

Determining Knowledge Level, Attitude, Behaviors Regarding Vocal Hygiene and Use of Medical Drugs and Herbal Medicinal Products for Vocal Health in Second Level Professional Voice Users

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Summary: Objectives. This study aims to determine the knowledge level, attitude, and behaviors regarding vocal hygiene and use of medical drugs and herbal medicinal products for vocal health in second level professional voice users.

Methods. The study examined second level professional voice users comprised of amateur singers, religious officials, voice instructors and vocal coaches consisting of academicians working in conservatories and education faculties, music teachers, conservatory students majoring in opera or choir, students majoring in music education, and amateur actors who were reached via online platforms and were administered a 32-item questionnaire

Results. A total of 406 participants consisting of conservatory students (26.8%), religious officials (23.2%), academicians (9.1%), amateur or self-taught musicians (14.8%), conservatory graduates (8.6%), and music teachers affiliated with the Ministry of National Education were recruited for the study. It was determined that 78.8% of the participants knew the definition of vocal hygiene, and 60.6% made an effort to maintain vocal hygiene. 57.9% of the participants declared that they had at least one disease affecting their vocal health. According to our research data, 8.9% of the participants were using one or more prescription drugs or over-the-counter products daily to protect their vocal health. Lozenges, vitamins, and allergy medications constituted a large portion of these medicinal products. In total, 62.3% of participants used herbal products for vocal health in their daily life. Participants mostly consumed products containing linden, sage, ginger, chamomile, and turmeric. It was determined that more than 20 different herbal products containing plants in different mixtures and contents were used. Furthermore, 40% of the participants using herbal medicinal products consulted a health care professional. It was found that these products were mostly obtained from herbalists (79.5%), and the source of information regarding these products was quite diverse. The rate of experiencing side effects due to the use of herbal products was 2%.

Conclusions. There is a lack of knowledge regarding vocal hygiene and its application on real-life behavior among second-level sound professionals. In particular, the awareness of vocal hygiene should be increased among religious officials. It was observed that the rate of use of herbal products to protect vocal health or to treat hoarseness was quite high. Further studies are needed to prove the benefits of these herbal and medicinal products on vocal health.

Key Words: Herbal medicinal product–Voice professional–Vocal hygiene–Drug.

INTRODUCTION

Herbal medicinal products (HMP) are defined as medicinal products containing untreated dried or fresh, whole or fragmented medicinal herbs referred to as herbal drugs, or one or more preparations in the form of extracts, essential oils, juices, and processed exudates obtained by subjecting them to processes such as squeezing, fractionation and

purification.¹ Although only 1 or 2% of the plants found in nature can be used as medicine in a medical capacity, the traditional use of natural plants is as old as human history. According to the World Health Organization, especially among developing countries, primary treatment problems are solved with traditional herbal medicines at a rate of 80%.² However, in some parts of society, herbal products are used far from proven medical practices. Drugs and herbal products taken by professional voice users for both acute and chronic health problems are relevant in terms of dryness and irritation in the mucosa of the vocal folds and vocal tract.³

Studies have investigated the use of herbal products in many parts of society.^{4–6} However, we have not encountered a study evaluating the use of herbal products to regularly maintain vocal hygiene in professional voice users who rely on their voice in their daily life. Furthermore, this study aims to investigate the awareness of vocal hygiene in a group of professional voice users and their use of drugs and

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herbal products used outside of physician advice for voice health. The results obtained are significant in terms of shedding light on potential problems. In this regard, this investigation is an original study.

Maintaining vocal hygiene in vocal professionals requires a multidimensional approach consisting of personal (vocal fold, vocal tract) measures and vocoergonomics (body and environmental). Vocal hygiene comprises of multiple behaviors including drinking plenty of water, reducing coffee-tea consumption, paying attention to sleep quality, maintaining ambient air humidity, avoiding prolonged periods of talking, reducing smoking and alcohol consumption, and avoiding drugs and treatments that impair the voice.⁷

Professional voice users or vocal performers comprise a large community of various professions. Professional voice users need to have a certain sound quality or use their voice intensively and maintain it professionally to make an impact on others.⁸ In their study on vocal dysfunction, Kaufman and Isaacson classified voice professionals according to the use of their voices, their level of professionalism, and the risks encountered⁹ Figure 1. The study included a group of second level professional voice users, which was larger in number and comprised of occupational professionals or candidates. This study aims to determine the level of knowledge, behaviors, and attitude of a group of professional voice users, and to reveal their use of herbal products and medical drugs for voice health.

MATERIAL AND METHODS

This descriptive cross-sectional study consists of data from second-level professional voice users. To determine the necessary and sufficient number of samples, the quorum representing the population was calculated as 384 using the Open Epi program, with unknown prevalence accepted as 50%, deviation as 5%, and 95% confidence interval. The data collection process was terminated after the participation via online platforms reached 410 volunteers.

An online questionnaire consisting of 32 questions was administered to amateur singers, religious officials, voice trainers consisting of academicians working in conservatories and education faculties, music teachers of the Ministry of National Education, students majoring in opera or choir, music teacher candidates in conservatories, and amateur actors. Since the number of amateur actors participating in the survey was insufficient ($n = 4$), the data of these groups were excluded. A total of 406 people were included in the study.

The questionnaire used in the study consisted of questions to determine sociodemographic data, knowledge of vocal hygiene, herbal products used for vocal health, drugs used (commercial name) and frequency of use. The survey questions are outlined as flowcards in Figure 2. A pilot study was conducted beforehand and an extensive literature review was conducted regarding the items on the questionnaire. The data obtained from the research were analyzed with SPSS 21 (Statistical Package for the Social Sciences) package program. Kruskal-Wallis H test was used for mean comparisons between groups, and the relationship between categorical variables was evaluated by Chi-Square analysis. $P < 0.05$ was considered statistically significant. The study obtained approval from the Afyonkarahisar Health Sciences University Clinical Research Ethics Committee (Date: 03.07.2020 No. 2020/299).

RESULTS

Sociodemographic data

A total of 406 volunteers were recruited for the study. In total, 34.5% of the participants were in the 18-30 age group, 53% were male, and 76.6% had undergraduate or higher education. Volunteers consisted of conservatory or Faculty of Education students (26.8%), religious officials (23.2%), music teachers (17.5%), amateur or self-taught musicians (14.8%), conservatory academicians (9.1%), and conservatory graduate musicians (8.6%). In order to categorize the

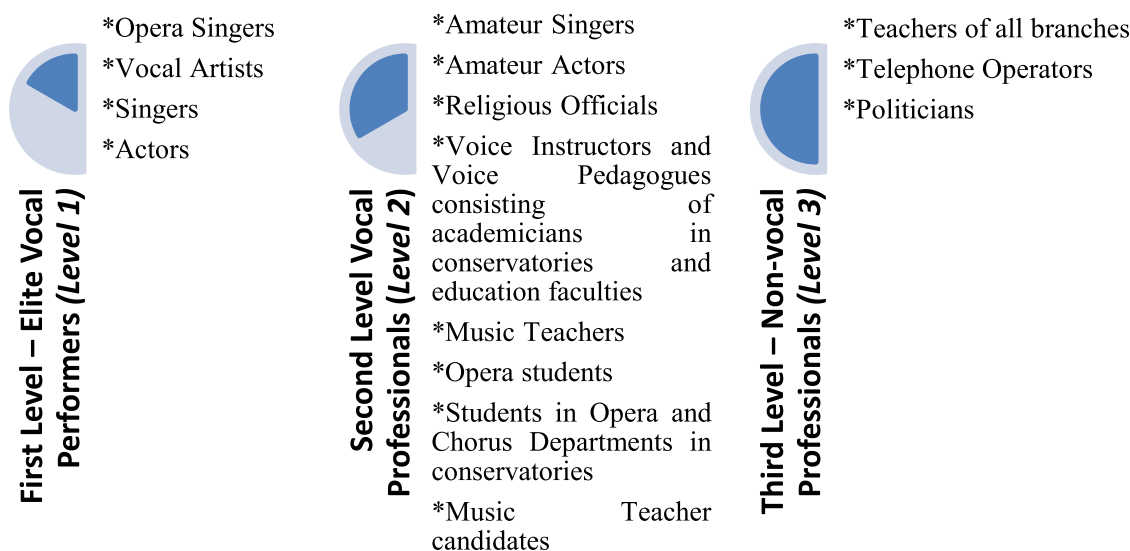


FIGURE 1. Professionalism levels according to the use of their voices.

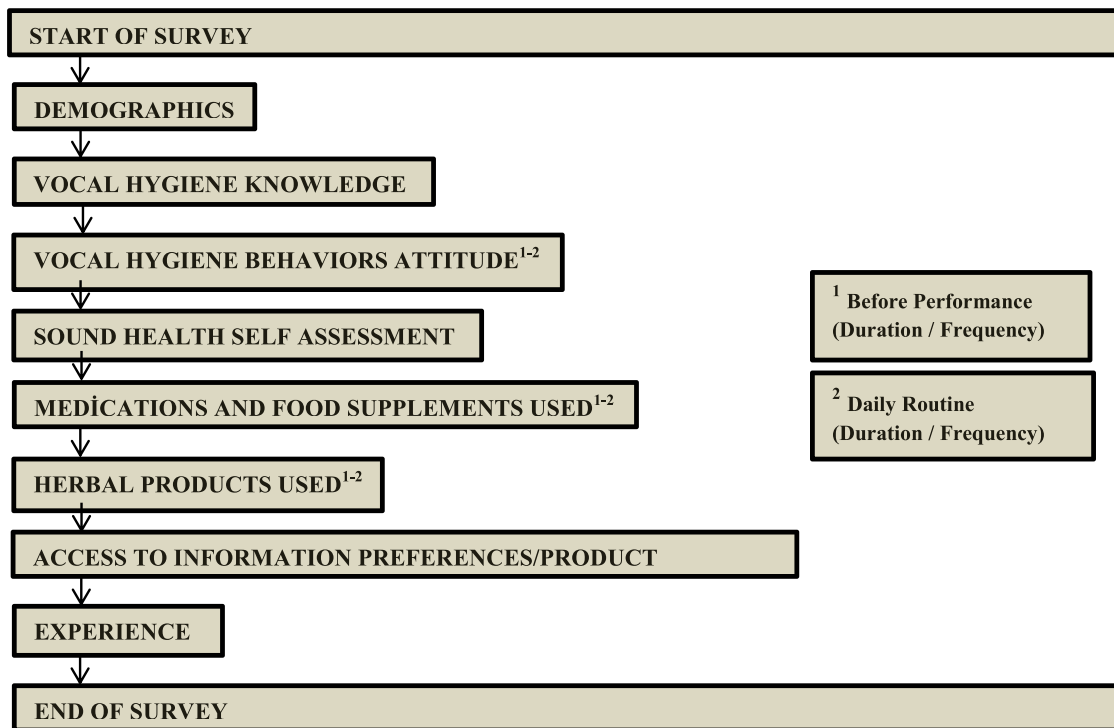


FIGURE 2. Flowchart showing the flow of questions of the entire questionnaire.

groups in the study more easily, the groups were distributed as presented [Figure 3](#).

Awareness of vocal hygiene

While 78.8% of the participants defined vocal hygiene in the most accurate manner as “all behaviors aimed at protecting the vocal system and preventing it from being damaged”, while 14.8% stated that they did not know the definition of vocal hygiene. The answers to the behaviors towards voice health are presented in [Figure 4](#).

Level of attention to vocal hygiene

While 60.6% of the participants stated that they paid attention to vocal hygiene in their daily life, 39.4% stated that they did not make any effort to maintain vocal

hygiene. Individuals were asked to respond by self-evaluating their behaviors related to vocal hygiene. A vocal hygiene behavior profile was created by giving one point to those who declared that they applied the behaviors pertaining to the subgroups of appropriate vocal hygiene, and zero points to those who did not. These behaviors were determined as consuming plenty of fluids, paying attention to sleep quality, keeping the ambient air humid, reducing the consumption of tea and coffee, avoiding talking for long periods of time, and effectively using the diaphragm for breathing. Accordingly, when the Vocal hygiene behavior score was calculated and compared between the groups, it was observed that the behavioral score in the educators group was significantly higher compared to the other groups ($P < 0.05$) ([Table 1](#)).

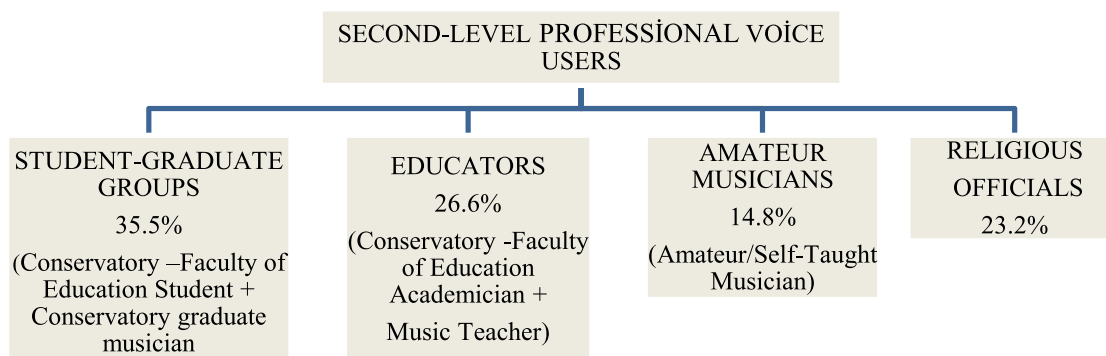


FIGURE 3. Categorization of groups.

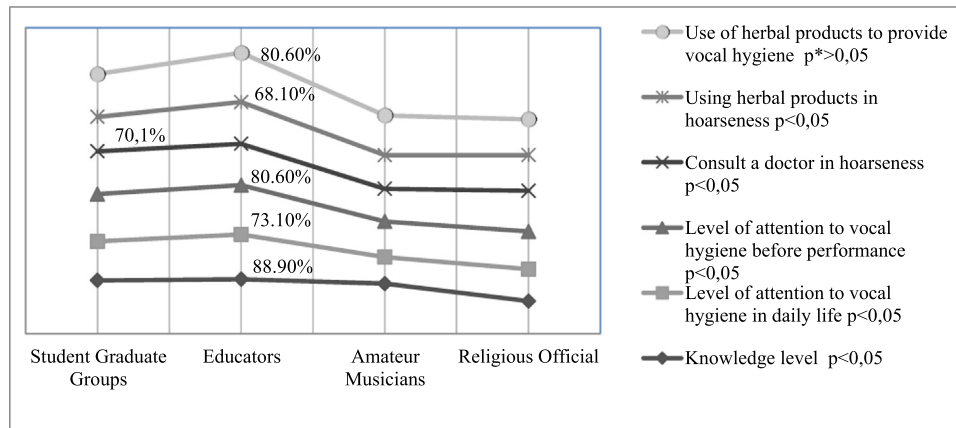


FIGURE 4. Voice hygiene knowledge-behavior-attitude answers of the groups (% values belong to the group with the highest rate; **P* = Chi square *P*value).

Medications and food supplement products used by the participants

While 91.1% of the participants stated that they did not use medical drugs related to their voice, 8.9% of them stated that they took one or more drugs for vocal health in daily life. Allergy drugs (7.9%) were the most commonly used drug among the medical drugs, while among the food supplements, the most commonly used were lozenges (22.9%) and vitamins (16.5%) (Table 2). When compared between the groups, the highest rate of using herbal products in the case of hoarseness was in the educator’s group (38.9%). The most used drug in this group was lozenges produced to protect voice health (32.4%).

According to the study, the rate of using drugs before a performance was 8.6%, and this rate is highest in the student-graduate group (34.7%). The use of propranolol before performance was the most preferred and was significantly higher compared to other drugs (*P* < 0.05). The use of propranolol as a pre-performance anti-anxiety drug had the highest rate in the student-graduate group (4.2%). It was observed that herbal anxiety-reducing drugs were used more frequently in the amateur musician group (6.7%)

Use of herbal products

In total, 62.3% of the participants declared that they use herbal products for their voice in their daily life. Over 20

herbal products, mainly linden (70.4%), sage (64.8%), and ginger (58.1%), were preferred by the participants. The rate of those who stated that they used products containing a mixture of plant powders with unknown contents was 2% (Table 3). The question of “How often do you use herbal products for your voice in your daily life?” was answered with the highest rate in the amateur musician group (8.1%) who responded they used these products daily (*P* < 0.05).

According to the results, 78% of participants stated they acquired herbal products from herbalists. The rate of acquiring herbal products from the pharmacy was lowest in amateur musicians and religious officials (*P* < 0.05). The student-graduate group stated that they acquired herbal products from the marketplace or bazaar (29.5%) (*P* < 0.05).

The most preferred source of information for deciding the HMP to use were teachers for the student-graduate group (36.4%), TV/internet/friends for amateur musician group (18.9%), TV-internet for the religious officials group (21.4%), and the doctor for the educators group (22.5%).

Among the participants, 32.5% stated that they consulted a doctor, 19.8% consulted their teachers, 15.5% consulted a herbalist, and 7.5% consulted a pharmacist for questions/issues during their use of herbal products.

Of the participants, 2% stated that they experienced adverse effects while using herbal products.

TABLE 1.
Vocal Hygiene Behavior Score

Occupational Status Related to Music	Vocal Hygiene Behavior Score					Kruskall-Wallis H test				
	<i>n</i>	Mean	Median	Minimum	Maximum	<i>ss</i>	Mean Rank	H	<i>P</i>	Dual comparison
Student-graduate group	144	77.64	80.00	25.00	100.00	16.36	185.38	8.3	0.039	2-1
Educators	108	83.33	90.00	25.00	100.00	16.23	228.19			2-3
Amateur musician	60	78.75	82.50	40.00	100.00	18.61	200.05			2-4
Religious official	94	79.10	82.50	25.00	100.00	19.45	205.10			
Total	406	79.66	80.00	25.00	100.00	17.52				

TABLE 2.
Medical Products used by Professional Voice Users related to voice

	Occupational Status Related to Vocal Use												Chi-square Analysis	
	Student-Graduate Groups			Educators		Amateur Musicians		Religious Official		Total		Chi-square		
	n	%		n	%	N	%	n	%	n	%			
Allergy drugs	12	8.3	12	11.1	3	5.0	5	5.3	32	7.9	3.1	0.372		
Propranolol	6	4.2	0	0.0	0	0.0	1	1.1	7	1.7	-	0.031		
Dexpanthenol	8	5.6	4	3.7	3	5.0	2	2.1	17	4.2	-	0.629		
Combined B vitamins	13	9.0	7	6.5	4	6.7	2	2.1	26	6.4	4.5	0.211		
Herbal anxiety-reducing products	1	.7	2	1.9	4	6.7	1	1.1	8	2.0	-	0.035		
Medications containing cortisone	3	2.1	1	.9	0	0.0	0	0.0	4	1.0	-	0.364		
Multivitamin complexes	9	6.3	10	9.3	4	6.7	1	1.1	24	5.9	6.2	0.101		
Lozenges	24	16.7	35	32.4	14	23.3	20	21.3	93	22.9	8.8	0.031		
Prescription anti-anxiolytic drugs	2	1.4	0	0.0	0	0.0	0	0.0	2	.5	-	0.269		
No use	90	62.5	66	61.1	38	63.3	62	66.0	256	63.1	0.53	0.911		
Total	144	100.0	108	100.0	60	100.0	94	100.0	406	100.0				

Medical profile

According to the data, 31.3% of the participants used tobacco and tobacco products. The highest rate of smoking was among amateur musicians (41.7%). The rate of participants with chronic disease that affected their voice health was 57.9%. These diseases were acid reflux (20.7%), chronic sinusitis (12.1%), vocal diseases such as nodules, polyps, granulomas (4.4%), and they stated that they regularly used the appropriate drugs for recovery. There was no significant difference between the groups in terms of presence and types of chronic disease ($P > 0.05$). However, among participants who declared that they had nodular polyps or granulomas in their vocal folds, 52.6% were religious officials.

Participants stated causes of hoarseness as vocal strain (53.2%), influenza (51.5%), acid reflux (14.3%), asthma (4.2%), pharyngitis (37.7%), and laryngitis (11.1%). The answers “vocal strain” and “acid reflux” for causes of hoarseness, or difficulty producing a sound, were most common among religious officials (60.6%, 25.5%, respectively) ($P < 0.05$). The student-graduate group had no members with chronic disorders affecting their voice ($P < 0.05$), which was a significant finding.

When the participants' current status regarding voice health was questioned, 54.2% stated their voice was normal, and 45.8% described various degrees of voice disorders.

DISCUSSION

Awareness of vocal hygiene and maintaining proper attitudes and behaviors regarding vocal hygiene is of utmost importance for professional voice users to keep their voice healthy and demonstrate good performance for many years. Studies underline that vocal hygiene education contributes to vocal health.^{10,11}

Within the scope of the study, the rate of knowledge of the definition of vocal hygiene was high. It has been determined that those who know the concept of vocal hygiene strive to maintain vocal hygiene both daily and before performances. The group consisting of religious officials was the group that least implemented behaviors aimed towards maintaining vocal hygiene in daily life. This may be the reason why formations such as granulomas and nodules in the vocal folds were more common in this group. An important cause of hoarseness in this group is vocal strain. We believe that this group should be supported in terms of proper use and vocal hygiene. There are also publications in the literature that report that vocal hygiene is not a well-known concept by religious officials.¹²

In the present study, the majority of those who knew the definition of vocal hygiene and apply it in daily life was the educators group. When the correct behaviors to ensure vocal hygiene were questioned and the results were scored, it was determined that it was highest in the educators and student-graduate groups. It is important to note that, regardless of knowledge of vocal hygiene, there is a tendency not to routinely implement it on a daily basis. In many studies consisting of elite vocalists and music teachers,

it has been demonstrated that adequate attention is not paid to vocal hygiene, although there is sufficient theoretical knowledge.^{13–15} Santa Maria et al conducted a study comparing amateur musicians and university graduate musicians and reported that there was no significant difference between the groups in terms of knowledge level of vocal hygiene and laryngeal diseases, therefore it was suggested that this was related to desire for vocal longevity rather than education.¹⁶ Behaviors for ensuring vocal hygiene before performances increased in all groups. This situation contradicts the definition of vocal hygiene, which should be a routine of daily life. There are other studies in the literature supporting that there is no relationship between knowledge level and vocal hygiene practice.¹⁷ Almost half of the participants stated that they had a problem with their voice health. Another variable that contributes to the evaluation of the lack of practice of vocal hygiene rules in daily life is the use of tobacco. It was observed that one out of every three participants smoked tobacco. The rate of tobacco use among second-level professional voice users was similar to the Turkish average.¹⁸ Tobacco use is a factor that increases the formation of vocal polyps. Reducing tobacco use is a vocal hygiene principle in and of itself.¹⁹

There is no recommendation regarding the use of supplementary drugs or herbal medicinal products to preserve vocal hygiene. According to the results of the study, the rate of using HMP was 62.3% in second level professional voice users. Today, the average HMP usage rates vary between 40% and 95%, especially in developing countries.²⁰ In this study, in groups other than amateur musicians and religious officials, approximately one out of every three people declared that they frequently used HMPs. The usage rates are high among professional voice users. The most preferred HMPs among second level professional voice users were linden, sage, ginger, clove, green tea, chamomile, echinacea, turmeric, rosehip, licorice honey, centaury oil, peppermint, cube and St. John's Wort.

It is necessary for professional voice users to avoid drugs that have the potential to change the saliva content, reduce intracellular fluid in larynx epithelium, or irritate the epithelium with chemical stimuli by increasing gastric acid content. In addition, products that can cause changes in the voice and affect the respiratory muscles due to their hormonal content should be avoided. When recommending HMP for vocal health, health care professionals should avoid drugs with anticholinergic, diuretic or sympathomimetic effects, and products that increase the likelihood of bleeding in laryngeal strains by triggering bleeding patterns.²¹ For example, the frequently used herbs ginger (*Zingiber officinale* L.) and German chamomile (*Matricaria chamomilla* L.) have anticoagulant effects. Particular attention should be paid to their use together with warfarin.²² Another herbal product that the participants declared to use is St. John's Wort (*Hypericum perforatum* L.) St. John's Wort should be used with caution because of its potential to interact with warfarin, alprazolam, digoxin,

erythromycin, omeprazole, oral contraceptives, and some cancer drugs, and physicians should provide information in its use.²³

The hepatotoxicity of green tea with acetaminophen has been demonstrated in animal experiments. Since echinacea (*Echinacea sp.* L.) inhibits the CYP 1A2 enzyme, its intake with caffeine may increase the side effects of caffeine, thus causing tremor, drowsiness, and headache. Concomitant use with acetaminophen, theophylline or ketoconazole may affect these drugs, increasing the risk of toxicity. Long-term use may suppress the immune system.^{23,24}

Honey licorice is an herbal product with mineralocorticoid effects especially preferred for vocal health. For this reason, during its use in the hypertensive population, the effects of hypertensive crisis and cardiac arrest secondary to hypokalemia with fluid overload can be encountered. This hypertensive crisis can also be triggered by the plant's monoaminooxidase inhibitors, and with consumption of wine and cheese.²⁵ Peppermint (*Mentha piperita* L.) can increase the drug's blood concentration by decreasing the drug metabolism of cyclosporine used in chemotherapy.^{26,27} The use of turmeric (*Curcuma longa* L.) reduces the blood concentrations of antidepressants or antipsychotic drugs, since it is metabolized in the liver via cytochrome p450 2A1 (CYP2A1). It is an undoubted clinical necessity that this valuable information guiding the physician's prescription should be given great attention.^{28,29}

Contrary to popular belief, the use of HMPs in treatment is not completely harmless. As HMPs have not undergone adequate clinical studies, their long-term effects are unknown, they can be mixed with harmful toxic plants due to their similarity in appearance, and potential safety hazards regarding herb-drug interactions leaves the natural and harmless perception of HMPs used for treatment by 65% of the general population open to debate.³⁰

The fact that information and consultancy regarding herbal medicinal products were obtained from different sources such as television, internet, friends, teachers and many others rather than doctors and pharmacies underline the confusion in this regard. In all groups, it was observed that the most common method of obtaining HMPs was from herbalists. Contamination with products used in pest control and toxic metals such as lead and mercury is another problem, especially for HMPs.³¹ Problems that may arise in herbalists, such as where the herbs that are dried for tea are obtained, choosing the right herbal plant, storage conditions, and standardization of products that are not prepared in accordance with pharmacopoeia makes the therapeutic value of HMPs debatable. In many studies investigating samples taken from various herbalists in Turkey, such problems are underlined.^{32–34} Strict control of products sold in terms of quality and standardization is essential to protect public health.

When the side effects related to the use of HMPs were questioned in our study, participants responded that they did not experience any harm to a great extent. According to American toxicology reports, 1.8% of annual cases were

TABLE 3.
Distribution of HMPs Used According to Occupation

		Occupational Status related to Vocal Use										Chi-square Analysis	
		Student Graduate Groups		Educators		Amateur Musicians		Religious Official		Total			
		n	%	n	%	n	%	n	%	n	%	Chi-square	p
<i>Sage</i>	Yes	55	62.5	49	69.0	28	75.7	32	56.1	164	64.8	4.6	0.202
	No	33	37.5	22	31.0	9	24.3	25	43.9	89	35.2		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Turmeric</i>	Yes	28	31.8	19	26.8	10	27.0	12	21.1	69	27.3	2.07	0.558
	No	60	68.2	52	73.2	27	73.0	45	78.9	184	72.7		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Ginger</i>	Yes	59	67.0	43	60.6	20	54.1	25	43.9	147	58.1	8.06	0.045
	No	29	33.0	28	39.4	17	45.9	32	56.1	106	41.9		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Rosehip</i>	Yes	21	23.9	14	19.7	14	37.8	12	21.1	61	24.1	4.5	0.211
	No	67	76.1	57	80.3	23	62.2	45	78.9	192	75.9		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Clove</i>	Yes	26	29.5	30	42.3	17	45.9	13	22.8	86	34.0	8.5	0.036
	No	62	70.5	41	57.7	20	54.1	44	77.2	167	66.0		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Cubeb</i>	Yes	6	6.8	5	7.0	2	5.4	8	14.0	21	8.3	-	0.367
	No	82	93.2	66	93.0	35	94.6	49	86.0	232	91.7		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Honey licorice root</i>	Yes	10	11.4	13	18.3	3	8.1	1	1.8	27	10.7	11.03	0.012
	No	78	88.6	58	81.7	34	91.9	56	98.2	226	89.3		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Hollyhock</i>	Yes	3	3.4	4	5.6	0	0.0	0	0.0	7	2.8	-	0.179
	No	85	96.6	67	94.4	37	100.0	57	100.0	246	97.2		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>St. John's Wort oil</i>	Yes	5	5.7	5	7.0	0	0.0	5	8.8	15	5.9	-	0.349
	No	83	94.3	66	93.0	37	100.0	52	91.2	238	94.1		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Bergamot</i>	Yes	6	6.8	5	7.0	7	18.9	1	1.8	19	7.5	-	0.019
	No	82	93.2	66	93.0	30	81.1	56	98.2	234	92.5		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Green tea</i>	Yes	36	40.9	13	18.3	21	56.8	7	12.3	77	30.4	31.1	0.0001
	No	52	59.1	58	81.7	16	43.2	50	87.7	176	69.6		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Citrus</i>	Yes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	-	-
	No	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Echinacea</i>	Yes	10	11.4	6	8.5	4	10.8	1	1.8	21	8.3	-	0.208
	No	78	88.6	65	91.5	33	89.2	56	98.2	232	91.7		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Boswellia</i>	Yes	1	1.1	0	0.0	0	0.0	0	0.0	1	.4	-	1
	No	87	98.9	71	100.0	37	100.0	57	100.0	252	99.6		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Sweetgum</i>	Yes	1	1.1	0	0.0	0	0.0	1	1.8	2	.8	-	0.802
	No	87	98.9	71	100.0	37	100.0	56	98.2	251	99.2		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Peppermint</i>	Yes	19	21.6	16	22.5	9	24.3	30	52.6	74	29.2	19.5	0.0001
	No	69	78.4	55	77.5	28	75.7	27	47.4	179	70.8		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Daisy</i>	Yes	50	56.8	29	40.8	9	24.3	18	31.6	106	41.9	15.2	0.0001
	No	38	43.2	42	59.2	28	75.7	39	68.4	147	58.1		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Lindens</i>	Yes	55	62.5	54	76.1	29	78.4	40	70.2	178	70.4	4.8	0.183
	No	33	37.5	17	23.9	8	21.6	17	29.8	75	29.6		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		
<i>Mixed herbal powders of unknown contents</i>	Yes	2	2.3	2	2.8	1	2.7	2	3.5	7	2.8	-	1
	No	86	97.7	69	97.2	36	97.3	55	96.5	246	97.2		
	Total	88	100.0	71	100.0	37	100.0	57	100.0	253	100.0		

due to products of herbal origin.³⁵ In this study, it was observed that the rate of participants who stated that they were harmed due to HMPs was compatible with the literature.

Herbal products for preserving vocal health have been used traditionally in many cultures for a very long time. However, even today, the therapeutic mechanisms of many of these have not yet been illuminated. In 2021, Calcinoni et al compiled a database for plants used for voice care on a rational basis. Classification of plants, methods of use, known biological activities and molecular targets were specified in a database containing 44 plants, 101 phyto-compounds and 32 recognized molecular targets.³⁶ The first steps taken in this regard need to be further expanded. The emergence of such databases reveals the current value of the subject and such studies are valuable in terms of being a source for evidence-based medical practices.

It was determined to the most commonly used product in the daily lives of the participants were lozenges, vitamins, and allergy medications. Lozenges are products of varying taste and aroma possibly containing green tea, echinacea, myrrh, menthol, eucalyptus, hyaluronic acid, pain relievers, and vitamins in cases of upper respiratory tract infections or when the voice is strained or hoarse. An allergic reaction may develop towards any of the additives unit contents, they are not recommended for patients with salivary disorders, and attention should be paid to the use of sugary products in patients with diabetes. If the product contains aspartame, contraindicated patients should be informed.³⁷⁻³⁹

Hydration of the vocal folds is the most important aspect in maintaining vocal hygiene. Allergy drugs can reduce endolaryngeal lubrication and make the vocal folds susceptible to trauma.⁴⁰

It is a common belief among voice professionals that taking vitamin B12 or others vitamins improves voice health. A randomized, double-blind, placebo-controlled clinical trial found that parenteral use of B12 to improve voice symptoms was indistinguishable from placebo. Vitamin E also has anticoagulant effects. Mucosal dryness is another side effect of preparations used in some treatments containing high doses of vitamin C and vitamin A.⁴¹⁻⁴³ The use of vitamins must be supervised by a physician within the scope of rational drug use.

According to the study, the highest levels of anxiety were in conservatory students. It was observed that propranolol use before performance was high in this group. There are also publications reporting the wide use of this drug before performance-related situations.⁴⁴ Propranolol is a beta-blocker drug and belongs to the sympatholytic drug group. It is indicated for the prophylaxis of hypertension, angina, tremor, and migraine. It should not be used without the approval of a doctor in people with asthma, certain heart rhythm disorders, depression or thyroid pathology. It interacts with nonsteroidal anti-inflammatory drugs, anticoagulants, antidepressants, and steroids.⁴⁵ According to meta-analysis studies, there is insufficient evidence regarding its efficacy in the treatment of anxiety disorder.⁴⁶

Although there are few randomized controlled studies supporting its efficacy but commonly used to reduce anxiety, as also demonstrated in this study, is passiflora (*Passiflora incarnata* L.).⁴⁷ As with anxiety, it is also used for insomnia, menopausal tension, muscle relaxation, and gastrointestinal complaints involving the nervous system.⁴⁸ It is available in the market in the form of tea, elixir, syrup and tablets. Passiflora, consisting of various species, should not be confused with *Passiflora caerulea*, which is used as a hedge plant in Turkey. It should not be consumed with alcohol. Although HMPs containing *Passiflora incarnata* are especially believed to be used before performances, with proper dosage and duration, its anxiolytic effect is expected to occur after 5-6 days.^{49,50}

This study was designed as a descriptive analysis and focused on the differences between second level professional voice users and tried to capture the moment. With this approach, it was aimed to form a basis for research investigating a causal relationship. Among the limitations of the study were the inability to create a regional representation since the survey data was obtained online due to the Covid-19 pandemic and the participants were from different regions due to the difficulties in reaching the adequate sample number.

CONCLUSION

There is a lack of knowledge regarding vocal hygiene and its application on real-life behavior among second-level sound professionals. In particular, the awareness of vocal hygiene should be increased among religious officials. Although the use of any drugs and herbal medicinal products to protect vocal health is not included in evidence-based medicine, it was determined that the rate of use of HMPs for this purpose is high among professional voice users. It should not be overlooked that drugs or HMPs used for the treatment of diseases may have negative impacts on the voice. Further studies are needed to prove the benefits of these herbal and medicinal products on vocal health. Professional voice users should be encouraged to seek advice from health professionals regarding the use of HMPs in their daily life or before performances and their effects on vocal health. The existence of dozens of consultation sources, multiple references for information, and the fact that few of these choices appertain to health professionals pose serious problems. When users want to use medicinal herbal products for the purpose of preserving their vocal health, the right resources should be provided by the health authorities regarding the supply of herbs and the use of the right product.

COMPLIANCE WITH ETHICAL STANDARDS

Afyonkarahisar Health Sciences University Non-Interventional Clinical Research Ethics Committee, Numbered: 03.07.2020- 2020/299.

AUTHOR CONTRIBUTIONS

Concept - JA; Design –JA,BÖ; Data Collection and/or Processing- JA,BÖ,KA,AG; Analysis and/or Interpretation –JA,BÖ; Literature Search –JA,BÖ,İD,EŞO,KA,AG; Writing Manuscript- JA,BÖ,İD,EŞO,; Critical Review- İD

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DECLARATION OF COMPETING INTEREST

No conflict of interest was declared by the authors

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