






# Actor's voice: association between vocal symptoms and life habits

## Voz do ator: associação entre sintomas vocais e hábitos de vida

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### ABSTRACT

**Purpose:** To analyze the occurrence of signs and symptoms in actors and associate those to their life habits and frequency at work, checking the existence of a functional relationship between the variables. **Methods:** Retrospective research, as approved by the Ethics Committee, which included data collected through an online form. The answers of 100 actors to the Vocal Production of the Actor questionnaire regarding the presence of self-reported vocal signs and symptoms, life habits and frequency were descriptively and inferentially analyzed (as for the association between these variables, chi-square test, and  $p < 0.05$ ). **Results:** Most were male, single, had completed higher education, and worked in more than a position with voice use. The most mentioned vocal symptoms were throat clearing, dry throat, rough voice, and dry cough, while the most reported habits were alcohol consumption, waking up at night, and not avoiding some kind of food. Some associations were noticed as protective factors in regression analysis: avoiding some foods for dry cough, not smoking for cough with mucus, waking up rested and drinking water for burning sensation in the throat and having leisure activities for shortness of breath. **Conclusion:** Analyzing separately, actors presented vocal symptoms due to the inadequate use of voice and their life habits. However, the relevance of some life habits and the presence of vocal symptoms were associated, as well as the lack of some life habits in some actors, as protective factors for the presence of vocal symptoms.

**Keywords:** Voice disorders; Signs and symptoms; Habits; Art; Worker's health

### RESUMO

**Objetivo:** Analisar a ocorrência de sinais e sintomas vocais em atores e associá-los a seus hábitos de vida e frequência ao trabalho, verificando a existência de uma relação funcional entre as variáveis. **Método:** Pesquisa retrospectiva, que utilizou banco de dados coletados por meio de formulário *on-line*. Os dados referentes à presença autorreferida de sinais e sintomas vocais, hábitos de vida e frequência ao trabalho de 100 atores, que responderam ao questionário denominado Condições de Produção Vocal do Ator, foram analisados de forma descritiva e inferencial (associação entre essas variáveis: teste do Qui-quadrado e  $p < 0,05$ ). **Resultados:** Pouco mais da metade dos participantes era do gênero masculino, maioria de solteiros, com ensino superior completo, exercendo mais de uma atividade de uso vocal. Os sintomas vocais mais referidos foram pigarro, garganta seca, voz grossa e tosse seca, enquanto que os hábitos citados foram ingerir bebida alcoólica, acordar à noite e não evitar algum tipo de alimento. Na análise de regressão, observaram-se associações como fatores protetores: evitar consumir alguns alimentos, para tosse seca, não fumar, para tosse com secreção, acordar descansado, beber água, para ardor na garganta e ter atividades de lazer, para falta de ar. **Conclusão:** Isoladamente, os atores apresentaram sintomas vocais decorrentes do uso inadequado da voz e de seus hábitos de vida. Nas associações, a significância entre alguns hábitos de vida e a presença de sintomas vocais foi registrada, bem como a ausência de determinados hábitos de vida em alguns atores, como protetores para a presença de sintomas vocais.

**Palavras-chave:** Distúrbios da voz; Sinais e sintomas; Hábitos; Arte; Saúde do trabalhador

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## INTRODUCTION

Actors have a broad and complex professional training that always included two elements, regardless of the school/pedagogical lineage: technical and expressive development<sup>(1,2)</sup>. As for the latter, Stanislavski noted the relevance of the technical aspect of voice and speech, and the care of the entire phonatory system for complex tasks of performing arts<sup>(3)</sup>. However, the science to support this population is still poorly studied when compared to other fields related to the voice, as only 8.25% of the researches in speech-language pathology on professional voice refer to the actor's voice<sup>(4)</sup>.

As a voice professional, the actor is inserted in a universe with several factors that may be related to the presence of vocal symptoms. Aspects related to work environment and organization have been recently highlighted as risk factors for the development of these symptoms among voice professionals<sup>(5-10)</sup>. On the one hand, it should be emphasized that vocal signs and symptoms may arise from the work organization of the voice professional; and, on the other hand, some symptoms, such as hoarseness, loss of voice and voice failure may prevent the presence of the professional at work, thus becoming a cause of absenteeism or unfavorable vocal conditions, creating a vicious circle<sup>(7)</sup>.

It is also important to consider that people's daily habits can also be regarded as risk factors. The most highlighted daily habits in the literature as risk factors are smoking<sup>(11,12)</sup> and alcohol<sup>(13)</sup>, which are present in most cases of laryngeal cancer. In addition, other aspects, such as irregular sleep, lack of hydration, environmental factors (dust, air conditioning, etc.), consumption of spicy foods, or simply not following regular meal times, may compromise the vocal production of the professional<sup>(14)</sup>. These habits impact each individual in a particular way, and the voice impact is often recorded on the occurrence of vocal signs and symptoms, such as hoarseness, loss of voice, vocal fatigue, pain when swallowing and throat clearing, among others<sup>(5,12,15)</sup>.

It should be noted that some habits are noticed among the actors at certain times, such as when they are performing and their routines are focused on rehearsals and presentations. Changes in their sleep habits, irregular diet, alcohol consumption (associated with a need to be "relaxed" before entering the stage), different types of work (representation, dubbing, etc.) in different contexts (Italian stage, arena, street stage, etc.) make these professionals unique to their characterization<sup>(2)</sup>. Voice care is critical in this intense work phase to avoid problems that may lead to the cancellation of shows due to the loss of voice or to the development and presence of bad vocal habits to their professional work<sup>(2)</sup>.

The voice rhythm, as well as the use of the voice by the actor and the presence of the voice problem, increases the potential absenteeism, which is characterized by the high prevalence of work absences due to vocal problems<sup>(16)</sup>, including reports of control and occupational health services and restrictions of work activities with career impairment, due to vocal illness<sup>(17)</sup>.

It is important to know the universe of actors, considering their life habits and the relationship of these habits with the occurrence of vocal signs and symptoms, in order to undertake speech-language initiatives aimed at health promotion and prevention of voice disorders<sup>(18)</sup>, and to seek a better quality of life and vocal well-being. Thus, this study aims to analyze the

occurrence of vocal signs and symptoms in actors and associate them to their life habits and frequency at work, checking the existence of a functional relationship between the variables.

## METHOD

This is a retrospective study conducted with actors<sup>(10)</sup>, which included data collected from July to September, 2018, and it was duly approved by the Research Ethics Committee of the Pontifical Catholic University of São Paulo, under the CAAE no.45416915.7.0000.5482. All individuals agreed to participate by signing a Free Prior Informed Consent.

Database included information of actors who were invited by email and social networks and met the following inclusion criteria: actors with theatrical experience of at least two years, being a professional actor and/or attending any school for actors and who completed the questionnaire in its entirety. Among the 109 actors who were contacted, 100 responded to the questionnaire and were linked to professional companies, technical training schools (Instituto de Arte e Ciência, Escola de Arte Dramática da Universidade de São Paulo, Teatro Escola Macunaíma, Serviço Nacional de Aprendizagem Comercial) and undergraduate courses in performing arts (Universidade Estadual de Campinas, Universidade de São Paulo e Pontifícia Universidade Católica de São Paulo).

The study applied the Vocal Production of the Actor (CPV-A)<sup>(10)</sup> questionnaire, which was adapted from the Teacher Vocal Production Condition (CPV-P)<sup>(19)</sup> questionnaire that was developed to work with teachers. All eligible participants were given a link to the questionnaire that was stored into Google Drive®.

The CPV-A consists of 56 questions in total, five of which are for identification of the participant, while six seek to raise the functional situation, 14 refer to the work environment, 14 to the work organization, and 17 on vocal aspects, habits and lifestyle.

Data regarding the following domains were highlighted for this study: vocal signs and symptoms (hoarseness, loss of voice, voice failure, rough voice, thin voice, voice ranging from rough to thin, weak voice, stinging sensation in throat, feeling of sand in throat, feeling of lump in the throat, throat clearing, dry cough, cough with mucus, pain when speaking, pain when swallowing, difficulty swallowing, burning sensation in the throat, mucus in the throat, dry throat, fatigue when speaking, effort when speaking, shortness of breath, difficulty in biting food); habits and lifestyle (smoking, drinking alcohol, drinking water during the use of voice, lack of leisure activities, energy drink consumption, feeding and sleeping/waking up rested); and also the question: "Have you ever missed work due to voice changes?". Regarding the possibility of answers, most questions used the Likert scale (0-never, 1-rarely, 2-sometimes, 3-almost always and 4-always) and multiple choice.

For statistical analysis, questionnaire responses on Likert scale were classified as "no" (for those assigned as 'never', 'rarely' and 'sometimes') and "yes" (for those assigned as 'almost always' and 'always'). Then the investigators performed a descriptive analysis by means of absolute and relative frequencies, measures of central tendency (mean and median) and dispersion (standard deviation (SD), minimum and maximum) for all the answers.

The chi-square test was used to analyze the association between outcomes, vocal signals and symptoms and independent variables (missing work due to vocal changes, leisure activities,

smoking, alcohol consumption, energy drink consumption, before or during intense vocal use, water consumption during vocal use, feeding at regular times, avoiding some kind of food and waking up rested). The multiple binary logistic regression analysis was applied using the backward technique for outcomes in which more than fifteen actors had the event and statistical significance in the independent variables, and a  $p$ -value  $< 0.20$ , in order to detect, as much as possible, the association between independent variables and vocal symptoms.

A 5% descriptive level ( $p < 0.05$ ) was assumed for statistical significance. The data were analyzed in the Statistical Package for Social Sciences (SPSS) 22.0 for Windows.

## RESULTS

As for the participants, it was found that slightly more than half were male (56.0%), while most of them were single (75.0%), had completed higher education (61.0%), and worked in more than a position with voice use (64.0%) (Table 1).

Age ranged from 19.7 to 66.4 years and the mean age of the sample was 30.8 years ( $SD=8.6$ ). The study also found a mean time 8.9 years of professional work ( $SD=6.1$ ), with a median of 7.6 years, and a minimum period of 2 years to a maximum of 30 years.

According to self-report vocal signs and symptoms, 68% of the actors had cough, which is the most frequent symptom. Cough was followed by dry throat (54.0%), rough voice (45.0%) and dry cough (39.0%) (Table 2).

The following highlights could be noticed in the isolated investigation regarding life habits: 66% of the actors consumed alcoholic beverages, while 55% used to wake during the night and 41% did not avoid some kind of food (Table 3).

A significant statistical association was observed when habits were associated to vocal signs and symptoms. As for alcohol consumption and smoking habits, the study found a significant association between alcohol consumption and rough voice (57.6% versus 20.6%,  $p < 0.001$ ) and between smoking and throat clearing (88.9% versus 60.3%,  $p = 0.006$ ) and cough with mucus (59.3% versus 23.3%,  $p = 0.001$ ), when smokers actors were compared to nonsmokers actors (Table 4).

Also, there was a significant association between the dry cough outcome and the fact that some actors did not avoid some kind of food, compared to those who avoided (58.5% versus 25.4%;  $p = 0.001$ ) (Table 4).

As for other symptoms, the significant association for shortness of breath and fatigue when speaking was between the lack of leisure activities (75.0% among actors versus 13.0%,  $p < 0.001$ ) and between not drinking enough water during the use of the voice (80% among actors versus 20%,  $p = 0.010$ ), respectively (Table 4).

Another significant association was found for the question "Have you ever missed work due to voice changes?", which, although not very frequent as an isolated event among the subjects, was associated with positive responses to vocal symptoms (hoarseness: 100.0% versus 31.3% and  $p = 0.012$ ; loss of voice: 50% versus 2.1% and  $p = 0.007$ ; voice failure: 75% versus 21.9% and  $p = 0.042$ ) and laryngopharyngeal symptoms (pain when swallowing: 50% versus 7.3% and  $p = 0.040$ ; difficulty swallowing: 50% versus 7.3% and  $p = 0.040$ ; mucus in the throat: 100% versus 24% and  $p = 0.004$ ) (Table 4).

**Table 1.** Numerical distribution and percentage of the demographic data of the research subjects (n=100)

Variable	Category	n	(%)
Gender	Male	56	(56.0)
	Female	44	(44.0)
Marital status	Single	75	(75.0)
	Separated / divorced	6	(6.0)
	Married or any union	19	(19.0)
Education level	Complete high school	11	(11.0)
	Complete higher education	61	(61.0)
	Ongoing higher education	16	(16.0)
	Incomplete higher education	12	(12.0)
Besides acting, do you perform other activities that require the use of voice?	No	36	(36.0)
	Yes	64	(64.0)
If so, what do you do?	Singer	24	(37.5)
	Teacher	27	(42.2)
	Speaker	10	(15.6)
	Salesman/saleswoman	3	(4.7)
Total		100	(100.0)

Subtitle: n= Number of subjects; % = Percentage

The other vocal signs and symptoms did not show significant association with lifestyle habits (Table 4).

In the multiple binary regression analysis, when more than fifteen actors with significant associations between life habits and vocal symptoms were included, and with respect to the voice failure variable, the independent factors to the outcome were missing work due to voice changes (odds ratio (OR)=13.61;  $p = 0.031$ ) and energy drink consumption before or during the intensive use of the voice (OR=5.11;  $p = 0.022$ ). Regarding the rough voice, the independent factor was the alcoholic drink variable (OR=5.59,  $p = 0.001$ ), that is, actors who consumed alcohol were more likely to present a rough voice when compared to those who did not (Table 5).

As for throat clearing, smoking was an independent factor (OR=4.60;  $p = 0.029$ ); that is, smokers had a 4.60 chance of clearing their throats when compared to non-smokers (Table 5).

Regarding the dry cough outcome, the independent protective factor was to avoid some foods (OR=0.24,  $p = 0.002$ ), that is, the subjects were less likely to have dry cough when compared to those who did not avoid some kind of food. As for the cough with mucus variable, smoking was found as an independent factor for the outcome (OR=3.97,  $p = 0.007$ ) (Table 5).

Regarding the burning sensation in the throat variable, the independent protective factors were to drink water during the use of voice and to wake up rested, respectively (OR=0.11,  $p = 0.022$  and OR=0.23,  $p = 0.014$ ). Concerning the shortness of breath, actors who had leisure activities had a protective factor of OR=0.04 ( $p < 0.001$ ) for shortness of breath, compared to actors who did not have leisure activities (Table 5).

**Table 2.** Numerical and percentage distribution of vocal signs and symptoms self-reported by the actors (n=100)

Variable	Category	n	(%)
Hoarseness	No	66	(66.0)
	Yes	34	(34.0)
Loss of voice	No	96	(96.0)
	Yes	4	(4.0)
Voice failure	No	76	(76.0)
	Yes	24	(24.0)
Rough voice	No	55	(55.0)
	Yes	45	(45.0)
Thin voice	No	83	(83.0)
	Yes	17	(17.0)
Voice ranging from rough to thin	No	82	(82.0)
	Yes	18	(18.0)
Weak voice	No	88	(88.0)
	Yes	12	(12.0)
Stinging sensation in throat	No	76	(76.0)
	Yes	24	(24.0)
Feeling of sand in throat	No	87	(87.0)
	Yes	13	(13.0)
Feeling of lump in the throat	No	79	(79.0)
	Yes	21	(21.0)
Throat clearing	No	32	(32.0)
	Yes	68	(68.0)
Dry cough	No	61	(61.0)
	Yes	39	(39.0)
Cough with mucus	No	67	(67.0)
	Yes	33	(33.0)
Pain when speaking	No	92	(92.0)
	Yes	8	(8.0)
Pain when swallowing	No	91	(91.0)
	Yes	9	(9.0)
Difficulty swallowing	No	91	(91.0)
	Yes	9	(9.0)
Burning sensation in the throat	No	79	(79.0)
	Yes	21	(21.0)
Mucus in the throat	No	73	(73.0)
	Yes	27	(27.0)
Dry throat	No	46	(46.0)
	Yes	54	(54.0)
Fatigue when speaking	No	77	(77.0)
	Yes	23	(23.0)
Effort when speaking	No	78	(78.0)
	Yes	22	(22.0)
Shortness of breath	No	82	(82.0)
	Yes	18	(18.0)
Total		100	(100.0)

Subtitle: n= Number of subjects; % = Percentage

## DISCUSSION

The composition of the sample in this study with a higher percentage of male subjects<sup>(20)</sup> shows a different profile when compared to the researches that are usually performed with voice professionals, especially with teachers. In most of these studies, there is a predominance of female<sup>(7,18,21)</sup> subjects, which raises the hypothesis that the voice disorder is also associated with the female gender, considering its laryngeal aspects<sup>(22)</sup>.

**Table 3.** Numerical and percentage distribution of the actors, according to lifestyle

Variables	Category	n	(%)
Have you ever missed work due to voice changes?	No	96	(96.0)
	Yes	4	(4.0)
Do you have any leisure activities?	No	8	(8.0)
	Yes	92	(92.0)
Do you smoke?	No	73	(73.0)
	Yes	27	(27.0)
Do you drink alcohol?	No	34	(34.0)
	Yes	66	(66.0)
Do you usually take energy drink before or during intense vocal use?	No	90	(90.0)
	Yes	10	(10.0)
Do you drink water while using your voice?	No	5	(5.0)
	Yes	95	(95.0)
Do you eat at regular times each day?	No	18	(18.0)
	Yes	82	(82.0)
Do you avoid any kind of food?	No	41	(41.0)
	Yes	59	(59.0)
Do you wake up at night?	No	45	(45.0)
	Yes	55	(55.0)
Do you feel rested when you wake up?	No	17	(17.0)
	Yes	83	(83.0)
Total		100	(100.0)

Subtitle: n= Number of subjects; % = Percentage

As for the age, the group was composed by young adults, with an average time of almost ten years in the labor market. Although this finding may suggest that some voice disorder is not present, inadequate vocal habits may lead to their onset. When testing the age variable in the multiple models in a research conducted with teachers<sup>(23,24)</sup>, it was possible to notice that the age group of 50-65 years proved to be associated with the presence of voice disorders, which may indicate a functional aging of the speech apparatus. These data highlight the need for voice care in the course of the professional practice of actors and teachers.

As for the educational level, it was possible to notice that most of the actors had completed higher education. And, although the percentage is high, it was lower than the percentage recorded in a study conducted with teachers and a similar instrument (93.7), since this degree is mandatory to this role<sup>(25)</sup>.

The analysis of the work profile of the subjects of this research allowed to notice that, besides acting, more than half of the participants also had other works, many of these side jobs also included their voice as the main instrument of work, as singers, teachers or speakers. Therefore, in addition to contributing to a potential higher incidence of voice disorders due to environmental and work organization issues<sup>(23,26)</sup>, this data further reinforces the need for voice care.

Concerning the record of signs and symptoms, throat clearing was self-reported in a higher percentage, which is consistent with findings of a research that consisted of 272 teachers<sup>(22)</sup> in the municipal network of São Paulo (82.4% of the case group, 64.8% of the control group,  $p=0.011$ ). In general, this symptom is present among subjects who make excessive use of voice, who may have laryngopharyngeal reflux associated or not with the use of voice<sup>(15)</sup>.

**Table 4.** Analysis of chi-square association between habits and the presence of vocal signs and symptoms

Questions		Presence of Signs and Symptoms											
		H	LV	VF	RV	TC	DC	CWM	PWS	DS	MT	FWS	SB
<i>Have you ever missed work due to voice changes?</i>	No n (%)	30 (31.3)	2 (2.1)	21 (21.9)	43 (44.8)	64 (66.7)	37 (38.5)	31 (32.3)	7 (7.3)	7 (7.3)	23 (24.0)	21 (21.9)	17 (17.7)
	Yes n (%)	4 (100)	2 (50.0)	3 (75.0)	2 (50.0)	4 (100)	2 (50.0)	2 (50.0)	2 (50.0)	2 (50.0)	4 (100)	2 (50.0)	1 (25.0)
	p-value	<b>0.012*</b>	<b>0.007*</b>	<b>0.042*</b>	1.000	0.303	0.642	0.597	<b>0.040*</b>	<b>0.040*</b>	<b>0.004*</b>	0.226	0.554
<i>Do you have any leisure activities?</i>	No n (%)	2 (25.0)	0 (0.0)	2 (25.0)	1 (12.5)	3 (37.5)	4 (50.0)	1 (12.5)	0 (0.0)	1 (12.5)	2 (25.0)	2 (25.0)	6 (75.0)
	Yes n (%)	32 (34.8)	4 (4.3)	22 (23.9)	44 (47.8)	65 (70.7)	35 (38.0)	32 (34.8)	9 (9.8)	8 (8.7)	25 (27.2)	21 (22.8)	12 (13.0)
	p-value	0.713	1.000	1.000	0.070	0.102	0.708	0.265	1.000	0.543	1.000	1.000	<b>0.001*</b>
<i>Do you smoke?</i>	No n (%)	24 (32.9)	4 (5.5)	17 (23.3)	30 (41.1)	44 (60.3)	25 (34.2)	17 (23.3)	7 (9.6)	7 (9.6)	19 (26.0)	17 (23.3)	13 (17.8)
	Yes n (%)	10 (37.0)	0 (0.0)	7 (25.9)	15 (55.6)	24 (88.9)	14 (51.9)	16 (59.3)	2 (7.4)	2 (7.4)	8 (29.6)	6 (22.2)	5 (18.5)
	p-value	0.697	0.572	0.784	0.197	<b>0.006*</b>	0.109	<b>0.001*</b>	1.000	1.000	0.719	0.911	1.000
<i>Do you drink alcohol?</i>	No n (%)	8 (23.5)	3 (8.8)	6 (17.6)	7 (20.6)	21 (61.8)	11 (32.4)	8 (23.5)	3 (8.8)	5 (14.7)	11 (32.4)	7 (20.6)	7 (20.6)
	Yes n (%)	26 (39.4)	1 (1.5)	18 (27.3)	38 (57.6)	47 (71.2)	28 (42.4)	25 (37.9)	6 (9.1)	4 (6.1)	16 (24.2)	16 (24.2)	11 (16.7)
	p-value	0.113	0.113	0.286	<b>0.001*</b>	0.337	0.328	0.148	1.000	0.267	0.387	0.681	0.629
<i>Do you drink water while using your voice?</i>	No n (%)	1 (20.0)	0 (0.0)	1 (20.0)	1 (20.0)	3 (60.0)	3 (60.0)	2 (40.0)	2 (40.0)	2 (40.0)	1 (20.0)	4 (80.0)	2 (40.0)
	Yes n (%)	33 (34.7)	4 (4.2)	23 (24.2)	44 (46.3)	65 (68.4)	36 (37.9)	31 (32.6)	7 (7.4)	7 (7.4)	26 (27.4)	19 (20.0)	16 (16.8)
	p-value	0.659	1.000	1.000	0.375	0.654	0.375	1.000	0.063	0.063	1.000	<b>0.010*</b>	0.219
<i>Do you avoid any kind of food?</i>	No n (%)	13 (31.7)	1 (2.4)	11 (26.8)	22 (53.7)	31 (75.6)	24 (58.5)	18 (43.9)	1 (2.4)	2 (4.9)	9 (22.0)	12 (29.3)	10 (24.4)
	Yes n (%)	21 (35.6)	3 (5.1)	13 (22.0)	23 (39.0)	37 (62.7)	15 (25.4)	15 (25.4)	8 (13.6)	7 (11.9)	18 (30.5)	11 (18.6)	8 (13.6)
	p-value	0.687	0.642	0.581	0.147	0.174	<b>0.001*</b>	0.053	0.078	0.302	0.343	0.214	0.166
Total	n (%)	34 (34.0)	4 (4.0)	24 (24.0)	45 (45.0)	68 (68.0)	39 (39.0)	33 (33.0)	9 (9.0)	9 (9.0)	27 (27.0)	23 (23.0)	18 (18.0)

\*=p-value extracted from the Fisher's exact test

**Subtitle:** H=Hoarseness; LV=Loss of voice; VF=Voice failure; RV=Rough voice; TC=Throat clearing; DC=Dry cough; CWM=Cough with mucus; PWS=Pain when swallowing; DS=Difficulty swallowing; MT=Mucus in the throat; FWS=Fatigue when speaking; SB=Shortness of breath

The most reported habits were: alcohol consumption, waking up at night and not avoiding some kind of food. Unlike the studies conducted with teachers, actors consumed more alcohol, which impacts vocal production<sup>(14)</sup>.

The main objective of this study was to associate vocal signs and symptoms with life habits and frequency at work. Participants who answered affirmatively to the question “Have you ever missed work due to voice changes?” reported the presence of the following symptoms: hoarseness, voice failure, mucus in the throat and swallowing symptoms (pain and difficulty). It can be assumed that the presence of hoarseness or voice failure would certainly compromise an actor’s performance, whether in different situations (representation, dubbing, telejournalism, among others) or places (Italian stage, arena, street, among

others), but, as the performance of the show is always very important, it would not necessarily make actors to miss work, since they are used to find a way to overcome vocal difficulties. This can be seen also in teachers who tend to not miss work even with any of these symptoms, as they believe that teaching a subject is more important than the way that their voice quality.

The authors of a study conducted with students of the theater course<sup>(27)</sup> reported that the performing arts professional needs to consider the relationship between vocal performance and aspects related to work organization, environmental factors and harmful habits and that, the more you are aware of this relationship, the more you will take care, and become less vulnerable.

The association was statistically significant regarding rough voice and alcohol consumption. In the speech-language

**Table 5.** Multiple binary logistic regression analysis

Signs and Symptoms															
VF		RV		TC		DC		CWM		BST		SB			
OR <sub>adj</sub>	TC	CI <sub>95%</sub>	OR <sub>adj</sub>	TC	CI <sub>95%</sub>	OR <sub>adj</sub>	TC	CI <sub>95%</sub>	OR <sub>adj</sub>	TC	CI <sub>95%</sub>	OR <sub>adj</sub>	TC	CI <sub>95%</sub>	
<i>Have you ever missed work due to voice changes?</i>															
1.0			1.0			1.0			1.0			1.0			
13.61	0.031	1.3-145.8	5.59	0.001	2.0- 15.2	4.60	0.029	1.2- 18.1	0.24	0.002	0.1-0.6	3.97	0.007	1.4- 10.9	
<i>Do you usually take energy drink before or during intense vocal use?</i>															
1.0															
5.11	0.022	1.3-20.5													

All models presented a >0.70 value for the Hosmer-Lemeshow test

**Subtitle:** VF=Voice failure, model adjusted by the variable "do you feel rested when you wake up?"; RV=Rough voice, model adjusted by the variable "do you have any leisure activities?" and "do you wake up at night?"; TC=Throat clearing, model adjusted by the variable "do you have any leisure activities?"; "do you eat at regular times each day?"; and "do you avoid any kind of food?"; DC=Dry cough; CWM= Cough with mucus; BST=burning sensation in the throat; SB=Shortness of breath; OR<sub>adj</sub>=odds ratio; CI<sub>95%</sub>=confidence interval.

pathology, it is common to include the recommendation to avoid alcoholic drink, considering that it anesthetizes the region, causes irritation and when the subject still makes excessive use of voice, voice changes are recorded<sup>(14)</sup>.

This study found that actors were more likely to clearing their throat or having cough with mucus if they smoked, with a statistically significant association between smoking and the symptoms. Smoking causes the onset of edema of the vocal folds and, as a result, the voice of tobacco or marijuana smokers tends to experience symptoms, such as being more severe<sup>(11,12)</sup>, which is not recorded in this study.

Often associated with smoking, laryngeal changes are irritation or inflammation of laryngeal structures and edema of the vocal tract tissues. With respect to smoking effects in the larynx and in the voice, the protective layer changes and increases the air friction, with consequent disruption in the vibratory cycle that changes the vocal quality and causes sudden vocal attacks, burning sensations, tightening and clearing when speaking, that is, voice disorder<sup>(13)</sup>.

Actors participating in this study who reported the dry cough symptom also reported to not avoid some kind of food, suggesting that the consumption of that food could lead to the presence of the laryngopharyngeal reflux symptom. There are controversies in the literature regarding the relation of the presence of these symptoms. In a research with teachers<sup>(15)</sup>, authors found no association between laryngopharyngeal reflux and voice disorders, but found an association between age (more frequent among the older ones) and those who reported a greater vocal disadvantage. On the other hand, a recent literature review<sup>(28)</sup> found that the consumption of certain foods, alcohol and the presence of gastroesophageal reflux may affect and favor vocal changes, such as hoarseness, throat clearing and cough<sup>(5,6,10)</sup>.

While insufficient sleep hours may also be related to the laryngopharyngeal reflux, it was identified in this research as a protective factor for the burning sensation in the throat, that is, the habit of not waking up feeling rested was associated with the presence of the burning sensation in the throat. In this case, it can be assumed that the actors who reported this association may be having irregular diet, are probably drinking and eating heavy foods - acids with excessive preservatives or carbohydrates, or carbonated, among others<sup>(14)</sup> - late at night, after the shows, and end up sleeping subject to the presence of laryngopharyngeal reflux, which causes throat symptoms and a restless sleep.

The results evidenced that the lack of hydration was associated to the fatigue when speaking. The association was recorded with the hoarseness symptom<sup>(5)</sup> in a research conducted with teachers, which reinforces the importance of this habit (hydration) and the importance of its propagation by the speech-language pathologists among voice professionals<sup>(14,16)</sup>.

Participants who reported no leisure activity also reported to have shortness of breath. At first, it can be related to the lack of physical activities. However, it is known that most actors have physical training during their training to ensure a better performance<sup>(29)</sup>.

On the other hand, the shortness of breath symptom may be related, secondarily, to vocal effort and to the lack of the proper vocal preparation, which should include vocal heating and cooling down<sup>(7)</sup>. Warming up the voice enhances tissue flexibility, blood flow, relaxation power, and contraction of the structures, providing a gain in performance, as well as greater protection against injury. Vocal cooling down aims at

the relaxation and reestablishment of the muscular patterns, thus preventing fatigue and potential injuries<sup>(30)</sup>.

A limit related to the instrument used in this research can be highlighted: most of the questions provided to the actors allowed more generic answers, which, on the one hand, reduced the time required to complete the questionnaire, but, on the other hand, it restricted a further analysis. For example, the study did not investigate the amount or the frequency of smoking habits. Further research can investigate these issues in more detail.

Finally, it can be pointed out that the life habits of actors may be responsible for some vocal signs and symptoms, which may lead the professional to miss work days, even though this factor was not mentioned by the great majority of the actors interviewed, since despite having hoarseness and loss of voice or voice failure, they do not miss their performances. In addition to the habits analyzed in this research, special attention should be given to environmental and work organization factors, in which the actor is inserted, since these aspects may also be responsible for the occurrence of vocal signs and symptoms<sup>(10)</sup>.

## CONCLUSION

The sample studied allowed to notice the presence of vocal symptoms related to the inadequate use of voice and life habits, consistent with a lack of knowledge and specific care about the professional use of voice. Significance was reported between some life habits and the presence of vocal symptoms when analyzing the associations. On the other hand, the relationship between the lack of some life habits was considered as protective for the presence of vocal symptoms in some actors in the regression analysis.

Despite significant vocal symptoms, the actors did not miss work, which emphasizes the need for vocal care throughout their careers, in order to avoid the occurrence of vocal disorders.

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