

Original article

## Awareness of the general population about vocal hygiene of the voice

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### Summary

**Introduction.** The definition of a normal voice is difficult to determine because the voice is defined by the speaker's anatomical configuration, socialization process, and culture. However, we can define the voice as healthy or dysphonic. The aim of the research in this work was to examine the awareness of the general population about voice disorders and vocal hygiene and its impact on voice health.

**Method.** In order to analyze the awareness of the general population about voice disorders and vocal hygiene, a cross-sectional study was conducted among 80 respondents from Foča and Podgorica. A survey questionnaire developed at the Center for Voice Health at the University of Michigan Health System was used as an instrument.

**Results.** The research results showed that there were no significant differences between men and women regarding being informed about voice disorders and vocal hygiene. Respondents of different educational status, smoking status and age did not show significant differences in awareness about voice disorders and vocal hygiene.

**Conclusion.** Based on the obtained results, it was shown that awareness about voice disorder and vocal hygiene was sufficient, but that it could be better.

**Key words:** vocal hygiene, general population, research

## Introduction

The voice is the basis of verbal communication. Based on listening to the voice, we can determine the sex and age of the individual [1]. We communicate to satisfy our desires, needs, and to reveal our feelings. Anatomically, the voice originates in the larynx, which consists of cartilage and muscles, and in the process of voice generation, the vocal cords play an important role [2]. Vocal hygiene (VH) includes taking care of the voice, and it starts with noticing the factors that affect the voice, namely those which influence is negative (smoking, talking or singing loudly, etc.), and those which influence is positive (regular sleep rhythm, healthy diet, good mental and psycho-physical condition, etc.) [3]. Vocal hygiene is a process that is adopted through education

and practice, and it needs to be constantly used in everyday life [4]. In this way, preventive action is taken to preserve the voice, and it is also achieved in obtaining an optimal and relaxing voice, which is also important for people who are not vocal professionals [5]. The best way to prevent voice disorders is to properly implement vocal hygiene [6]. It involves recognizing improper vocal behavior and its negative impact on the phonation apparatus, removing symptoms or correcting forms of behavior so that they have as little negative impact on the voice as possible, and correcting working conditions that make normal phonation difficult and cause voice strain [7]. If we follow the rules of vocal hygiene, we will reduce the risk of voice disorders that are common among all people, especially those who use their voice professionally, such as teachers, singers, etc. [8]. Due to the high phonatory requirements, vocal education and vocal hygiene are extremely important to the population of vocal professionals and represent a basic prerequisite for vocal health and efficiency, i.e. at the same time they ensure a long and successful career [9]. Vocal education should be an integral part of the education of a vocal professional, where a developed awareness of one's own voice, knowledge of the basics of anatomy and physiology of the vocal apparatus, vocal hygiene and vocal techniques are prerequisites for a long and successful professional activity [10]. It is not necessary to emphasize that there would be lower number of patients with voice disorders if vocal education were implemented, especially within the framework of formal education for professions involving a certain vocal activity [11].

There is almost no literature in the field of vocal education, and there are even fewer workshops, seminars and other forms of informal education [12]. If there are any, then they are most often of a closed type, therefore, inaccessible to the general public [13].

The aim of the research in this work was to examine the awareness of the general

population about voice disorders and vocal hygiene and its impact on voice health.

## Method

The research used a questionnaire on vocal hygiene taken from the project "Indicator of the quality of life related to the voice", which was standardized at the Center for Voice Health at the University of Michigan. There is the consent for the use of this questionnaire for scientific purposes. The questionnaire consists of 33 questions about voice disorders. The respondent had the task of circling one of the three offered answers (correct, I do not know, incorrect). Respondents also filled in general information about themselves (sex, age, education, smoking status). In this survey, out of potential 33 points on the questionnaire, the minimum number of points was nine, while the respondent with the maximum number had 29 points. For the analysis of the obtained results, the method of non-experimental research based on a sample survey of respondents was applied. Respondents who achieved a higher score on the questionnaire showed that they had better information about vocal hygiene. Descriptive statistics measures were used to determine the structure of the sample - arithmetic mean, standard deviation, standard deviation error, frequencies and percentages. To examine the significance of differences, the t-test for independent samples and one-factor analysis of variance - ANOVA were used. The results are shown below.

Control variables were: sex, age, education, and smoking status. The dependent variables were the answers given by the respondents to the questions in the questionnaire.

## Results

Out of a total of 80 respondents, 62.5% were women. There were only 45% respondents

aged 20–30, while the rest were in the 30–50 category. Fifty one percent (51%) of respondents attended secondary school, 46% attended faculty, while the rest attended college. Only 20% declared themselves as smokers, while the rest were non-smokers. When it comes to the general level of information about voice disorders and vocal hygiene, based on the results of the t-test analysis for one sample ( $t=35.9$ ,  $p > .05$ ), we can say that the population is averagely informed, as described in table 1. Out of the potential 33 points on the questionnaire, the minimum was 9, while the maximum was 29.

**Table 1.** General level of awareness about voice disorders and vocal hygiene

t	M	SD	Sig
35.909	18.67	4.64	.000*

\* $p < 0.001$ ; t - t test for one sample, M - arithmetic mean, SD - standard deviation, SDe - standard deviation error, Sig - statistical significance

### Information about voice disorders, vocal hygiene and sex

The results of the t-test analysis for independent samples tell us that there is no significant difference between men and women when it comes to the level of information about voice disorders and vocal hygiene ( $p > .05$ ), as we assumed. The results are shown in table 2.

**Table 2.** Differences in the level of awareness of voice disorders between men and women

	M	SD	t	Sig
men	1.07	4.12	9.4	.88
women	20.18	4.27		

M - arithmetic mean, SD - standard deviation, SDe - standard deviation error, t - t statistic for independent samples, sig - significance statistic

### Awareness of voice disorders, vocal hygiene and age

We assumed that there were no significant differences between the age of the respondents in the level of awareness of voice disorders and vocal hygiene. Given that the questionnaire required respondents to answer which age range they belong to (20–30, 30–50), the t-test was used for analysis for independent samples. The results of the test showed that there was no difference in awareness between these age groups ( $p > .05$ ), which is illustrated in table 3.

**Table 3.** Differences in the level of awareness of voice disorders and vocal hygiene between ages

	M	SD	t	Sig
20-30	21.36	4.55	3.41	.67
30-50	20.6	4.37		

M - arithmetic mean, SD - standard deviation, t - t statistic for independent samples, sig - statistical significance

### Awareness of voice disorders, vocal hygiene and education

We hypothesized that respondents with a higher level of education would be more informed about voice disorders and vocal hygiene, however, people who have completed secondary school were equally informed as people with a higher level of education, either college or university ( $p > .05$ ). The results of one-way analysis of variance (ANOVA) are shown in table 4.

**Table 4.** Differences in the level of awareness of voice disorders, vocal hygiene between three levels of education

	M	SD	F	Sig
secondary school	16	4.950	1.846	.16
faculty	15	3.048		
high school	18	3.685		

M - arithmetic mean, SD - standard deviation, N - number of respondents, t - t statistic for independent samples, sig - statistical significance

## Awareness of voice disorders, vocal hygiene and smoking status

Finally, we hypothesized that smokers would be less informed about voice disorders, vocal hygiene than non-smokers, but we did not obtain significant differences ( $p > .05$ ). Independent samples t-test results are shown in table 5.

**Table 5.** Differences in the level of awareness of voice disorders and vocal hygiene between smokers and non-smokers

	M	SD	T	Sig
smokers	16.38	3.243	2.234	.085
non-smokers	18.20	4.785		

M - arithmetic mean, SD - standard deviation, t - t statistic for independent samples, sig - statistical significance

## Discussion

Vocal hygiene refers to taking care of the voice; it implies adequate behaviors that protect our voice. Adults, especially vocal professionals must consciously follow the guidelines of vocal hygiene, but when it comes to children, parents and other adults in their environment must be a good role model or example of how to use their voice healthy. Education and timely awareness about voice hygiene by the speech therapist-vocal therapist and other members of the medical team is the first step in the prevention and treatment of voice disorders. The goal of our research was to determine the level of awareness of the general population about voice disorders. It was determined to what extent respondents were informed about voice disorders by looking at the differences in information among different groups of respondents. Based on the presented results and the application of appropriate statistical methods, the hypotheses were either accepted or rejected. The results of the research were based on the questionnaire filled out by 80 respondents from the general

population, 62.5% were women. The first hypothesis in this paper assumes that there are no statistically significant differences between men and women in the level of information about voice disorders. Based on the application of the t-test for independent samples, no statistically significant differences ( $p > 0.05$ ) were obtained between male and female subjects on the variable of awareness of voice disorders. Based on this, we can conclude that both sexes are equally informed about voice disorders. The second hypothesis assumes that respondents of different age are equally informed about voice quality. Based on the application of one-factor analysis of variance (ANOVA), no statistically significant differences ( $p > 0.05$ ) were obtained between respondents of different age (20–30, 30–50) on the variable of awareness about voice disorders. Based on this, we can conclude that respondents of different age are equally informed about voice disorders. The third hypothesis assumes that respondents with a higher level of education are more informed and aware of voice disorders than respondents with a lower level of education. Based on the application of one-factor analysis of variance (ANOVA), no statistically significant differences ( $p > 0.05$ ) were obtained between respondents of different levels of education on the variable of awareness of voice disorders. Based on this, we can conclude that respondents of different levels of education are equally informed about voice disorders and that the third hypothesis was not confirmed.

The fourth hypothesis assumes that there are statistically significant differences in the level of information about voice quality in relation to smoking status. Based on the application of the t-test for independent samples, no statistically significant differences ( $p > 0.05$ ) were obtained between smokers and non-smokers on the variable of awareness of voice disorders. Based on this, we can conclude that smokers and non-smokers are equally informed about voice quality and that

the fourth hypothesis is not confirmed. Smoking leads to changes in resonator, articulatory and respiratory structures, which lowers the basic laryngeal tone. Smoking can also lead to organic changes in the vocal cords. The mucous membrane becomes swollen and thicker, so the mobility of the vocal cords decreases. Research related to voice hygiene focuses mainly on two areas:

- a) voice hygiene as a preventive strategy,
- b) voice hygiene as a method of treating people with voice disorders.

It is difficult to evaluate the effectiveness of voice hygiene as a preventive tool, as research and screening programs are often expensive, leading to limited data. Voice hygiene as the only strategy for the treatment of voice disorders has shown minimal but favorable results. As a component of a comprehensive therapeutic program, it is difficult to highlight its influence. However, certain components of vocal hygiene, including hydration and vocal rest, have been associated with improved treatment outcomes [14].

In addition, contemporary literature suggests changing the approach to maintaining voice health by moving from taxative and stricter behavioral approaches to therapy to a holistic approach. Voice hygiene should be considered only as a component of a broad voice rehabilitation program. The goal of one of the studies was to critically evaluate the latest peer-reviewed scientific data on the impact of vocal hygiene training on voice quality and function. Data were obtained by direct or indirect measurement of auditory perception, acoustics and self-reporting of professional voice users. In this study, a systematic review was performed using systematic review and meta-analysis protocols. Five databases were searched using the keywords "voice hygiene", "teaching voice hygiene", "voice health", "voice quality" and "tone quality" [15].

The study included 23 studies that met the selection criteria. Four studies associated low voice hygiene awareness or insufficient

voice hygiene training with self-reported acute and chronic voice symptoms, as well as greater perception of voice problems among professional voice users. Numerous studies have shown that adequate voice placement or voice hygiene instruction is associated with positive voice outcomes [16]. However, six studies have shown that teaching voice hygiene is more effective when combined with direct speech therapy. When voice hygiene training is performed in isolation, there is a clear superiority of a direct approach to voice therapy, with or without voice hygiene training, over a voice hygiene training program alone (indirect treatment). Research in the field of voice hygiene is specific and focused on finding concrete solutions. It is generally accepted that hydration and rest are beneficial for the voice; recent research supports this assumption. Research suggests that vocal, speech and otolaryngology experts need to pay more attention to voice treatment. It is necessary to provide accurate medical diagnosis and specific recommendations for singers. The greater the complexity of the vocal tasks that are put before a person, the more it is necessary to take care of the voice carefully and in a structured way. In the past, voice hygiene had a negative connotation; a more positive and supportive approach to voice care is recommended [17]. The conducted research on the awareness of the general population about vocal hygiene of the voice can be the basis for further research in order to gain the best possible insight into the awareness of population about vocal hygiene and voice disorders in order to obtain data that would be more credible and could be generalized to the wider population.

## Conclusion

The results of the research show that there are no significant differences between men and women when it comes to being informed

about voice disorders and vocal hygiene. Respondents of different educational status, smoking status and age did not show significant differences in awareness about voice disorders and vocal hygiene. The sample of

this research is not sufficient to generalize the conclusion. Considering this very current and important aspect in people's lives, it is necessary to do a much more extensive research in the future.

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**Ethical approval.** The Ethics Committee of the University of East Sarajevo, Faculty of Medicine Foča, Republic of Srpska, Bosnia and Herzegovina, approved the study

and informed consent was obtained from all individual respondents. The research was conducted according to the Declaration of Helsinki.

**Conflicts of interest.** The authors declare no conflict of interest.

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## Informisanost opšte populacije o vokalnoj higijeni glasa

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**Uvod.** Definiciju normalnog glasa teško je odrediti jer je glas definisan anatomskom konfiguracijom govornika, procesom socijalizacije i kulturom. Međutim, glas možemo definisati kao zdrav ili disfoničan. Cilj istraživanja u ovom radu bio je da se ispita informisanost opšte populacije o poremećajima glasa i vokalnoj higijeni i njenom uticaju na zdravlje glasa.

**Metod.** U svrhu analize informisanosti opšte populacije o poremećajima glasa i vokalnoj higijeni sprovedena je studija presjeka među 80 ispitanika iz Foče i Podgorice. Kao instrument korišćen je anketni upitnik koji je razvijen u Centru za zdravlje glasa na Univerzitetu zdravstvenog sistema u Mičigenu.

**Rezultati.** Rezultati istraživanja su pokazali da ne postoje značajne razlike između muškaraca i žena kada je u pitanju informisanost o poremećaju glasa i vokalnoj higijeni. Ispitanici različitog obrazovnog statusa, pušačkog statusa i uzrasta nisu pokazali značajne razlike o informisanosti o poremećaju glasa i vokalnoj higijeni.

**Zaključak.** Na osnovu dobijenih rezultata pokazalo se da je informisanost o poremećaju glasa i vokalnoj higijeni dovoljna, ali da bi mogla biti i bolja.

**Ključne riječi:** vokalna higijena, opšta populacija, istraživanje