

Self-medication practices with conventional and herbal drugs among ear, nose, and throat patients

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SUMMARY

OBJECTIVE: This study evaluates the self-practices with conventional and herbal drug use among ear, nose, and throat outpatients.

METHODS: A cross-sectional survey-based study was carried out among all ear, nose, and throat outpatients on their first visit to the otorhinolaryngology department at a tertiary care hospital. The survey comprised a total of 14 questions with 4 different sections, including demographic characteristics, self-medication of conventional medicines, herbal medication usage, and perception regarding herbal medicines.

RESULTS: Overall, 255 questionnaires were distributed among patients, of which 183 completed the questionnaire (response rate=71.7%). Respondents reported self-medication (44.8%) with conventional drugs before visiting a hospital. The most commonly used medicine was analgesics (31.7%) and antibiotics (21.9%). Nearly half of the patients (49.2%) used at least one herbal drug. The most commonly used herbal medications were *Tilia cordata* (78.8%), *Zingiber officinale* (62.2%), and *Camellia sinensis* (45.5%). According to the International Union for Conservation of Nature Red List, most of the medicinal herbs were considered as data deficient/least concern. About 36.6% of the participants perceived that herbal drugs are effective for ear, nose, and throat problems. Moreover, 22.9% of the patients did not know about herbal-drug interaction with other medications.

CONCLUSIONS: This study observed a considerable prevalence of self-based practices with conventional and herbal medications. Strict national regulations on conventional and herbal medication access and long-term actions should be implemented to discourage inappropriate drug use.

KEYWORDS: Self medication. Herbal medicine. Antibiotics. Analgesics. Otolaryngology. Turkey.

INTRODUCTION

Self-medication (SM) is a major public health issue around the world¹. It is a frequent practice in both developing and developed countries². Several studies have shown that inappropriate SM leads to wastages of health resources, raises pathogen resistance, and poses major health risks such as adverse drug reactions (ADRs), extended suffering, and dependency^{1,2}. It is reported that a higher number of medications in developed countries were obtained without a prescription². The use of herbal and nonherbal medication practices to meet healthcare needs was also prevalent in developing countries³. Moreover, it is also reported that more than 70% of people in developing countries utilize herbs for various illnesses⁴.

It is estimated that more than 75 and 50% of the populations in developing and developed countries, respectively, use natural plant products to treat lifestyle-related illnesses⁵. It is the widespread belief that plant-based products are risk free and can be consumed without restriction. It should be noted that plant derivatives, like any other medication, have adverse and toxic side effects⁶. They might contain toxins or other contaminants

that increase the chance of adverse effects. More research is needed to clarify and determine the clinical significance of herb-drug interactions. It is critical for health professionals, patients, regulatory authorities, and herbal medicine suppliers to be aware of the potential ADRs and drug interactions that can occur when herbal medicines are used either alone or in combination with conventional drugs⁷. Additionally, many of them have unknown long-term effects, necessitating appropriate use, education, and research⁶. Therefore, it is important to conduct rigorous scientific procedures and clinical trials to guarantee the consistency and quality of herbal products^{5,7}.

Ear, nose, and throat (ENT) diseases cause major disruption in patients' daily lives¹. The prevalence of ENT diseases varies by geography and patient age⁸. Self-practices with conventional and herbal drugs are common in ENT patients. Recent studies reported that the ENT patients' self-practice with conventional medication ranged from 79.1–83%^{8,9}. It is also reported that the rate of herbal drug utilization among ENT patients ranges from 2–63% in different nations⁴. Individuals may suffer serious consequences as a result of SM practices without consulting a medical expert^{1,2,8}.

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The self-practices of over-the-counter (OTC) drugs and nonpharmaceutical products (e.g., vitamins, herbal products, and dietary supplements) are frequently used by the Turkish population¹⁰. These medications are available without a prescription, and people perceived that they are safe and effective. However, these medications can have adverse effects like prescription drugs and be misused or abused because of their active ingredient^{10,11}. Herbal and conventional medicine's concomitant use can also cause dangerous herb-drug interactions¹².

In Turkey, ENT illnesses impact people of all ages and are an important public health issue¹³⁻¹⁵. However, literature searches revealed that previously no research examined the self-practices with conventional and herbal drug use among ENT patients in our study healthcare setting as well as in Turkey. Periodic studies are critical for assessing the usage of self-based medication practices in ENT patients and to give current insight to healthcare policy makers. Therefore, this study was carried out to assess the self-practices with conventional and herbal drug use among ENT patients at a tertiary care hospital in Turkey.

METHODS

A cross-sectional questionnaire-based survey was carried out among all ENT outpatients on their first visit to the otorhinolaryngology department at the tertiary care hospital in Adana, Turkey, in November 2017. This study was approved by the university's Ethical Review Committee, and the research was carried out in accordance with the Helsinki Declaration (meeting no: 69; date: October 6, 2017; Supplementary file 1).

Patients aged 17 years or older who attended an ENT department were included in the study, while respondents under the age of 17 and not willing to participate were excluded during the study period. This study used a convenience sampling technique. As per hospital data, an average of 750 patients visited the ENT department within 1 month. According to the Raosoft sample size calculator, the minimum calculated sample size was 255. The response distribution was assumed to be 50%, the margin of error was set at 5%, and the confidence level for the sample estimate was set at 95% (http://www.raosoft.com/sample_size.html).

A self-reported questionnaire was developed for this study based on a review of prior literature^{1,4,8,12}. Three researchers reviewed the questionnaire instrument before the execution of the study to determine the appropriateness and validity (internal and external), along with the confirming adequacy of the questions. Data collection was conducted on a daily basis via a face-to-face approach. Informed consent was obtained from all participants.

The final 14-item questionnaire was divided into four sections:

1. demographic,

2. SM of conventional medicines,

3. herbal medication usage, and

4. perception regarding herbal medicines.

Demographic characteristics included age, gender, and education level. SM of conventional medicines included four questions regarding self-practices of conventional medication for ENT problems before visiting a hospital, types of medications, source of information, and their action regarding extra medications after the completion of treatment. The third section comprised four items regarding herbal medication use, types of herbal drugs, purpose of use, and source of information. The last section contained three questions related to the patient's perception of herbal medicines. We also classify the herbal drugs according to the International Union for Conservation of Nature (IUCN) Red List (<https://www.iucnredlist.org/>).

The final data were collected and transferred to Microsoft Excel 365 (version 2108, Microsoft Corp., USA), and the findings were recorded in number and percentage form. The final results are presented in tabulated form.

RESULTS

Of the 255 questionnaires distributed among the patients who visited the ENT department during the study period, 183 completed the questionnaire, and the response rate was 71.7%. The reason given for not completing the questionnaire was lack of time in the clinic (n=69), while 13 questionnaires were excluded owing to incomplete data. Finally, this study included 183 patients with a mean age of 34.96 (SD ±15.81) years (Table 1). Notably, 82 (44.8%) patients reported SM before visiting a hospital. The most commonly used medicine was analgesics (31.7%) and antibiotics (21.9%). The participants also reported the combined use of different medication classes. Further details are listed in Table 1. Nearly half of the patients (49.2%, n=90) used at least one herbal drug. Most of the participants indicated the usage of more than one herbal drug. The most commonly used herbal medications were *Tilia cordata* (78.8%), *Zingiber officinale* (62.2%), and *Camellia sinensis* (45.5%). The IUCN Red List classified the majority of the therapeutic herbs in this study as data deficient/least concerning (Table 2).

Among herbal users, 52 (57.8%) patients reported the purpose of usage. The most cited purposes of herbal drug use were common cold (26.9%) and general well-being (11.5%). None of the patients reported a qualified healthcare professional as a source of information for herbal drugs in this study. Additional information is provided in Table 3.

Table 1. Demographic characteristics and self-practices with conventional drugs (n=183).

Age	Frequency (n)
Average age	34.96
Minimum age	17
Maximum age	86
Standard deviation	15.81
Gender	n (%)
Male	65 (35.5)
Female	118 (64.5)
Education	
Primary school	29 (15.8)
Middle school	18 (9.8)
High school	52 (28.4)
University or above	84 (45.9)
None	0 (0)
Self-medication before visiting a hospital for ENT diseases (n=183)	n (%)*
No	101 (55.2)
Yes	40 (21.9)
Sometimes	42 (22.9)
If yes/sometimes, which drugs (n=82)	
Analgesic	26 (31.7)
Antibiotic	18 (21.9)
Flu/cold medicine	9 (10.1)
Nasal spray	4 (4.8)
Throat spray	3 (3.6)
Ear drops	2 (2.4)
Lozenge	2 (2.4)
Inhalers	1 (1.2)
Antibiotic and analgesic	6 (7.3)
Antibiotic and cold medicine	2 (2.4)
Antibiotic and nasal spray	2 (2.4)
Antibiotic and lozenge	1 (1.2)
Antibiotic and mouth wash	1 (1.2)
Pain and fever reducer drug	2 (2.4)
Analgesic and nasal spray	1 (1.2)
Cough syrup and analgesic	1 (1.2)
Analgesic, cold medicine, and nasal spray	1 (1.2)
Total	82
Information about the medicine used during your treatment of ENT	
Pharmacist	84 (45.9)
Doctor	75 (40.9)
Neighbor/relative/friend	54 (29.5)
Internet	25 (13.6)
The prospectus of the drug	6 (3.2)
Other	3 (1.6)
What do you do with the extra medications after your treatment?	
Kept in home	87 (47.5)
Throw it in the bin	58 (31.7)
Give to the pharmacy	25 (13.6)
Give to my relatives/friends/neighbor	6 (3.3)
Give to a family doctor	4 (2.2)
Give to an emergency department in the hospital	2 (1)
My medication does not increase	1 (0.5)

*n (%): is the number and percentage indicating that more than one response was permitted. ENT: ear, nose, and throat.

DISCUSSION

Self-medication practices are widespread among otorhinolaryngological patients^{1,4,8,9}. In this study, the prevalence of SM with conventional drugs was 44.8% among ENT patients before visiting a hospital. A study conducted in Nepal among ENT outpatients revealed similar results (47.3%)¹⁶. A higher prevalence (99%) of self-practices with conventional medicine was revealed in a study conducted in Lebanon⁹. However, a lower percentage (31%) of SM practices among patients attending the ENT department was observed in Nigeria¹⁷. The variation in the reported prevalence rate in this study compared to previous studies may be due to the differences in study methodology, cultural factors, populations, study design, and sample size. A considerable proportion of the population uses self-practice with conventional medication, and this is a concerning issue and may have the potential risks of adverse effect⁴.

The most commonly used medicine was analgesic and antibiotics. Participants also reported a combined usage of different medication classes. This finding was also supported by the studies conducted in Brazil and Lebanon^{8,9}. According to a meta-analysis of analgesics, cough medicines, dermatological products, nutritional supplements, and antibiotics were the most commonly self-practiced therapeutic drugs¹⁸. It is reported that if

analgesics, cold drugs, cough syrups, and other OTC drugs are not used properly, they might harm the patient's quality of life and intensify the symptoms^{8,10,11}. According to the World Health Organization, antibiotic resistance is currently one of the most serious threats to global health, food security, and development. Antibiotic resistance can affect anyone, regardless of age or place¹⁹. Antibiotic SM is a major contributor to the current antibiotic resistance dilemma¹⁹. Proper public health education is required to enhance public awareness about the dangers of SM of antibiotics, as well as legislation restricting access to OTC drugs^{10,11}.

In this study, a substantial proportion of the patients (49.2%) stated the use of at least one herbal drug for ENT illnesses before visiting the hospital. A previously published study in Kenya also reported substantial levels of herbal drug use (37.3%) among ENT patients²⁰. A recent small-scale study conducted among patients suffering from chronic tinnitus in Turkey also reported the use of herbal medicines²¹. It is reported that the frequency of herbal medicine practices varies greatly among regions, countries, and around the world due to societal, traditional, and disease types^{4,21}.

Linden (*T. cordata*), ginger (*Z. officinale*), and green tea (*C. sinensis*) were the most frequently reported herbal medication approaches in this study. Recent review-based articles stated the effectiveness of Linden in anxiety, colds, cough, cardiovascular,

Table 2. Herbal medication use among ear, nose, and throat outpatients (n=183)

Use of herbal medicines	Frequency (n)	Percentage
No	93	(50.8)
Yes	60	(32.8)
Sometimes	30	(16.4)
If yes/sometimes, which herbal drugs (n=90)		
Herbal name (local name/scientific name)	n (%)*	IUCN Red List
Linden (Ihlamur/ <i>Tilia cordata</i>)	71 (78.8)	Least concern
Ginger (Zencefil/ <i>Zingiber officinale</i>)	56 (62.2)	Data deficient
Green tea (Yeşil çay/ <i>Camellia sinensis</i>)	41 (45.5)	Data deficient
Mint (Nane/ <i>Mentha longifolia</i>)	17 (18.8)	Least concern
Lemon (Limon/ <i>Citrus limon</i>)	17 (18.8)	Least concern
Garlic (Sarımsak/ <i>Allium sativum</i>)	14 (15.5)	Least concern
Turmeric (Zerdaçal/ <i>Curcuma longa</i>)	11 (12.2)	Data deficient
Fennel (Rezene/ <i>Foeniculum vulgare</i>)	8 (8.8)	Least concern
Nettle (Isırgan/ <i>Urtica dioica</i>)	8 (8.8)	Least concern
Grape seeds (Üzüm çekirdeği/ <i>Vitis vinifera</i>)	5 (5.5)	Least concern
Sage (Adaçayı/ <i>Salvia officinalis</i>)	2 (2.2)	Least concern
Liquorice (Meyan kökü/ <i>Glycyrrhiza glabra</i>)	2 (2.2)	Least concern
Perforate St John's-wort (Sarı kantaron/ <i>Hypericum perforatum</i>)	2 (2.2)	Least concern
Daisy (Koyungözü/ <i>Bellis perennis</i>)	1 (1.1)	Data deficient

*n (%) is the number and percentage indicating that more than one response was permitted. IUCN: The International Union for Conservation of Nature.

and sore throat²². A Turkish study also found that linden (*T. cordata*) and sage (*Salvia officinalis*) were the most often utilized herbal medications²³. Another study reported that linden was among the 10 most frequently used medicinal plants for health problems in Spain²⁴. The effectiveness and use of *Z. officinale* in allergic rhinitis and oral cavity health problems were also reported²⁵. It is reported that *C. sinensis* is a valuable natural source of antibacterial phytochemicals with multiple

Table 3. The purpose of use, source of information, and patients' perception of herbal drugs.

Purpose of use (n=52)	n (%)*
Common cold	27 (51.9)
General well-being	10 (19.2)
Relaxation	4 (7.6)
Disease prevention	2 (3.8)
Fever	2 (3.8)
Throat pain	2 (3.8)
Shortness of breath	1 (1.9)
Cough	1 (1.9)
Immunity	1 (1.9)
Headache	1 (1.9)
Weight problem	1 (1.9)
Sources of information	
Internet	114 (62.3)
Environment (neighbor/relative/friend)	57 (31.1)
Media (TV, newspaper)	30 (16.4)
Book magazine	24 (13.1)
Qualified healthcare professionals (doctor/pharmacist/nurse, etc.)	0 (0)
What do you think about herbal treatment for ENT treatment?	
Noneffective	105 (57.4)
Effective	67 (36.6)
Uncertain	11 (6)
Did you know that herbal products/drugs may interact with other medicines?	
Yes	125 (68.3)
No	42 (22.9)
Sometimes	16 (8.7)
Did you know that herbal products/drugs also have side (adverse) effects?	
Yes	121 (66.1)
No	34 (18.6)
Sometimes	28 (15.3)

*n (%) is the number and percentage indicating that more than one response was permitted. ENT: ear, nose, and throat.

applications²⁶. The effectiveness of medicinal herbs is dependent on proper use and preparation. The inappropriate use of herbal drugs may be responsible for adverse effects^{24,25}. It is also important to highlight that the IUCN Red List classifies some of the medicinal plants consumed by the ENT patients in this study as data deficient/least concern. None of the herbal medications utilized by the participant in this study included the threatened/vulnerable/endangered category. Moreover, rigorous scientific proof of the effectiveness of phytotherapy in otorhinolaryngology is still lacking, and it is critical to be aware of the interactions with conventional treatment. However, further in-depth research, national and international legislation, and strict regulation are necessary for the controlled use, safety, and efficacy evaluation of these herbal drugs^{5,7,24}.

Interestingly, in this study, the participants reported that pharmacists and doctors are the main sources of information for conventional therapy compared to neighbors/relatives/friends and the Internet. In contrast, the Internet, neighbors/relatives/friends, and media were the most cited sources for herbal medication usage. None of the patients reported a qualified healthcare professional as a source of information for herbal drugs in this study. A Turkish study revealed similar findings and indicated that media and social circles (neighbors/relatives/friends) were the primary sources of information for herbal medication²¹. Another study conducted in Spain also reported family/friends and the Internet as a frequently cited source by the participants²⁴. According to the most recent 2020 estimate, Turkey has 54 million social media users, which could explain why so many respondents in our survey acquired knowledge regarding herbal use via the Internet²⁶. Herbal products are commonly used to treat clinical illnesses and are routinely purchased online without the supervision of a healthcare provider. Due to widespread inflated claims of clinical efficacy and safety, the use of herbals is still controversial⁴. The information may be more conveniently available on Internet social media sites; however, there is a risk of misinformation and may lead to safety issues²⁷.

Similar to other studies, this study also has limitations. The present findings may not be generalizable, especially since our study was based on a convenience sample of ENT patients recruited from a single hospital in Turkey. This may have biased the findings, such as an overestimation or underestimating of total conventional and herbal drug usage. This is a cross-sectional study with the limitation of only collecting data on all variables at one point in time, so no causal relationship could be inferred. Additionally, we did not inquire in depth about the participants' demographic details, such as religion or income level, due to ethical concerns, which could have resulted in the omission of some confounding variables.

Despite these limitations, this study has some strengths. This is the first study to evaluate SM practices with conventional and herbal drugs among ENT patients in our healthcare setting. This study targeted both conventional and herbal medicines to self-medicate, and these results may serve as an excellent starting point for further investigation. This study also provides a baseline of local data regarding SM practices (conventional and herbal medicines), and the results may be beneficial for practical clinics, healthcare professionals, and policy makers.

CONCLUSIONS

This study observed a considerable prevalence of self-based practices with conventional and herbal medications in ENT

patients who attended the general otolaryngology clinic. Strict national regulations on conventional and herbal medication access and long-term actions should be implemented to discourage inappropriate drug use. A patient education program concerning the effects of SM practices is also urgently needed.

AUTHORS' CONTRIBUTIONS

OK: Conceptualization, Project administration, Writing – review & editing. **FB:** Conceptualization, Project administration, Writing – review & editing. **ZK:** Conceptualization, Project administration, Writing – review & editing. **MD:** Project administration, Writing – review & editing. **YK:** Project administration, Writing – review & editing.

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