ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

DOI: 10.5336/jtracom.2020-78099

Investigation of the Knowledge Level and Usage Habits About Herbal Products and Phytotherapy of Undergraduate Students of the Faculty of Dentistry

Diş Hekimliği Fakültesi Öğrencilerinin Bitkisel Ürünler ve Fitoterapi Hakkındaki Bilgi Düzeyleri ile Kullanım Alışkanlıklarının İncelenmesi

Miray EGE[a], Muhammed Yusuf KURT[b], Bilal EGE[b], Mahmut KOPARAL[b]

[a]Department of Pharmacognosy, Adıyaman University Faculty of Pharmacy, Adıyaman, TURKEY
[b]Department of Oral and Maxillofacial Surgery, Adıyaman University Faculty of Dentistry, Adıyaman, TURKEY

ABSTRACT Objective: Recently, the use of phytotherapy has been increasing rapidly, as in other traditional and complementary medicine practices. In our study, it is aimed to evaluate the awareness and usage features of dentistry students about herbal products and phytotherapy. **Material and Methods:** This study was carried out on 242 volunteer students studying in the 1st, 2nd, 3rd and 4th grades at the Adıyaman University Faculty of Dentistry. Students' knowledge and personal experiences about herbal products were evaluated through questionnaires that were prepared previously and consisted of three parts (demographic information, use of herbal products, phytotherapy attitude and level of knowledge). **Results:** As a result of the answers given by the students participating in the study, it was determined that approximately half of them did not have information about phytotherapy. However, unlike this low level of knowledge, about 94% of students used herbal products. Herbal products were most often used for colds (87.2%) and prophylactic purposes (74.4%). Lemon, green tea, sage, linden and mint were the most preferred herbal products by the students. The rate of use of phytotherapy for oral and dental health was 44%. **Conclusion:** The increasing interest of people in herbal products and the use of these products for the purpose of treatment lead doctors to do more research on phytotherapy. Although most of these students, who will be dentists of the future, use herbal products, they do not have sufficient knowledge about phytotherapy. For this reason, it may be beneficial to include a vocational training on phytotherapy in the undergraduate education curriculum.

Keywords: Phytotherapy; dentistry; complementary therapies; awareness

ÖZET Amaç: Diğer geleneksel ve tamamlayıcı tıp uygulamalarında olduğu gibi fitoterapinin kullanımı da son yıllarda hızla artmaktadır. Çalışmamızda, diş hekimliği fakültesi öğrencilerinin fitoterapi konusundaki farkındalıkları ile bitkisel ürünleri kullanım özelliklerinin değerlendirilmesi amaçlanmıştır. **Gereç ve Yöntemler:** Bu çalışma, Adıyaman Üniversitesi Diş Hekimliği Fakültesi 1., 2., 3. ve 4. sınıflarda okuyan 242 gönüllü öğrenci üzerinde gerçekleştirilmiştir. Öğrencilerin bitkisel ürünler hakkındaki bilgi ve kişisel deneyimleri, daha önce hazırlanmış ve 3 bölümden (demografik bilgi, bitkisel ürünlerin kullanımı, fitoterapi tutumu ve bilgi düzeyi) oluşan anketlerle değerlendirilmiştir. **Bulgular:** Çalışmaya katılan öğrencilerin verdiği cevaplara göre öğrencilerin yaklaşık yarısının fitoterapi hakkında bilgi sahibi olmadığı belirlendi. Ancak bu bilgi seviyesinin aksine, öğrencilerin yaklaşık %94'ünün bitkisel ürünleri kullandığı tespit edildi. Bu bitkisel ürünlerin çoğunlukla soğuk algınlığı (%87,2) ve profilaktik amaçlar (%74,4) için kullanıldığı ve öğrenciler tarafından en çok tercih edilen bitkisel ürünlerin limon, yeşil çay, adaçayı, ıhlamur ve nane olduğu görüldü. Ağız ve diş sağlığı için fitoterapinin kullanım oranı ise %44 idi. **Sonuç:** İnsanların bitkisel ürünlere karşı ilgilerinin ve bu ürünlerin tedavi amaçlı kullanımının artması doktorları fitoterapi hakkında daha fazla araştırma yapmaya yönlendirmektedir. Geleceğin diş hekimi olan, bugünün öğrencilerinin çoğu bitkisel ürünü kullanmasına rağmen fitoterapi hakkında yeterli bilgiye sahip değildirler. Bu nedenle lisans eğitimi müfredatına fitoterapi ile ilgili mesleki bir eğitime yer verilmesi faydalı olabilir.

Anahtar Kelimeler: Fitoterapi; diş hekimliği; tamamlayıcı terapiler; farkındalık

Phytotherapy, in its most general definition, refers to the treatment or prevention of diseases with plants and herbal products. The use of plants and herbal products as medicines is as old as human history. It has also been one of the oldest known treatment methods before the modern medicine and synthetic pharmaceutical industry. Plants have been the source of the discovery of many drugs used today. Recently, the world is turning to nature, more natural products, traditional and holistic approaches in prevention and treatment of diseases.

Correspondence: Miray EGE
Department of Pharmacognosy, Adıyaman University Faculty of Pharmacy, Adıyaman, TURKEY/TÜRKİYE
E-mail: miraybezirciege@gmail.com

Peer review under responsibility of Journal of Traditional Medical Complementary Therapies.

Received: 14 Jun 2020 ***Accepted:*** 19 Oct 2020 ***Available online:*** 22 Jan 2021

Integrated treatment approaches and phytotherapy have become more popular in dentistry, which is one of the branches where antibiotics, anti-inflammatory drugs and analgesics are used most frequently in the treatment protocol. The fact that patients who avoid the possible side effects of the routine drugs used in the treatment, turn to herbal products that have less risk in terms of side effects, has caused the necessity to integrate phytotherapy in the field of dentistry. The prevention of dental diseases, especially dental caries, trying to keep the tooth in the mouth as much as possible, the holistic approach of dentistry, which is based on the protective therapeutic model rather than the surgical model, has recently gained importance. In this sense, phytotherapy, which is a holistic treatment approach, has become more preferred in oral and dental health.[1]

In general, it is believed that the products of natural origin obtained from plants are safer than synthetic drugs. Patients prefer herbal products, for therapeutic or protective purposes in a wide spectrum of diseases, from minor indications to major indications such as cancer. Most of the time, these products are considered harmless and are used without doctor's advice. However, the opinion that every natural product will be safe is not correct. Some plants can have extremely toxic effects and cause unexpected side effects.[2,3] For example, it has been reported that green tea, which is considered to be very safe and preferred, may cause liver toxicity in inappropriate use.[4] Clove essential oil, which is preferred in toothache, has irritating properties of mucosa.[5] Sage can cause convulsions and epilepsy-like seizures especially in children due to the camphor and tuyon phytochemicals it contains.[6] In addition, some of the herbal products can interact with the currently used drugs and affect the treatment negatively. For example, *Hypericum perforatum* (St. John's Wort) is a plant commonly used to treat depression and externally as a wound healing agent. However, it interacts with almost all known drugs by interacting with many mechanisms. It may decrease the effectiveness of medications or cause serotonergic syndrome when taken with medicines used to treat depression. In addition, it can make photosensitivity in external use.[7,8] Similarly, it should be remembered that licorice, which is frequently preferred, can cause hypertension and interact with some heart medications.[9]

In addition to all these, it should be known that herbal products are an area open to abuse. Some of the existing products are produced under inappropriate conditions. Also, it should not be overlooked that there are many adulterated products on the market. Many of these adulterated products do not contain the right plant in therapeutic amount, while some contain synthetic drugs. Thus, patients are unwittingly exposed to these drugs while choosing a natural alternative while avoiding the possible side effects of synthetic drugs. This situation can cause serious side effects that can go up to death.[10] Despite all this, most people believe that plants are harmless and think that there will be no negative effects. For this reason, considering the possible negative conditions, doctors should definitely question the use of such herbal treatment methods while taking anamnesis from their patients.

It is extremely important for patients to share these preferences with their physicians in using herbal products. Physicians should advise their patients on the use of phytotherapeutics. They must have a sufficient level of knowledge to guide patients. Because of the increase in the number of patients using phytotherapy, which is the most popular branch of holistic medicine applications today, it is inevitable for physicians to encounter patients who use herbal products in their daily practices. One of these branches is dentistry. However, awareness of phytotherapy in dentistry is still not at the desired levels and most dentists do not have sufficient information about the interactions and side effects of these herbal products with drugs.[11-13] In the solution of this problem, we think that comprehensive phytotherapy training is needed to handle the wide application area of phytotherapy in dentistry with a holistic approach and to better understand and apply it. For this reason, it is important to determine the current knowledge levels of dental faculty students about the use of herbal products and phytotherapy.

In the literature, there is no study on phytotherapy on students of the faculty of dentistry. However, there are studies in the literature on students study-

ing in different faculties and schools. For example, in a study, the use of herbal products of vocational school students was evaluated and 72.5% of the students stated that the herbal product was very good for them.[14] In another study, Sucaklı et al. Evaluated the use of herbal products among all university students and stated that the use of herbal products was common among students.[15] It is observed that the use of herbal products for various purposes is common in adults as well as students.[16] While the use of herbal products in healthy individuals is generally common for cosmetic, care and preventive purposes, it is also common for therapeutic purposes, especially in people with chronic disease (such as diabetes).[17]

Among the university students, there are also studies investigating other traditional and complementary medicine practices. In many of these studies, it has been stated that students are willing to receive education on traditional and complementary medicine practices and these practices should be integrated into modern medicine.[18,19] Although there are studies on traditional and complementary medicine practices among university students studying in different faculties, the number of studies examining the use of phytotherapy and herbal products is quite limited.[20,21] The level of awareness and use of phytotherapy of dentistry students has not been clarified yet. In our study, we aim to evaluate the current knowledge, attitudes and behaviors of dentistry students about phytotherapy. Thus, we aim to contribute to further studies on the inclusion of phytotherapy education in undergraduate curriculum planning with the results we will achieve.

MATERIAL AND METHODS

In this cross-sectional study, 1st, 2nd, 3rd and 4th grade students who were educated at the Faculty of Dentistry at Adıyaman University were included. The research was carried out in accordance with the Helsinki Declaration 2008 principles by obtaining the necessary approval from the Non-interventional Research Ethics Committee of Adıyaman University (date: 14.01.2020, decision no: 2020/1-16). Before the study, the purpose of the research is explained and it was told that participation in the study was voluntary. Informed volunteer approval form was obtained from the students that they will participate in the study. As a result, while the research population consisted of 260 people, 242 students voluntarily participated in the survey.

Before starting the study, preliminary research was carried out using questionnaires on an independent group of volunteers, and the surveys were finalized by making the necessary changes. The questionnaires were applied by making the necessary explanations about the questions in the questionnaires during the theoretical lessons in order to ensure the full participation of the students. The questionnaire forms created were distributed to the volunteer participating students and collected after they were filled.

In the study, socio-demographic information such as age, gender, class they studied, maternal and paternal education status, settlement, income status were recorded. In addition, descriptive information about general health conditions such as systemic disease, drug use, smoking or alcohol use were obtained. Thus students' knowledge and attitudes about phytotherapy and herbal products and their attitudes towards these methods were evaluated through the questionnaire prepared in the light of current literature.

STATISTICAL ANALYSIS

Statistical analysis of data was done by using was done by using Statistical Package for the Social Sciences (SPSS) version 25.0 statistical package program. Descriptive statistical methods were used to determine the frequency of the responses of the participants against the questionnaires with their demographic characteristics. Results are shown as numbers and percentages. In addition, descriptive statistical methods were used in the SPSS program to calculate the average age of the volunteers.

RESULTS

The research universe consists of 260 people who are educated in the 1st, 2nd, 3rd and 4th grades at the faculty of dentistry, and a total of 242 students, 107 males and 135 females, were included in our study. While the age range of the students included was between 17 and 31 years, the average age was 20.3±1.83. The

TABLE 1: Distribution of students according to their demographic information.

		n	%
Class	1st Class	76	31.4%
	2nd Class	64	26.4%
	3rd Class	61	25.2%
	4th Class	41	17%
	Total	242	100%
Gender	Male	107	44.2%
	Female	135	55.8%
Educational status of the mother?	Illiterate	24	9.9%
	Primary education	141	58.3%
	High school	47	19.4%
	University	28	11.6%
	Master	2	0.8%
Educational status of the father?	Illiterate	2	0.8%
	Primary education	103	42.6%
	High school	54	22.3%
	University	71	29.3%
	Master	12	5%
Residential area	Province	147	60.7%
	District	68	28.1%
	Country	27	11.2%
Income status	Enough	141	58.3%
	Partly enough	91	37.6%
	Insufficient	10	4.1%
Systemic disease	No	226	93.4%
	Yes	16	6.6%
Drug use	No	233	96.3%
	Yes	9	3.7%
Smoking	No	192	79.3%
	Yes	50	20.7%
Alcohol	No	209	86.4%
	Yes	33	13.6%

distribution of the demographic characteristics of the participating students according to various subtitles is given in Table 1. Considering the distribution of the number of students by class, it was seen that the students were in the first grade, followed by the 3rd and 2nd grade, and the least in the 4th grade. It was seen that the education level of parents was mostly at primary education level, people lived more frequently at the provincial level in terms of settlement, and the income level was sufficient, and systemic disease, drug use, smoking and alcohol use were low in most of the students (Table 1).

While 54% (n=131) of the students who participated in the study stated that they had knowledge about herbal products and phytotherapy before; 46% (n=111) specified that they did not have any information and did not conduct research on this subject. Considering the information sources of the students the top three ranks are family-relative (31%; n=142) followed by media (29%; n=133) and friends (20%; n=91), the number of the participants who obtained information from healthcare professionals (5%) and pharmacists (3%) was quite low (Table 2).

Of the students, 93.8% (n=227) answered yes to the question of whether you used any herbal products for medical purposes before (Table 3). It was also asked for which purpose they used herbal products. It was found that herbal products were used mostly for common cold (87.2%; n=211), for prophylactic purposes (74.4%; n=180) and hair loss (27.3%; n=66) (Table 3). The most commonly used plants are pep-

TABLE 2: Students' use of phytotherapy applications and the sources they learned about phytotherapy.

Having information about phytotherapy	n (%)
Knowledgeable	131 (54%)
Not knowledgeable	111 (46%)
Sources of information	**n (%)**
Family-relatives	142 (31%)
Media-communication resources	133 (29%)
Friends	91 (20%)
Herbalist	48 (10%)
Health personnel	23 (5%)
Pharmacist	15 (3%)
Others	10 (2%)

TABLE 3: Students' use of phytotherapy and herbal products.

Phytotherapy use before		n (%)	
Yes		227 (93.8%)	
No		15 (6.2%)	
Purpose of usage	**n (%)**		**n (%)**
Prophylactic	180 (74.4%)	Quitting smoking	2 (0.8%)
Colds flu	211 (87.2%)	Joint Pain	15 (6.2%)
Hair loss	66 (27.3%)	Gynecological diseases	50 (20.7%)
Hypertension	9 (3.7%)	Asthma	11 (4.5%)
Sleeping disorder	30 (12.4%)	Depression	20 (8.3%)
Goiter	5 (2.1%)	Diabetes	1 (0.4%)
Anemia	58(23.4%)	Migraine	12 (5%)
Losing weight	64 (26.4%)	Others	51 (21.1%)
Gaining weight	10 (4.1%)		

TABLE 4: Herbal products and percentage distributions.

Herbal products (n (%))							
Hawthorn	37 (15.3%)	Artichoke	23 (9.5%)	Carob	89 (36.8%)	Fennel	61 (25.2%)
Anise	20 (8.3%)	Apple vinegar	96 (39.7%)	Rosehip	117 (48.3%)	St. John's Wort	46 (19%)
Sage	143 (59.1%)	Guelder-rose	5 (2.1%)	Bitter melon	4 (1.7%)	Senna	13 (5.4%)
Juniper	10 (4.1%)	Ginseng	19 (7.9%)	Lemon	181 (74.8%)	Sumac	85 (35.1%)
Aloe vera	87 (36%)	Gingko biloba	2 (0.8%)	Lavender	31 (12.8%)	Garlic	132 (54.5%)
Calendula	8 (3.3%)	Rose	103 (42.6%)	Linden- lemon	135 (55.8%)	Onion	121 (50%)
Lady's mantle	8 (3.3%)	Jujube	17 (7%)	Lemon+garlic	23 (9.5%)	Cinnamon	116 (47.9%)
White cabbage	53 (21.9%)	Chaste tree	3 (1.2%)	Parsley	125 (51.7%)	Grape seed	58 (24%)
Almond oil	110 (45.5%)	Nettle	59 (24.4%)	Miswak	78 (32.2%)	Blueberry	34 (14%)
Okra seed	13 (5.4%)	Linden	132 (54.5%)	Parsley + walnut	9 (3.7%)	Green tea	144 (59.5%)
Walnut	26 (10.7%)	Fig	102 (42.1%)	Corn tassel	15 (6.2%)	Turmeric	67 (27.7%)
Yarrow	8 (3.3%)	Swedish bitter	1 (0.4%)	Parsley + quince	19 (7.9%)	Ginger	127 (52.5%)
Black seed	102 (42.1%)	Clove	123 (50.8%)	Peppermint	132 (54.5%)	Olive leaf	24 (9.9%)
Sycamore leaves	10 (4.1%)	Lavandula stoechas	1 (0.4%)	Peppermint-lemon	186 (76.9%)		
Fenugreek	11 (4.5%)	Cherry stalk	61 (25.2%)	Pomegranate	82 (33.9%)		
Dill	97 (40.1%)	Flax seed	19 (7.9%)	Lemon balm	5 (2.1%)		
Laurel	47 (19.4%)	Thyme oil	44 (18.1%)	Chamomile	104 (43%)		
Mulberry	84 (34.7%)	Thyme	111 (45.9%)	Sweet basil	56 (23.1%)		

*Numbers show multiple responses.

permint+lemon (76.9%), lemon (74.8%), green tea (59.5%), sage (59.1%), linden (54.5%) and peppermint (54.5%) while *Lavandula stoechas* (0.4%), Swedish bitter (0.4%), *Ginkgo biloba* (0.8%), *chaste tree* (1.2%), *bitter melon* (1.7%) were the least preferred plants (Table 4).

Similarly, students were asked whether they use herbal products on oral and dental health. Of them, 44% (n=106) reported that they used these products. It was found that the students who stated that they used it mostly preferred for reasons such as pain (25.2%), mouth sores (22.7%) and bad breath (21.1%) (Table 5).

After use, 65.3% (n=158) of the students stated that herbal products were beneficial, 34.7% (n=84) stated that they did not provide any benefit. Similarly, 81.4% (n=197) of the students stated that the herbal products treat their existing diseases, and 18.6% (n=45) did not. In addition, 3.7% (n=9) of the students specified that they were damaged after the use of herbal products; 96.3% (n=233) stated that they did not suffer any damage (Table 5).

While 8.7% (n=21) of the students using herbal products specified that they applied to the doctor before using these products; 91.3% (n=221) reported that they did not apply. Upon this, when the students were asked whether they would like to receive consultancy service on phytotherapy, 54.5% of the stu-

TABLE 5: Students' use of the phytotherapy and herbal products for oral and dental health.

Phytotherapy use for oral and dental health before	**n (%)**
Yes	106 (44%)
No	136 (56%)
Purpose of usage	**(%)**
Oral wound	55 (22.7%)
Toothache	61 (25.2%)
Tooth sensitivity	13 (5.4%)
Bleaching	24 (9.9%)
Halitosis	51 (21.1%)
Gum bleeding	10 (4.1%)
Other	9 (3.7%)
Was it useful after use?	**n (%)**
Useful	158 (65.3%)
Not useful	84 (34.7%)
Has it cured the current disease?	**n (%)**
Yes	197 (81.4%)
No	45 (18.6%)
Have you seen any damage after use?	**n (%)**
Yes	9 (3.7%)
No	233 (96.3%)

TABLE 6: General approaches of the students about phytotherapy.

Consultation with the doctor before using herbal products	n (%)
Yes	21 (8.7%)
No	221 (91.3%)
Request for consultancy service	**n (%)**
Yes	132 (54.5%)
No	57 (23.6%)
Undecided	53 (21.9%)
Who should provide consultancy service?	**n (%)**
Doctors	180 (74.4%)
Pharmacists	134 (55.4%)
Herbalists	72 (29.8%)
Health personnel	36 (14.9%)
TV/Internet	31 (12.8%)

dents wanted to take it, while 45.5% of them did not have a desire to do so or were undecided about it (Table 6). Students also reported that they wanted to receive this counseling service primarily from doctors (74.4%), pharmacists (55.4%) and herbalists (29.8%) (Table 6).

Finally, students' attitude assessments regarding phytotherapy and herbal treatment products are shown in Table 7 in detail. The topics that students participate at the highest level are as follows;

- Herbal products and phytotherapy knowledge positively affect professional life and patient satisfaction (64.9%; n=157)
- Treatment methods related to phytotherapy should be taught in dentistry (63.6%; n=154)
- Patients may be offered herbal toothpaste or mouthwash (64%; n=155)
- Herbal products may be useful in preventive dentistry (63.2%; n=153)

Contrary to this situation, the subjects that students do not attend at the highest level are listed as follows;

- Herbal products can be used as a last resort to the disease (62.8%; n=152)
- Herbal products do not interact with drugs (51.2%; n=124)
- Herbal products have no harmful effects (43.8%; n=106)

In addition, it was seen that students were mostly undecided on the following subjects;

- The use of herbal products can be dangerous as they will negatively affect drug therapy (26%; n=63)
- Herbal products are more expensive (21.9%; n=53)

DISCUSSION

In the literature, there are very few studies investigating the use of herbal products in both healthy individuals and university students. As for dentistry students, there is no study investigating phytotherapy use, perspective on herbal products and attitudes towards phytotherapy education.

Of the students who participated in our study, 6.6% had a systemic disorder, 3.7% stated that they are using medicines chronically. Similarly, Yetis et al. reported that 7.6% of students and Sucaklı et al. reported that 7.7% of the students had a chronic disease.[14,15] Considering that the studies were conducted among university students, it is seen that our findings are consistent with the literature.

Menghini et al. noticed that 69% of the participants had knowledge about phytotherapy in their study with the students of the faculty of pharmacy.[22] On the other hand, Sonmez et al. reported that 67.3% of the participants had knowledge about phytotherapy in their study with medical students.[18] In our study, 54% of the students stated that they had information about phytotherapy. This rate seems to be slightly lower compared to medicine and pharmacy faculties. We think that this may be related to whether faculties include phytotherapy in their education curriculum.

The frequent use of social media organs and the constant interaction of people in these areas has created a new area for marketing of herbal products. Today, phytopharmaceuticals are more easily licensed than drugs. In addition, marketing, advertising and sales of herbal products, especially through the internet and social media, make it difficult to control

TABLE 7: General attitude of the students about phytotherapy applications.

Students' attitudes and behaviors towards the use of herbal products	Agree n (%)	Disagree n (%)	Partly agree n (%)	Undecided n (%)	Total n (%)
I believe that herbal products will protect or cure diseases	12 (5%)	140 (57.9%)	83 (34.3%)	7 (2.9%)	242 (100%)
Herbal products do not provide treatment but can only be supportive. Treatment is provided only with medicines	102 (42.1%)	45 (18.6%)	77 (31.8%)	18 (7.4%)	
Herbal products have no harmful effects	106 (43.8%)	39 (16.1%)	72 (29.8%)	25 (10.3%)	
Herbal products do not interact with drugs. Can be used together.	124 (51.2%)	21 (8.7%)	34 (14%)	53 (21.9%)	
The use of herbal products can be dangerous, as they will hinder existing drug therapy	62 (25.6%)	52 (21.5%)	75 (31%)	63 (26%)	
Herbal products can be used as a last resort to diseases	152 (62.8%)	29 (12%)	34 (14%)	27 (11.2%)	
I think it is worth trying herbal products before going to the doctor	90 (37.2%)	66 (27.3%)	57 (23.6%)	29 (12%)	
Herbal products should not be used in the treatment of serious diseases	81 (33.5%)	63 (26%)	64 (26.4%)	34 (14%)	
I think that herbal products will treat and prevent diseases such as cancer.	66 (27.3%)	66 (27.3%)	70 (28.9%)	40 (16.5%)	
Herbal products benefit in the treatment of oral and dental diseases	21 (8.7%)	113 (46.7%)	78 (32.2%)	30 (12.4%)	
I believe that herbal products can be useful in preventive dentistry	18 (7.4%)	153 (63.2%)	46 (19%)	25 (10.3%)	
I can recommend herbal paste and mouthwash to my patients.	18 (7.4%)	155 (64%)	58 (24%)	11 (4.5%)	
If I receive training on herbal products, I can prescribe herbal products instead of antibiotics or analgesics	20 (8.3%)	129 (53.3%)	63 (26%)	30 (12.4%)	
Herbal products need to be subjected to more scientific experiments. Therefore, I hesitate to prescribe.	34 (14%)	116 (47.9%)	55 (22.7%)	37 (15.3%)	
Herbal products should be sold only in pharmacies	52 (21.5%)	118 (48.8%)	52 (21.5%)	20 (8.3%)	
Herbal products should be prescribed by doctors.	27 (11.2%)	131 (54.1%)	60 (24.8%)	24 (9.9%)	
If herbal products are prescribed by the doctor, I prefer to be treated with herbal products.	25 (10.3%)	125 (51.7%)	60 (24.8%)	32 (13.2%)	
I find herbal products more expensive	39 (16.1%)	78 (32.2%)	72 (29.8%)	53 (21.9%)	
I think that methods that provide treatment in phytotherapy should be taught in dentistry.	10 (4.1%)	154 (63.6%)	41 (16.9%)	37 (15.3%)	
Knowing phytotherapy positively affects my professional life. Increases patient satisfaction and potential.	8 (3.3%)	157 (64.9%)	52 (21.5%)	25 (10.3%)	

these products.[10,23] Even most of the time, there are many unlicensed products on the market and these products are produced under inappropriate conditions. In addition, their production and sales are made by people who do not have education and competence in the field. Generally, these products are marketed with 100% natural origin, completely harmless and with exaggerated promises such as definitive treatment for diseases.[23] In the study of Sucaklı et al., 21.2% of the participants stated that they saw the herbal product in TV programs, and 17.1% specified that they applied the herbal product and cure recipes they read on the internet. In addition, 3.7% of the participants stated that they bought herbal products that they saw in internet and TV advertisements.[15] In the study of Sonmez et al. similarly, it was noticed that medical school students learned information about traditional methods mostly through social environment and communication tools, and they received information from doctors with a low rate of 6.8%.[18] Guven et al. reported that students received information from their families about herbal products with a high rate of 75.8%. Following this, students obtain information from the internet, circle of friends and herbalists. However, pharmacists and doctors are not among the answers.[24] In our study, 31% of the students stated that they primarily obtained information about phytotherapy from the people around them; 29% stated that they obtained information through media and communication resources. Apart from this, 10% of the participants stated that they obtained information from

the herbalists. However, the rate of obtaining information from pharmacists (3%) and health professionals (5%) who should be consulted on this matter was found to be quite low, similar to the study of Sonmez et al. We think that the low rate of consultation with a pharmacist or doctor before using herbal products may be due to the university students' seeing the herbal products as harmless and thinking that they can use them without consulting a pharmacist or doctor.[18]

Of the students, 93.8% stated that they previously used a herbal product for therapeutic or prophylactic purposes. This rate is quite above the rate (22.7%) reported by Yetis et al. about herbal product use in their study with vocational school students.[14] In a study conducted by Guven et al. with the medical school students, the ratio of using of herbal products was found to be 73.4%.[24] We think that this rate is closer to the rate we have found and is higher than other faculties because the students are studying in health related faculties.

In the literature, very few of the studies investigating herbal products and phytotherapy have investigated which plants people prefer. Menghini et al. stated that the most preferred herbal products in their study with students of pharmacy faculty are products containing chamomile, aloe, fennel, valerian, propolis and ginseng.[22] In the study of Guven et al. with medical students, the most preferred plants are linden (88.5%), sage (73.4%), mint (71.8%), rosehip (60.6%) and green tea (57.5%).[24] In our study, peppermint+lemon (76.9%), lemon (74.8%), green tea (59.5%), sage (59.1%), linden (54.5%), mint (54,5%) and ginger (52.5%) were the most preferred plants.[24] However, more extensive researches are needed, which show which plant is preferred more in which indications.

Menghini et al. reported that the students of pharmacy faculty use herbal products mostly for the purposes of tonic and refreshing (20%), sleep disorders (19%), anxiety (17%) and eating disorders (14%).[22] Sucaklı et al. reported that the students of university use herbal products mostly for the purposes of common cold (58.4%), prophylactic (purposes 46.6%), skin diseases (29.1%) and hair loss (21.4%).[15] Similarly, Yetis et al. reported that the students of vocational school use herbal products mostly for the purposes of immune system enhancer and protector (31.3%), skin (31.3%) and hair problems (22.3%).[14] In our study, 87.2% of the students stated that they used herbal products in the treatment of colds and flu. This was followed by products used for prophylaxis (74.4%), hair loss (27.3%) and weight loss (26.4%). Considering the most frequently used plants in our study, this situation was also compatible with the most common use purposes we found (87.2% cold and flu; 74.4% prophylactic use). Therefore, we think that our results will contribute to future studies.

In the literature, it is seen in studies conducted among various university students that mostly the use of these products on general health is investigated. The use of phytotherapy in oral and dental health, which is an integral part of general health, has not been investigated before. In contrast, in our study, 44% of dentistry students benefited from phytotherapy and herbal products for oral and dental health. It was determined that 25% of these students used herbal products to eliminate toothache, 22.7% for oral aphthae and 21.1% for bad breath. Students' high preference for herbs such as cloves (a natural option for toothache), mulberries (ethnopharmacological use in mouth wounds), peppermint, sage, and thyme (plants containing essential oil known for their antimicrobial properties in the mouth) which are known to be effective on oral health, confirms the answers given. In the literature, this is the first time that this topic is examined among dentistry students and we think that it has important results in terms of including phytotherapy in oral and dental health services.

Another important issue examined in the previous studies is the benefit or harm of the herbal products used. Menghini et al. stated that 11% of the students benefited from herbal products very well, 75% of them were good, and 14% were weak and less beneficial.[22] Yetis et al. reported that 72% of the students benefit from herbal products and 13% are damaged by these products.[14] Sucaklı et al. stated that 67.6% of the students benefit from herbal products and 30.7% do not benefit or harm.[15] In our study, it was found that 65.3% of the students of the faculty of

dentistry benefited, while 34.7% did not see any benefit. It is understood that the results we obtained are compatible with the literature in this sense and university students studying in various faculties benefit at similar rates.

In our study, 81.4% of the students stated that the herbal products treated their existing diseases in the period they were used. In addition, 3.7% of the students stated that they were damaged by the herbal products used. However, the fact that the damages faced by the students has not been investigated is one of the limitations of our study. Further studies addressing this issue are needed to understand the possible negative effects of phytotherapeutics.

In the studies conducted, students stated that they did not consult a doctor before using herbal products, 81.5% of vocational school students noticed that it is not necessary to consult a doctor in the use of herbal products, 5.2% of these students stated that they do not want to consult because they think that doctors will react negatively on this issue.[14] Similarly, 91.3% of the students stated that they did not consult a doctor before using herbal products in our study. Students' evaluation of herbal products as harmless or thinking that they will not cause toxic effects may explain that they do not find it necessary to seek medical advice. In addition, doctors' prescribing synthetic drugs in general and not directing patients to use natural products may have prompted students to think in this way.

In our study, although the students reported that they used these products without consulting a doctor, 54.5% of the students stated that they wanted to get consultancy service in this regard. They emphasized that this counseling should be given by doctors (74.4%), pharmacists (55.4%) and herbalists (29.8%), respectively. These results suggested that the number of people using the products without consulting a doctor may decrease if professional support is given before using the products. More studies are needed to support this prediction.

Today's students, who are future doctors, should have sufficient knowledge about phytotherapy. In addition, it should be remembered that 61.5% of individuals who applied complementary and alternative therapies did not inform their doctors about the methods they use.[25] However, hiding patients' desire to be treated with herbal products from their doctor may cause undesirable results (side effects, drug interactions, etc.). Therefore, doctors and dentists should definitely question the use of such herbal treatment methods while taking an anamnesis. It should be kept in mind that especially if the patients already have medicines, herbal products can interact with them and change their effectiveness by various mechanisms.[26] It is very important for the candidate doctors and dentists to get a comprehensive education on phytotherapy in order to increase the effectiveness in treatment and prevent unwanted results.

In our study, unlike the literature, the general attitudes of dentistry students about phytotherapy practices were also evaluated and 57.9% of the students stated that phytotherapy can really cure or protect from diseases, 34.3% of students partly agreed with this opinion. In addition, the students mostly disagreed with the view that the treatment can only be provided with drugs and that phytotherapy is useless in this regard. It is clear that students generally find phytotherapy useful, 43.8% of students did not agree with the opinion that herbal products have no harmful effects, but some of the remaining students supported this view. This situation shows that students do not have enough information about toxic plants and also herbal products that may cause toxicity in inappropriate use. Moreover, the fact that approximately half of the students disagree or remain indecisive that the drugs and herbal products may interact, supports this opinion. Similarly, 25.6% of the students did not agree with the view that herbal products may affect the treatment negatively or change effectiveness of the treatment while receiving any treatment. This shows that some students consider herbal products quite safe.

The fact that herbal products have been getting more attention recently has also increased the marketing and advertising of these products. Especially the promotion of many natural products is made with exaggerated promises such as definitive solution and 100% treatment.[27] In this sense, many people buy herbal products as a result of being natural and believing that they will provide an effective treatment. Serious patient groups that need to be very sensitive,

especially cancer, as well as people with chronic diseases such as diabetes, hypertension, depression, rheumatism and those who need to use drugs constantly become the target audience of these advertisements. As these patients avoid serious side effects of chronic medication use and severe treatment processes, they may tend to herbal products as a last resort. In the field of phytotherapy, there are various websites about cancer treatment. However, these sites market herbal products that do not have sufficient evidence. Sided or incomplete information is provided by only mentioning the positive features of these products. This situation is both very misleading and very dangerous for patients. Mutlu et al. stated that 62% of cases used complementary and alternative medicine methods in their study on cancer patients.[28] In previous studies, the prevalence of complementary and alternative medicine use in cancer patients was reported to vary between 22.1-84.1%.[29] In a study on cancer patients, herbal products were reported to make up 95% of complementary and alternative medicine methods. In this study, *Urtica dioica* (nettle) was specified as the most commonly used herbal product.[30] In another study on cancer patients, herbal products were again the most preferred alternative medicine method; nettle and garlic were found to be the most commonly used herbal product.[31] However, in this group of patients, using herbal products other than the doctor's advice is very dangerous. In our study, students did not agree with the opinion that herbal products can be used as a last resort when no response from other treatments is obtained. In addition, the number of students who agree with the view that herbal products may be effective in the treatment of diseases such as cancer or for preventive purposes and the students who do not agree are equal, 14% of the students stated that they were undecided in this regard. In addition, 26% of the students agreed that herbal products should not be used in the treatment of serious diseases. In fact, students reported that they think that herbal products may also be included in the treatment of severe diseases. Students also stated that they can prefer treatment with herbal products when they are paid like normal medicines within the scope of health insurance.

When asked about the use of herbal products in their own fields, 46.7% of the students noticed that they think these products will be beneficial in dental diseases. In addition, 63.2% stated that they think that herbal products will be useful in preventive dentistry. Students think that herbal products may be protective rather than treatment for oral and dental diseases. Of the students, who are future dentists, 64% stated that they may recommend herbal toothpaste and mouthwash to their patients in the future. In addition, 53.3% of the students specified that they could prescribe herbal products instead of antibiotics or analgesics if they received phytotherapy training, 63.6% of the students agreed that the methods that provide treatment in the field of phytotherapy should be taught in the dentistry education curriculum. In addition, 64.9% of the students think that knowing phytotherapy and herbal products will positively affect their professional life and increase patient satisfaction and potential. Only 3.3% of the students disagreed with this view. Considering the students who are partially involved and undecided, it is seen that dentistry students are quite eager about phytotherapy education. However, since there is no other study in the literature that evaluates the general attitudes of dentistry students about phytotherapy practices, more studies are needed to investigate this issue extensively to confirm our results.

CONCLUSION

In our study, it was observed that the students of the faculty of dentistry have a relevant and positive approach to phytotherapy and herbal products. It is inevitable that these students, who are future dentists, often encounter patients who use phytotherapy and herbal products while performing their profession. In order to ensure that patients benefit optimally from treatment, it will be beneficial to provide trainings to increase the basic knowledge and skill levels of candidate doctors and dentists on evidence-based, rational phytotherapy. In addition, the opinions of dentists, who are among the primary healthcare practitioners such as medical doctors and pharmacists for the development of rational phytotherapy, are very valuable in this field. For this reason, the answers given by the dentistry students who will take an active role in the health applications in the future reveal important results. However, it will be useful to carry out similar researches evaluating the use of herbal products for both patients and physicians.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Miray Ege, Bilal Ege;* ***Design:*** *Miray Ege, Mahmut Koparal;* ***Control/Supervision:*** *Bilal Ege, Miray Ege;* ***Data Collection and/or Processing:*** *Muhammed Yusuf Kurt, Bilal Ege;* ***Analysis and/or Interpretation:*** *Muhammed Yusuf Kurt, Bilal Ege;* ***Literature Review:*** *Miray Ege, Bilal Ege;* ***Writing the Article:*** *Miray Ege;* ***Critical Review:*** *Mahmut Koparal, Bilal Ege.*

REFERENCES

1. Hotwani K, Baliga S, Sharma K. Phytodentistry: use of medicinal plants. J Complement Integr Med. 2014;11(4):233-51. [PubMed]
2. Peters D, Donaldson J, Chaussalet T, Toffa S, Whitehouse J, Carroll D, et al. Time for a new approach for reporting herbal medicine adverse events? J Altern Complement Med. 2003 Oct;9(5):607-9. [Crossref] [PubMed]
3. Calixto JB. Efficacy, safety, quality control, marketing and regulatory guidelines for herbal medicines (phytotherapeutic agents). Braz J Med Biol Res. 2000;33(2):179-89. [Crossref] [PubMed]
4. Mazzanti G, Menniti-Ippolito F, Moro PA, Cassetti F, Raschetti R, Santuccio C,, et al. Hepatotoxicity from green tea: a review of the literature and two unpublished cases. Eur J Clin Pharmacol. 2009;65(4):331-41. [Crossref] [PubMed]
5. de Groot AC, Schmidt E. Essential Oils, Part IV: Contact Allergy. Dermatitis. 2016;27(4): 170-5. [Crossref] [PubMed]
6. Halicioglu O, Astarcioglu G, Yaprak I, Aydinlioglu H. Toxicity of Salvia officinalis in a newborn and a child: an alarming report. Pediatr Neurol. 2011;45(4):259-60. [Crossref] [PubMed]
7. Final report on the safety assessment of Hypericum perforatum extract and Hypericum perforatum oil. Int J Toxicol. 2001;20 Suppl 2:31-9. [Crossref] [PubMed]
8. Russo E, Scicchitano F, Whalley BJ, Mazzitello C, Ciriaco M, Esposito S,, et al. Hypericum perforatum: pharmacokinetic, mechanism of action, tolerability, and clinical drug-drug interactions. Phytother Res. 2014;28(5):643-55. [Crossref] [PubMed]
9. Nazari S, Rameshrad M, Hosseinzadeh H. Toxicological Effects of Glycyrrhiza glabra (Licorice): A Review. Phytother Res. 2017;31(11):1635-50. [Crossref] [PubMed]
10. Ekar T, Kreft S. Common risks of adulterated and mislabeled herbal preparations. Food Chem Toxicol. 2019;123:288-97. [Crossref] [PubMed]
11. Mattos G, Camargo A, Sousa CA, Zeni ALB. Plantas medicinais e fitoterápicos na Atenção Primária em Saúde: percepção dos profissionais [Medicinal plants and herbal medicines in Primary Health Care: the perception of the professionals]. Cien Saude Colet. 2018; 23(11):3735-44. Portuguese. [Crossref] [PubMed]
12. Groppo FC, Bergamaschi Cde C, Cogo K, Franz-Montan M, Motta RH, de Andrade ED,, et al. Use of phytotherapy in dentistry. Phytother Res. 2008;22(8):993-8. [Crossref] [PubMed]
13. de Paula JS, de Resende AM, Mialhe FL. Factors associated with the use of herbal medicines for oral problems by patients attending the clinics of the School of Dentistry, Federal University of Juiz de Fora, Brazil. Braz J Oral Sci. 2012;11(4):445-50. [Crossref]
14. Yetis G, Kolac T, Gurbuz P, Yakıncı ZD. Determination of the Health Services Vocational School Students' Thoughts and Usage Habits about Herbal Treatment. Int J Sec Metabolite. 2017;4(3):463-72. [Link]
15. Sucaklı M, Ölmez S, Keten HS, Yenicesu C, Sarı N, Çelik M,, et al. [Evaluation of the usage of herbal products among university students]. Med-Science. 2014;3(3):1352-60. [Link]
16. Rambod M, Nazarinia M, Raieskarimian F. The prevalence and predictors of herbal medicines usage among adult rheumatoid arthritis patients: A case-control study. Complement Ther Med. 2018;41:220-4. [Crossref] [PubMed]
17. Pınar N, Topaloğlu M, Özsan M, Özer C, Alp H. The use of herbal supplements of diyabetic patients attending the university hospital in Hatay, Endocrine Polyclinic. Konuralp Med J. 2017;9(3):202-6. [Link]
18. Sönmez CI, Başer DA, Küçükdağ HN, Kayar O, Acar I, Güner PD, et al. Evaluation of knowledge of traditional and complementary medicine of medical school students. Konuralp Med J. 2018;10(3):276-81. [Crossref]
19. Ege B, Kurt MY, Ege M, Geyik A. Evaluation of attitudes of faculty of dentistry students on traditional and complementary medicine practices. J Tradit Complem Med. 2020;3(2): 178-90. [Crossref]
20. Yildirim Y, Parlar S, Eyigor S, Sertoz OO, Eyigor C, Fadiloglu C, et al. An analysis of nursing and medical students' attitudes towards and knowledge of complementary and alternative medicine (CAM). J Clin Nurs. 2010;19(7-8):1157-66. [Crossref] [PubMed]
21. Akan H, Izbirak G, Kaspar EC, Kaya CA, Aydin S, Demircan N,, et al. Knowledge and attitudes towards complementary and alternative medicine among medical students in Turkey. BMC Complement Altern Med. 2012;12:115. [Crossref] [PubMed] [PMC]
22. Menghini L, Vitalone A, Filippo M, Leporini L. Use and awareness of medicinal plant and phytotherapy among undergraduate students at school of pharmacy - university of chieti, Italy. European J Med Plants. 2015;7(3):109-17. [Crossref]
23. Ozdemir B, Sahin I, Kapucu H, Celbis O, Karakoc Y, Erdogan S,, et al. How safe is the use of herbal weight-loss products sold over the internet? Hum Exp Toxicol. 2013;32(1): 101-6. [Crossref] [PubMed]
24. Guven H, Kalkan S, Hocaoglu N, Yildiztepe E, Gokalp G. Evaluation of the knowledge level and usage attitudes of the medical students on the medicinal herbs and herbal products: a project of special study module in the first three years of the school of medicine. Int J Basic Clin Pharmacol. 2019;8(3):394-401. [Crossref]
25. Roemheld-Hamm B, Dahl NV. Herbs, menopause, and dialysis. Semin Dial. 2002;15(1):53-9. [Crossref] [PubMed]

26. Posadzki P, Watson L, Ernst E. Herb-drug interactions: an overview of systematic reviews. Br J Clin Pharmacol. 2013;75(3):603-18. [Crossref] [PubMed] [PMC]

27. Crawford SY, Leventis C. Herbal product claims: Boundaries of marketing and science. J Consum Mark. 2005;22(7):432-6. [Crossref]

28. Mutlu H, Akca Z, Cihan Y, Aslan T, Erden A, Buyukcelik A,, et al. Alteration of Complementary and Alternative Medicine Usage in Patients With Cancer in Turkey. Med-Science. 2013;2(3):757-63. [Crossref]

29. Kav S, Hanoğlu Z, Algier L. [Use of Complementary and Alternative Medicine by Cancer Patients in Turkey: A literature review]. UHOD. 2008;18(1):32-8. [Link]

30. Tas F, Ustuner Z, Can G, Eralp Y, Camlica H, Basaran M,, et al. The prevalence and determinants of the use of complementary and alternative medicine in adult Turkish cancer patients. Acta Oncol. 2005;44(2):161-7. [Crossref] [PubMed]

31. Algier LA, Hanoglu Z, Ozden G, Kara F. The use of complementary and alternative (non-conventional) medicine in cancer patients in Turkey. Eur J Oncol Nurs. 2005;9(2):138-46. [Crossref] [PubMed]