

The Prevalence of the Herbal Medicine Use in the South of Turkey

Türkiye'nin Güneyinde Bitkisel İlaç Kullanımının Prevalansı

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ABSTRACT Objective: In this study, it was aimed to investigate the frequency of herbal medicine (HM) use, the factors affecting the use of HM and from where information about the use of HM was obtained. **Material and Methods:** The study was conducted in the Eastern Mediterranean Region of Turkey. All data were gathered between the dates 01/Feb/2016 and 15/Feb/2017 through a survey developed by the researchers. **Results:** In the study where 956 people have participated, the frequency of HM use was determined to be 53.73%. A significant relation was determined between HM use and gender, marital status, place of birth, education, family income and working status ($p<0.01$). The relation between HM use and the age, health status and health insurance was found to be insignificant ($p>0.05$). The participants have specified that they use mostly *Tilia sp.* (13.2%) and 9.20% reported that they faced the adverse effect of HM use. **Conclusion:** As is the case in all over the world, it is determined that HM use is also prevalent in Turkey. To meet this increasing demand in HM consumption in a more controlled and secure way, the use of HM should be included in the national health system. Herbal medicine licensing and sales control should be done in accordance with the regulations published by Ministry of Health, Turkey Pharmaceuticals and Medical Devices Agency. In this sense, the only authorized institution should be Ministry of Health.

Keywords: Herbal medicine; prevalence; attitude; behavior; complementary alternative therapy; phytotherapy; public health

ÖZET Amaç: Bu çalışmada, Türkiye'nin güneyinde yaşayan 18 yaş ve üzeri kişilerde bitkisel ilaç (HM) kullanım sıklığı, HM kullanımı üzerinde etkili olan faktörlerin tespit edilmesi ve HM kullanımı ile ilgili bilgilerin nereden temin edildiği araştırılmıştır. **Gereç ve Yöntemler:** Çalışma, Türkiye'nin Doğu Akdeniz Bölgesi'nde gerçekleştirilmiştir. Tüm veriler araştırmacılar tarafından geliştirilen bir anket ile 01/Şubat/2016 ve 2015/Şubat/2017 tarihleri arasında toplanmıştır. **Bulgular:** 956 kişinin katıldığı çalışmada HM kullanım sıklığı %53.73 olarak belirlendi. HM kullanımı ile cinsiyet, medeni durum, doğum yeri, eğitim, aile geliri ve çalışma durumu arasında anlamlı ilişki saptandı ($p<0.01$). HM kullanımı ile yaş, sağlık durumu ve sağlık sigortası arasındaki ilişki anlamsız bulunmuştur ($p>0,05$). Katılımcılar en çok ıhlamur (*Tilia sp.*) tüketmektedir (%13,2). Katılımcıların %9,20'si HM kullanımının kötü etkisi ile karşılaştıklarını bildirmiştir. **Sonuç:** Tüm dünyada olduğu gibi Türkiye'de HM kullanımının yaygın olduğu tespit edilmiştir. HM tüketimindeki bu artan talebi daha kontrollü ve güvenli bir şekilde karşılamak için HM kullanımı ulusal sağlık sistemi içerisine dahil edilmelidir. Bitkisel ilaçların ruhsatlandırılması ve satışının denetimi Sağlık Bakanlığı Türkiye İlaç ve Tıbbi Cihaz Kurumu tarafından yayınlanan yönetmeliklere göre yapılmalıdır. Bu anlamda tek yetkili kurum Sağlık Bakanlığı olmalıdır.

Anahtar Kelimeler: Bitkisel tıp; prevalans; tutum; davranış; tamamlayıcı alternatif tedavi; fitoterapi; halk sağlığı

The Beijing Declaration calls for cooperation between modern and traditional HM and highlights the importance of conducting research to support traditional HM in providing appropriate, safe and effective treatments.¹⁻³ HM is defined by the WHO as herbs, herbal materials, herbal preparations and finished herbal products which contain parts of plants, or other plant materials, as active ingredients.^{2,3} HMs have

been, and continue to be, used in every country around the world. In much of the developing world, WHO estimate that up to 70-95% of the population rely on these traditional medicines for primary care. The global market for traditional medicines was estimated at US\$ 83 billion annually in 2008, with a rate of increase that has been exponential. In 2009, sales of herbal medicines and dietary supplements in Europe

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were reported as approximately 7 billion Euros.³ Between 70% and 95% of citizens in a majority of developing countries, especially those in Asia, Africa, Latin America and the Middle East, use traditional medicine, including traditional and herbal medicines, for the management of health and as primary health care to address their health-care needs and concerns.⁴ Herbal products that have been used in traditional medicine since ancient times in civilizations such as India and China still use 65% of the society regularly.⁵ It is mentioned in the studies conducted during recent years that rates of traditional medicines, including HM use are quite high in our country, too.⁵⁻⁸ Turkey has a very important geographic location. It is a bridge between Asia and Europe. Because of its geographical location, Turkey has a very rich medicinal plant flora. To date approximately 10,500 plant species have been identified within her borders and 30% of these are endemic.⁹ There were about 20,000 herbal plants used for medical purposes, and 600 of these have been known to be grown in Turkey.¹⁰ The Eastern Mediterranean Region where the study was done is the richest region of Turkey in terms of the diversity of medicinal plant flora. In the literature, there are very limited studies on the use of HMs in Turkey. In recent years, studies were conducted on HM use.^{9,11,12} There was no study about the prevalence of medicinal plant use in the Eastern Mediterranean Region of Turkey.

In this study, it has been tried to determine the attitudes and behaviors of the Turkish people, who are a community dependent on their traditions, on herbal medicine use. In this sense, the frequency of HM usage of people over the age of 18 who live in the Mediterranean region, which has a rich flora, was tried to be determined. It has been tried to determine whether demographic factors such as gender, marital status, birth place, education level, income and employment status have an effect on herbal medicine use. The reasons for using HM and how they got information about HM were investigated.

MATERIAL AND METHODS

The study was conducted in Hatay, Adana and Mersin provinces located at the Eastern Mediterranean Region of Turkey. This region starting with Amanos Mountains and continuing with Toros Mountain Chain

is a region quite rich in medical and aromatic flora. According to the report published in 2012 by West Mediterranean Development Agency (WMDA), 75% of plant species found in European continent is also found in Turkey. Around one of third of these plant species (2282 species) are endemic species. Approximately 37.77% (862 species) of these endemic plant species are found in the Mediterranean Region where this study was conducted.¹³

In this cross-sectional, society-based study, all data were gathered between the dates 01/Feb/2016 and 15/Feb/2017 through a survey developed by the researchers. The survey consists of 22 questions in two separate sections. While the first part includes the 7 questions concerning socio-demographic characteristics such as gender, age, marital status, place of birth, education, family income, working status, the second part includes the 15 questions concerning the HM usage characteristics such as reason for choosing a HM, common reasons for HM use, adverse effect frequency, source of HM etc., The use of HM was identified by a single question on whether the participant was using any HM in the last year. The survey study was submitted for the approval of Ahi Evran University Ethics Board and necessary authorizations have been obtained (Protocol number: 2016-01/02). This study was carried out in accordance with the Helsinki Declaration 2008 principles. Surveys have been conducted by 1 associate professor, 1 assistant professor, 2 nurses and 1 research assistants who were trained in preparation and application of questionnaires. The surveys were conducted face-to-face with randomly selected people aged 18 years and older in three different city centers. Participation in the survey was voluntary.

The data were analyzed using the Statistical Package for Social Sciences version 21.0 software for Windows. Frequency and percentage value were used to describe categorical data. Kolmogorov-Smirnov test was performed to evaluate normality distribution. Chi-squared tests and binary logistic regression were used to compute odds ratios (ORs) of association of socio-demographic characteristics with HM use, and to assess the factors predictive of HM use. Users and non-users of HM were compared according to age using the independent t test. Probability level (p) less

than 0.05 were considered to indicate statistical significance.

RESULTS

In this study, 956 people were surveyed and 869 interviews out of these were used. 87 surveys were not included in the study because participants left many questions blank (response rate 90.89%). The mean duration of interviews with HM users was found to be

16.2 minutes and the duration of interviews with non-users was found to be 5.4 minutes. According to independent t test results, there was no statistically significant difference between the age average of HM users (42.0±10.7) and the age average of non-users (38.07±13.93) (p=0.420).

Logistic regression was used to investigate if any socio-demographic factors were associated with the decision to use HM, with the results shown in Table 1.

TABLE 1: Socio-demographic characteristics of respondents.

| Variables | Respondents N (%) | HM users (%) | X ² value; Significance | OR (95%CI); Significance |
|--|----------------------|--------------|------------------------------------|--------------------------|
| Gender | | | 5.242; 0.022 | |
| Female | 460 (52.93) | 264 (57.39) | | 1.37 (1.05-1.79); 0.022 |
| Male | 409 (47.07) | 203 (49.63) | | Reference |
| Marital Status | | | 7.633; 0.006 | |
| Married | 420 (48.33) | 246 (58.57) | | 1.46 (1.12-1.91); 0.006 |
| Not Married | 449 (51.67) | 221 (49.22) | | Reference |
| Place of Birth | | | 16.547 ; 0.000 | |
| Rural | 342 (39.36) | 213 (62.28) | | 1.78 (1.35-2.34); 0.000 |
| Urban | 527 (60.64) | 254 (48.19) | | Reference |
| Education | | | 33.926; 0.00 | |
| Higher education (University, M.Sc, Ph.D.) | 262 (30.14) | 173 (66.03) | | 2.82 (1.42-5.60); 0.003 |
| High school | 241 (27.73) | 128 (53.11) | | 1.70 (0.86-3.34); 0.127 |
| Middle school | 109 (12.54) | 61 (55.96) | | 1.91 (0.91-3.98); 0.086 |
| Primary | 217 (24.97) | 89 (41.01) | | 1.04 (0.52-2.07); 0.905 |
| No | 40 (4.60) | 16 (40.00) | | Reference |
| Family income (\$) | | | 23.748; 0.000 | |
| Less than 600 | 398 (45.80) | 183 (45.98) | | 1.32 (0.56-3.13); 0.523 |
| 600-900 | 313 (36.01) | 186 (59.42) | | 2.28 (0.96-5.42); 0.063 |
| 900-1100 | 135 (15.54) | 89 (65.92) | | 3.01 (1.21-7.48); 0.018 |
| More than 1100 | 23 (2.65) | 9 (39.13) | | Reference |
| Working status | | | 35.087; 0.000 | |
| Housewife | 210 (24.17) | 119 (56.67) | | 2.91 (1.27-6.68); 0.012 |
| Government | 153 (17.61) | 99 (64.71) | | 4.07 (1.74-9.56); 0.001 |
| Employee | 79 (9.10) | 28 (35.44) | | 1.22 (0.49-3.04); 0.669 |
| Self-employment | 77 (8.87) | 45 (58.44) | | 3.12 (1.26-7.45); 0.014 |
| Retired | 170 (19.57) | 102 (60.00) | | 3.33 (1.43-7.76); 0.005 |
| Student | 151 (17.38) | 65 (43.04) | | 1.68 (0.72-3.93); 0.232 |
| Unemployment | 29 (3.34) | 9 (31.03) | | Reference |
| Self-reported health status | | | 2.466; 0.651 | |
| Excellent | 269 (30.96) | 146 (54.28) | | 1.42 (0.86-2.35); 0.174 |
| Very good | 224 (25.77) | 121 (54.01) | | 1.40 (0.84-2.35); 0.197 |
| Good | 194 (22.32) | 108 (55.68) | | 1.50 (0.89-2.54); 0.131 |
| Fair | 103 (11.85) | 56 (54.36) | | 1.42 (0.79-2.56); 0.240 |
| Poor | 79 (9.10) | 36 (45.57) | | Reference |
| Health insurance | | | 0.964; 0.326 | |
| Yes | 777 (89.41) | 422 (54.31) | | 1.24 (0.81-1.91); 0.326 |
| No | 92 (10.59) | 45 (48.91) | | Reference |

There were significant relationship between gender and HM use. Females showed a significantly higher prevalence of HM use than that of males (OR: 1.37; 95% CI: 1.05-1.79; p=0.022). A significant relationship has been determined between the marital status and HM use. Participants who were married (58.57%) have more tendency to use HM than those who were not married (49.22%) (OR: 1.46; 95% CI: 1.12-1.91; p=0.006). There was a significant relationship between participants' birthplace and HM use. According to these results, the rate of HM use in those of rural origin (62.28%) was higher than that of urban origin (48.19%) (OR: 1.78; 95% CI: 1.35-2.34; p=0.000). A statistically significant relationship was found between education level and the use of HM. A group of higher education was more likely to use HM than a non-educational group (OR: 2.82; 95% CI: 1.42-5.60; p=0.003). There was a statistically significant association between family income and HM use. Groups of 900-1100 \$ and 600-900\$ were more likely to use HM than 1100+ family income group (OR: 3.01; 95% CI: 1.21-7.48; p=0.018, OR: 2.28; 95% CI: 0.96-5.42; p=0.063, respectively). There was a significant relationship between participants' working status and HM use. Housewives (OR: 2.91; 95% CI: 1.27-6.68; p=0.012), government (OR: 4.07; 95% CI: 1.74-9.56; p=0.001), self-employment (OR: 3.12; 95% CI: 1.26-7.45; p=0.014) retired (OR: 3.33; 95% CI: 1.43-7.76; p=0.005) were more likely to use HM than unemployed.

The relationship between how participants felt themselves and the use of HM was statistically insignificant. Similarly, there was no association between the presence or absence of health insurance for participants and the use of HM.

467 (53.73%) participants have stated that they used HM at least once in the last year. The HM preferences of HM users are given in Table 2. The participants were observed to have preferred mostly *Tilia sp.* (13.2%), *Mentha piperita L.* (12.3%), *Zingiber officinale* (10.6%), and *Camellia sinensis* (9.6%).

HM users were asked to choose the three most important reasons for using herbal products. Reasons to prefer HM use of the participants who use HM have been summarized in Table 3. There was a significant association between the use of HM and rea-

TABLE 2: Prevalence of use of medicinal herbs.

| Herbs | Scientific name | % |
|-----------------|-----------------------------------|------|
| Linden tea | <i>Tilia sp.</i> | 13.2 |
| Peppermint | <i>Mentha piperita L.</i> | 12.3 |
| Ginger | <i>Zingiber officinale</i> | 10.6 |
| Green tea | <i>Camellia sinensis</i> | 9.6 |
| Sage | <i>Salvia tribola</i> | 8.4 |
| Rosemary | <i>Rosmarinus officinalis</i> | 6.7 |
| Garlic | <i>Allium sativum</i> | 6.4 |
| Thyme | <i>Thymus serpyllum L.</i> | 5.3 |
| Melisa | <i>Melissa officinalis L.</i> | 4.3 |
| Aniseed | <i>Pimpinella anisum</i> | 4.1 |
| Echinacea | <i>Echinacea sp.</i> | 3.2 |
| Fennel | <i>Foeniculum vulgare</i> | 2.8 |
| Black seed | <i>Nigella sativa L.</i> | 2.3 |
| Nettle | <i>Urtica sp.</i> | 2.0 |
| Goldenberry | <i>Physalis peruviana</i> | 1.8 |
| Parsley | <i>Petroselinum crispum</i> | 1.4 |
| Daphne | <i>Lauris Nobilis</i> | 1.0 |
| Clove | <i>Caryophyllus aromaticus L.</i> | 1.0 |
| Chamomile | <i>Matricaria chamomilla L.</i> | 0.9 |
| Senna | <i>Cassia acutifolia</i> | 0.6 |
| Aloe vera | <i>Aloe barbadensis</i> | 0.5 |
| Pollen | <i>Bee pollen</i> | 0.5 |
| Cinnamon | <i>Cinnamomum zeylanicum</i> | 0.4 |
| St John's Worth | <i>Hypericum perforatum</i> | 0.3 |
| Gingko | <i>Gingko biloba</i> | 0.3 |
| Ginseng | <i>Panax ginseng</i> | 0.3 |

TABLE 3: Reason for choosing a herbal medicine.

| Reasons | % |
|-------------------------------|------|
| Natural | 31.2 |
| Easily accessibility | 23.4 |
| Totally safe | 19.6 |
| Satisfaction of acquaintances | 10.2 |
| Low cost | 7.3 |
| My traditional beliefs | 4.6 |
| Other | 3.7 |

son for choosing a HM. HM users reported that they mostly preferred these products because they found these natural (31.2%), and because of the easy accessibility (23.4%).

The difference between the common reasons for HM use is statistically significant. When participants were asked why they use HM, they noted that the

most important reason for using HM was to strengthen the immune system (27.3%). Another important reason was cold and flu (21.4%). The statistics of other reasons HM usage cases have been given in Table 4.

Of HM users, 9.20% have stated that they encountered with adverse effects of using HM. The difference between the prevalence of adverse effects is statistically significant. The most common adverse effect was stated abdominal pain (39.53%). The frequency of occurrence of other adverse effects is given in Figure 1.

HM users stated that they did not talk to their physicians about HM use (94.44%). They pointed out that they were refraining from the physician's reaction (71.52%) as the reason for not talking about the use of HM with their physicians.¹⁵ In their study, 41.6% of the participants reported that they did not recognize the use of herbal medicine to their doctor. Research has revealed that complementary and alternative treatment methods directly interact with medical treatment. It has been determined that 70% of patients hide from healthcare personnel that they are using herbal medicine or health support products. Hiding patients from using this type of medication can prevent the physician from making the correct diagnosis.¹⁴

Participants were informed about the information about HM by herbalists 41.19%, followed by internet (29.83%), TV (17.61%), pharmacists (7.95%), written sources (magazines, books and newspapers) (1.99%) and family physicians (0.28%). By the contrast with this, participants reported that they mostly acted with the advice of family members (63.38%) on HM use. The difference between HM users' preferences for providing HM is statistically significant. Participants purchase products mostly from herbalists (63.38%) and then the pharmacies (16.92%) (Figure 2).

All of HM users (100%) reported that they had reviewed the label on purchase of the product. 71.09% of HM users reported that they considered when purchasing a product; whether the product has international quality certificates. 94.64% of HM users stated that they have definitely examined the expiry date on the product.

TABLE 4: Common Reasons for herbal medicine use.

| Reasons | % |
|----------------------------------|------|
| Immune system and General Health | 27.3 |
| Cold, Flu | 21.4 |
| Gastric and bowel problems | 10.6 |
| Sleep disorders | 8.6 |
| Relaxation or Stress release | 8.1 |
| Slimming | 8.0 |
| Analgesic | 5.3 |
| Skin problems | 5.2 |
| Diabetes | 2.1 |
| Cholesterol | 1.2 |
| Kidney disease | 0.6 |
| Menopause | 0.4 |
| Heart disorders | 0.4 |
| High blood pressure | 0.4 |
| Cancer | 0.2 |
| Allergy | 0.2 |

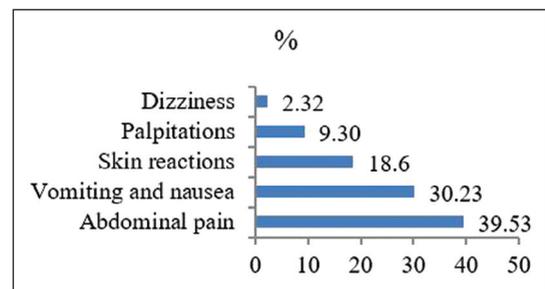


FIGURE 1: Prevalence of adverse effects.

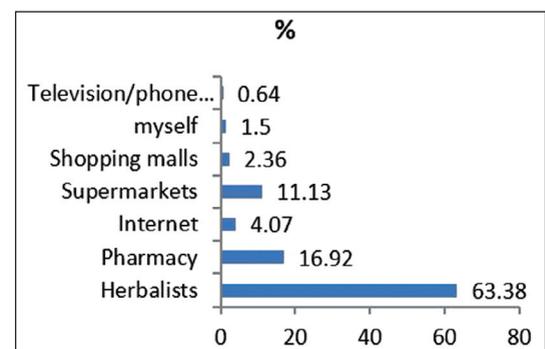


FIGURE 2: Source of herbal medicine.

DISCUSSION

In Turkey, very little is known about the prevalence of HM use in general population. The rate of HM use was found to be 53.73% in this study, which was con-

ducted with participants aged 18 years and older in the Eastern Mediterranean region, which is the richest region of Turkey in terms of the diversity of medicinal plant flora. Similar to previous studies, it was found that a high utilization of HM among Turkish adult has determined the rate of HM use in Turkey as 55.7%, (10) as 48.8%, (8) as 55.4%.¹² According to these results, one of the two people in Turkey is using HM. In Canada three in four people use natural health products.¹⁴ It is also stated in the WHO report that the use of HM is constantly increasing.^{3,15} As a result of such a high demand to HM use, it is necessary to take serious precautions regarding the use of HM in accordance with the decisions taken by the WHO.

There is not much information in Turkey about the factors that affect the use of HM and preferences on HM use. The results of this study show that gender, marital status, place of birth, education level, family income, and working status have an impact of HM use. The study showed that women are 1.37 times more inclined than men towards HM use. These results are similar to the studies in literature.^{12,16,21,22} Women's possession of a more emotional and protective structure than man may have increased their desire to use HM. It was notified that the demand toward HM use increases as the educational level increases.⁷ Similarly, our study shows that the higher education group is 2.82 times more inclined than the uneducated group towards HM use. It is believed that people attach more importance for their health as educational level increases and prefer HM's as they found these natural and harmless. The study also showed that rural areas are 1.78 times more inclined than the urban-born towards HM use. This may result from the fact that those born in the rural areas are more accustomed to natural living and more intertwined with the nature. Again, the fact that the people in the rural areas try to heal with traditional methods when they get ill, explains the increased demand by people born in rural areas towards HM use. The literature has no studies that show the relation between socio-demographic features and HM use in Turkey's generality and the east Mediterranean Region, where the study was conducted. We hope that our findings will represent a source of information for future studies.

Another important result of this study is that the (non) possession of health insurance by the participants has no meaningful effect on HM use. The fact that health insurances do not pay HM fees may be a reason for this. Considering that HM use is getting wider, a legal arrangement is needed on this issue.

We have found out with the study that the most common reasons for using HM were strengthening the immune system, maintaining general health conditions, cold, flu, gastric and bowel problems sleep disorders.¹⁸ HM was reported to have been used in the United States mostly for head or chest cold, musculoskeletal conditions, stomach or intestinal illness, anxiety/depression. In a study conducted in the United Kingdom, HM was found to have been used more for general health care and disease prevention.²⁴ It was reported that 51% of participants felt herbs were safe (51%) with less side effects (55%) than pharmaceutical medicines. 9.20% of HM users reported that they have experienced adverse effects of HM. This rate has been found out 11.0% and 2.1%.^{5,7} The use of HM has risks for human health due to the inability determining dosages. Significant adverse effects can be encountered, especially with the wide range of chemicals that plants contain, or with interactions with food. Serious arrangements should be made about the sale of these products when these significant adverse effects and the demand for the use of HM in the world are taken into account.

Another important finding is the physician-patient relationship in this study. It was found that HM users do not give information to their physicians about the HM they used (94.44%). Participants were also found to have withdrawn from the response (71.52%) to be given by their physicians as a reason for not talking to their physicians about the use of HM. These results are similar with the studies in literature Illamola et al. (2020), Dagli et al. (2016), WHO (2007) and Parthik et al. (2011) which that 70% of physicians do not have enough information about alternative medical methods.^{2,11,20,21} Damery et al. (2011) found that 96.5% of general practitioners in Turkey did not receive training on alternative medical methods.²² reported that 95% of physicians informed that the HM use may have risks.²³ The lack

of information on alternative medical methods such as HM in physicians' education can cause physicians not to talk about using HM with their patients. Patients should be encouraged to talk with their physicians about the HM they are using. It will be of considerable benefit in giving information about the use of HM in physicians training.¹⁹

Herbal products are generally not registered and their sales are not controlled in many countries around the world. According to WHO, medicinal herbs are sold in many countries in an informal and uncontrolled manner, and regulations on HM market are inadequate. Internet/media sales and product advertisements are difficult to control, and they can reach many people within a short period. In particular, product sales made through the internet and television are being realized in highly uncontrolled form.^{7,24} According to the results of this study, HM users mostly provide their products from herbalists (63.38%) and pharmacies (16.92%). Iliamola et al. (2020), Uzun et al. (2014) and WHO (2007) have found the same results with us.^{2,7,20} Shakeel et al. (2008) reported that HM users preferred the supermarket or health food suppliers (45.9%) and second most preferred pharmacies (28.9%) in Australia.²⁵ Özçelik and Toprak (2015) reported that HM users preferred the market and herbalist (51.3%).¹⁷ It has been found that opinions of HM users about the herbal remedies to be influenced by the media organs such as TV and internet, but take into account the advice of family members about HM use (63.38%). These results are higher than those found by and similar to the results found out by.^{5,7,24,26-28} Information regarding the use of medicinal plants was predominantly based on books (57%), the internet (53%), friends, colleagues or neighbors (51%) and health practitioners (42%). As HM users take these products mostly from herbalist's measures firstly must be taken regarding quality standards sold by the herbalists, persons to sell HM must be obliged to have certain training on HM. Also, since HM users mostly take advices of family members into consideration, training projects related to HM use must be organized for training of families in national extent.¹⁵ The sale and licensing of herbal medicines should only be done by the Ministry of Health, Turkey Phar-

maceuticals and Medical Devices Agency. The detection of patients who are sick from herbal medication use and the criminal proceedings about those who sell this drug should be carried out by the Ministry of Health.

This survey study had two limitations. First, it was sometimes difficult to remember the answers to questions about the use of HM in the survey. Especially elderly participants had difficulty to remember some answers. Second, some people did not want to answer because of the thought of their answers being seen by someone else. Therefore, at the beginning of the survey, participants were informed about the purpose of the survey, where and how the results will be used, and the answers will be kept confidential. Besides, the name, surname, and contact information of the people who participated in the survey were not taken.

CONCLUSION

This study represents the first study for identifying the prevalence of HM use in Turkey's Eastern Mediterranean Region and the factors that affect HM use. The study concluded that just like in the entire globe, HM use is quite common in adults being 18 and older of age in Turkey. The reports and guides recently published by the WHO showed that the most important demand by the WHO is that its members introduce a controlling process over HM's from their production until their marketing. Necessary legal arrangements should be made so that people can obtain healthier and reliable HM's. As concluded by the study, it was seen that HM's that are forbidden for sales in some countries could be reached and consumed by people in Turkey. For this reason, authorities in Turkey should make serious legal arrangements on HM use. In this sense, it is a positive development that a department of traditional, complementary and functional type practices has been established within the Ministry of Health recently. It is extremely important for this department to take a more active role. Similarly, the inspections of Ministry of Health, Turkey Pharmaceuticals and Medical Devices Agency regarding the registration and promotion of herbal medicines are vital. Considering that people mostly

trust recommendations from family persons in terms of HM use, training programs at national level should be conducted for educating families. Sufficient amount of information should be added to the educational curriculum of physicians and pharmacists. The physicians or pharmacists who will recommend these products should gain competence regarding herbal products and should be able to direct their patients for the correct supply of these products. It should be said that the information they have disclosed to their doctors about the HMs they use is vital by organizing information meetings and trainings. Brochures and banners that increase the conscious level of people on HM use should be distributed in hospitals and pharmacies.

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

This study is entirely author's own work and no other author contribution.

REFERENCES

- Picking D, Younger N, Mitchell S, Delgoda R. The prevalence of herbal medicine home use and concomitant use with pharmaceutical medicines in Jamaica. *J Ethnopharmacol.* 2011;137(1):305-11. [PubMed]
- Illamola SM, Amaeze OU, Krepkova LV, Birnbaum AK, Karanam A, Job KM, et al. Use of herbal medicine by pregnant women : what physicians need to know. *Front Pharmacol.* 2020;10:1483. [Crossref] [PubMed] [PMC]
- Laelago T, Yohannes T, Lemango F. Prevalence of herbal medicine use and associated factors among pregnant women attending antenatal care at public health facilities in Hossana Town , Southern Ethiopia: facility based cross sectional study. *Arch Public Heal.* 2016;74:7. [Crossref] [PubMed] [PMC]
- Ali BAM, Mahfouz MS. Herbal medicine use among patients with type 2 diabetes in North Sudan. *Annu Res Rev Biol.* 2014;4(11):1827-38. [Crossref]
- Şahan D, İlhan MN. [Traditional and complementary medicine practices and evaluation in public health]. *Gazi Heal Sci J.* 2019;4(3):12-9.
- Robinson MM, Zhang X. *The World Medicines Situation 2011-Traditional Medicines: Global Situation, Issues and Challenges.* 3rd ed. Geneva: WHO; 2011. p. 12.
- Uzun MB, Aykaç G, Özçelikay G. [Improper use and harms of herbal products]. *Lokman Hekim J.* 2014;4(3):1-5.
- Aydın S, Bozkaya AO, Mazıcıoğlu M, Gemalmaz A, Özçakır A, Öztürk A. What influences herbal medicine use ? - Prevalence and related factors. *Turk J Med Sci.* 2008;38(5):455-63.
- Tokem Y, Aytemur ZA, Yıldırım Y, Fadiloglu C. Investigation into the use of complementary and alternative medicine and affecting factors in Turkish asthmatic patients. *J Clin Nurs.* 2012;21(5-6):698-707. [Crossref] [PubMed]
- Soner BC, Sahin AS, Sahin TK. A survey of Turkish hospital patients' use of herbal medicine. *Eur J Integr Med.* 2013;5(6):547-52. [Crossref]
- Dagli R, Kocaoglu N, Bayir H, Hakki M, Doylan MR. Evaluation of medical drug and herbal product use before anesthesia. *Int J Clin Exp Med.* 2016;9(2):4670-4.
- Polat R, Cakicioglu U, Satil F. Traditional uses of medicinal plants in Solhan (Bingöl-Turkey). *J Ethnopharmacol.* 2013;148(3):951-63. [Crossref] [PubMed]
- Korkmaz M, Karakuş S. Traditional uses of medicinal plants of Üzümlü district, Erzincan, Turkey. *Pak J Bot.* 2015;47(1):125-34.
- Sucaklı MH, Ölmez S, Keten HS, Yenicesu C, Sari N, Çelik M. [Evaluation of the usage of herbal products among university students]. *Med Sci.* 2014;3(3):1352-60. [Crossref]
- Yilmazel G, Naçar M. Herbal products : utilization , knowledge and attitudes of Turkish adults. *Int J Basic Clin Pharmacol.* 2016;5(6):2426-31. [Crossref]
- Batı Akdeniz Kalkınma Ajansı. Tıbbi ve aromatik bitkiler sektör raporu 2012. (Accessed date: 20.1.2019) [Link]
- Özçelik G, Toprak D. [Why is phytotherapy preferred?]. *Ankara Med J.* 2015;15(2):48-58. [Crossref]
- Doğan Ö, Avcı A. [Herbs and drug interactions]. *Türkiye Klinikleri J Public Health-Special Topics.* 2018;4(1):49-54.
- Upton R. Traditional Chinese medicine and the dietary supplement health and educational act. *J Altern Complement Med.* 1999;5(2):115-8. [Crossref] [PubMed]
- WHO. WHO guidelines for assessing quality of herbal medicines with reference to contaminants and residues. 2007. p.105. [Link]
- Parthik P, Patel NM, Patel PM. WHO guidelines on quality control of herbal medicines. *IJRAP.* 2011;2(4):1148-54.
- Damery S, Gratus C, Grieve R, Warmington S, Jones J, Routledge P, et al. The use of herbal medicines by people with cancer: a cross-sectional survey. *Br J Cancer.* 2011;104(6):927-33. [Crossref] [PubMed] [PMC]
- Yeşil M. [Determination of medical plant use habits in Giresun province]. *Turk J Agric-Food Sci Technol.* 2020;8(3):547-59. [Crossref]
- Kaner G, Karaalp C, Seremet-Kürklü N. [Determining the frequency use of herbal products and factors affecting the use herbal products among university students and their families]. *Turk Hij Den Biyol Derg.* 2017;74(1):37-54. [Crossref]
- Shakeel M, Newton JR, Bruce J, Ah-See KW. Use of complementary and alternative medicine by patients attending a head and neck oncology clinic. *J Laryngol Otol.* 2008;122(12):1360-4. [Crossref] [PubMed]
- Zahn R, Perry N, Perry E, Mukaetova-Ladinska E. Use of herbal medicines: pilot survey of UK users' views. *Complement Ther Med.* 2019;44:83-90. [Crossref] [PubMed]
- Küçükçüçlü Ö, Kızılci S, Mert H, Uğur Ö, Büyükkaya Besen D, Ünsal E. Complementary and alternative medicine use among people with diabetes in Turkey. *West J Nurs Res.* 2012;34(7):902-16. [Crossref] [PubMed]
- Giveon SM, Liberman N, Klang S, Kahan E. Survey of primary care physicians' perceptions of their patients' use of complementary medicine. *Complement Ther Med.* 2003;11(4):254-60. [Crossref] [PubMed]