provide better performance on voice, body and acting⁽⁵⁾.

CONCLUSION

Drama students with vocal complaints have more voice symptoms and more perceived voice handicap. There was no difference in knowledge of vocal health and hygiene among drama students with and without vocal complaints. However, for the students with vocal complaints, less knowledge of vocal health and hygiene indicates higher perception of voice handicap and voice symptoms.

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Author contributions

MRSAC study delimitation, data collection, data analysis, writing of the manuscript; RY study delimitation, writing and revision of the manuscript; CP study delimitation, writing and revision of the manuscript; MCMB study delimitation, writing and revision of the manuscript; MB study design, data analysis, writing and revision of the manuscript.