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Evaluation of Medication and Herbal Product Usage Habits in the Geriatric Population: A Pilot Study From Trabzon Province, Türkiye

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ABSTRACT

Objective: Polypharmacy and the uncontrolled use of herbal products increase drug interactions and adverse drug reactions, leading to possible risks for the geriatric population. This study aimed to investigate the medications and herbal products used by geriatric individuals who presented to a family health center in Trabzon province, Türkiye, as well as their related habits and knowledge and information sources.

Methods: The study was conducted through face-to-face interviews with geriatric patients who presented to the Yomra Family Health Center in Trabzon between February and May 2019. The questionnaire forms obtained from a total of 236 individuals with appropriate data quality were included in the study.

Results: Of the participants, 137 (58.1%) were primary school graduates, whose mean age was 69.23 ± 4.81 years. It was found that 212 (89.9%) of the participants used medications regularly, and 143 (60.5%) of the regular medication users did not remember the name or purpose of at least one medication. The participants used a total of 646 medications, of which 63 (9.7%) were kept under unsuitable storage conditions. It was also determined that 76 (32.2%) of the participants used herbal products, with the most commonly used herbal products being linden and lemon-and-mint tea.

Conclusion: Pharmacists can improve the treatment adherence and outcomes of geriatric patients by monitoring their treatment regimens in terms of dose, duration, and drug interactions, while also providing counseling on medications and herbal products, including necessary warnings and instructions. Furthermore, healthcare professionals must be fully aware of the potential health complications arising from the combined intake of herbs and drugs to ensure optimal patient care..

Keywords: Aging, drug-related side effects and adverse reactions, drug therapy, geriatrics, herbal, polypharmacy

1. INTRODUCTION

Cognitive and physical functions decline with advancing chronological age, and the incidence of chronic diseases and complications is increasing (1). The World Health Organization (WHO) defines individuals aged 65 years and over as the geriatric population (2). With developments in health technologies and public health services, as well as increased accessibility to health services, the average life expectancy has increased, resulting in a gradual increase in the geriatric population all over the world, including Türkiye. According to data from the Turkish Statistical Institute, the proportion of the elderly population among the total population was 8.8% in 2018, which increased to 10.2% by 2023. According to population projections, this percentage is estimated to reach 16.3% in 2040, 22.6% in 2060, and 25.6% in 2080 (3).

Physiological changes such as reduction in the size and perfusion of organs, in the level of albumin and in the body water-fat ratio, as well as biochemical alterations in the frequency of receptors and signal transduction systems that occur with age in the geriatric population, affect the efficacy and safety of treatment by altering the pharmacokinetic and pharmacodynamic parameters of drugs (4-6). Moreover, polypharmacy and uncontrolled use of herbal products

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in the geriatric population increase the incidence of adverse drug reactions and potential risks associated with pharmacotherapy (7).

The term of "herbal product" defined by WHO corresponds to raw drugs, teas, and pharmaceutical-formulated products obtained from plants (8). Herbal products on the Türkiye market are classified as food supplements or traditional herbal medicinal products in compliance with European Union regulations. The herbal product that is used for therapeutic administration, registration application, evaluation, and approval procedures of this product are performed by the Republic of Türkiye Ministry of Health (7). Furthermore, dietary supplements that are identified as "the products for which the daily intake dose is determined by being prepared alone or in mixtures, in capsules, tablets, drops, disposable powder packs, liquid ampoules, dropper bottles, and other similar liquid or powder forms consisting of nutrients such as vitamins, minerals, proteins, carbohydrates, fibers, fatty acids, amino acids, or concentrates or extracts of plants, animal-originated substances, bioactive substances, and similar substances that have nutritional or physiological effects to supplement the normal diet" are crucial components of the market (9).

Studies examining the use of drugs and herbal products in the Turkish geriatric population are limited in the literature (10-13). Currently, due to the increasing variety of herbal products, easy access to these products, and their widespread use (often influenced by social media) without the recommendation of a physician/pharmacist, there is a need for new studies that examine the geriatric population's habits concerning medical/herbal product use. Therefore, the aim of this study was to investigate medical/herbal products used by the geriatric population, as well as the geriatric population's related habits, level of knowledge, and information sources regarding these products. This was accomplished by administering a face-to-face questionnaire to geriatric individuals who presented to a family health center (FHC) in Trabzon province, Türkiye.

2.METHODS

This descriptive study, which was conducted through a face-to-face questionnaire method, involved geriatric individuals who presented to the Yomra Family Health Center in Trabzon province, Türkiye, between February and May 2019, agreed to participate in the study, and signed an informed consent form. It was determined that the number of patients over the age of 65 years who applied to the family health center where the study was conducted for 4 months was approximately 660. No sample selection was performed in this study, but the method for calculating the minimum sample size was used to determine the sample size. In the power analysis conducted using OpenEpi® (*version 3.01*), the design effect was assumed to be 1 when the prevalence of herbal drug use in the geriatric population was 18% (14), and the minimum sample size was calculated as at least 169 individuals with a 5% error level, 95% confidence interval, and 80% power (10, 14).

Individuals with dementia and hearing, vision, and speech difficulties, as well as those under 65 years of age, were not included in the study. The collected data were checked by the researchers, and questionnaires from participants who gave incomplete, contradictory, or inappropriate responses were excluded (Figure 1).

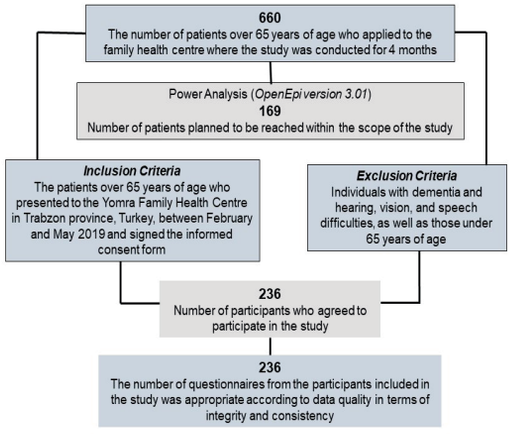

Figure 1. *Flow diagram of study population*

The questions directed at geriatric individuals aimed to evaluate the medical and herbal product usage habits of the participants. The questionnaire used for this purpose was developed by the researchers in light of previous studies in the literature. Before collecting the data, the questionnaire was pre-tested by administering it to a sample of 10 individuals, and it was finalized by correcting incomprehensible expressions in line with the feedback received. After all participants were informed about the content and purpose of the study, their informed consent was obtained. The questionnaire interviews lasted an average of 15 minutes. The questionnaire form consisted of 14 questions presented under three main sections: "sociodemographic and personal characteristics," "chronic disease status and medications used," and "characteristics related to medication/herbal product use." There were both multiple-choice and open-ended questions. Patient declarations formed the basis of this study. No plant or herbal product samples were taken from the participants, and no botanical identifications were made. Before the study, permission was obtained from the Public Health Services Directorate of the Trabzon Provincial Health Directorate and the Scientific Research Ethics Committee of the Karadeniz Technical University Faculty of Medicine (2019/4).

The IBM Statistical Package for Social Sciences Version 23.0 statistical program was used for the data analysis. The chi-squared test ($\chi 2$ and Fisher's exact tests) was used to compare categorical variables in independent groups. The statistical significance level was accepted as $p < .05$.

3.RESULTS

Of the 236 participants who agreed to participate in the study, 98 (41.5%) were female and 138 (58.5%) were male. The mean age of the participants was 69.23 ± 4.81 years. While 224 (94.9%) of the geriatric individuals participating in the study had social security, 12 (5.1%) did not. The educational status of the participants is given in Table 1.

Table 1. *Educational status of the participants*

Education	Number (percentage)
Illiterate	43 (18.2%)
Primary school	137 (58.1%)
Secondary education	42 (17.8%)
University	14 (5.9%)

The diagnosed chronic diseases of the participants and their distribution according to gender are given in Table 2. The rates of hypertension, dyslipidemia, thyroid diseases, osteoarthritis, and mood disorders were higher in women than in men (Table 2). Twenty-four (10.1%) of the participants stated that they did not use any medications, while 212 (89.9%) used an average of 3.17 medications per person. Of the participants who reported using medications, 143 (60.5%) could not remember the names of the medications they were taking. The participants' medication usage, including the types of medications and frequency of use, are given in Table 3. Of the participants, 191 (80.9%) followed a once-a-day pharmaceutical regimen, whereas two (0.8%) followed a two-or-three-times-a-day regimen, and 14 (5.9%) took their medications four times a day.

Table 2. *Diagnosed chronic diseases of the participants*

Chronic disease	Gender		
	Female	*Male*	*p value*
Hypertension	69 (70.4%)*	67 (48.6%)	.001
Congestive heart failure	14 (14.2%)	25 (18.1%)	.435
Atrial fibrillation	5 (5.1%)	10 (7.2%)	506
Dyslipidemia	28 (28.6%)*	22 (15.9%)	.019
Diabetes mellitus	25 (25.5%)	38 (27.5%)	.729
Hypothyroidism/hyperthyroidism	12 (12.2%)*	5 (3.6%)	.012
Osteoarthritis	15 (15.3%)*	3 (2.1%)	.0001
GERD Peptic/duodenal ulcer	25 (25.5%)	25 (18.1%)	.171
Mood disorder	20 (20.%)*	11 (7.9%)	.005
Prostatic disease	-	39 (28.2%)	-
Asthma	16 (16.3%)	5 (3.6%)	.001
Chronic obstructive pulmonary disease	1 (1%)	5 (3.6%)	.405

GERD: gastroesophageal reflux disease

Of the medications used by the participants, 68 (10.1%) were kept in the refrigerator, 54 (8%) in the medicine cabinet, 14 (2.1%) in the patient's bag, and 534 (79.3%) in other areas within their homes. It was determined that 43 (6.4%) of these medications were stored in refrigerators, and 63 (9.7%) were stored under unsuitable conditions.

Table 3. *Types of medications used by the participants (total medicine number=646)*

Medication type	Number of medicine (percentage)
Analgesic	38 (5.9%)
Antianginal	35 (5.4%)
Antiarrhythmic	4 (0.6%)
Antidepressant	34 (5.3%)
Antidiabetic	83 (12.8%)
Antihyperlipidemic	35 (5.4%)
Antihypertensive	144 (22.2%)
Antirheumatic	15 (2.3%)
Antithrombotic	43 (6.6%)
Diuretic	2 (0.3%)
Hypothyroidism/hyperthyroidism medication	23 (3.6%)
Inhalers (for the treatment of asthma and COPD)	32 (4.9%)
Parkinson's medication	3 (0.5%)
Peptic/duodenal ulcer and GERD medication	54 (8.3%)
Peripheral vasodilator	1 (0.1%)
Prostatic hypertrophy medication	28 (4.3%)
Urinary incontinence/retention medication	3 (0.5%)
Vestibular disorder medication	13 (2%)
Vitamin supplementation	16 (2.5%)
Other	16 (2.5%)

COPD: chronic obstructive pulmonary disease; GERD: gastroesophageal reflux disease

**more than one option was checked*

Of the participants, 231 (97.9%) were informed about the instructions for use of their medications, with 206 (87.3%) stating that they had received this information from a physician, 94 (39.8%) from a pharmacist, five (2.1%) from a nurse, and nine (3.8%) from a relative. The remaining five (2.1%) participants reported that they had not been informed about the medication they were taking (Table 4).

Table 4. *Distribution of participants according to their information status concerning medication use instructions (n=236)*

Informed about	Number (percentage)
Dosage	102 (43.2%)
Schedule	231 (97.9%)
Method of administration	220 (93.2%)
Drug–drug interactions	3 (1.3%)
Drug–nutrient interactions	6 (2.5%)
Side effects	14 (5.9%)
*More then one option has been thicked	

It was determined that 207 (87.7%) of the participants self-monitored their medication use, while 29 (12.3%) had their medication use monitored by a caregiver. When medication use was controlled by the patient, the rate of regular medication use was found to be higher (p = .013). To ensure regular medication use, 178 (75.4%) of the participants kept their medications within sight, 53 (22.5%) carried their medications with them, eight (3.4%) set an alarm or reminder, five (2.1%) used a medicine box, and one (0.4%) kept a chart. The medication usage habits of the participants are detailed in Table 5.

Table 5. *Participants' medication usage habits*

	Always *number (percentage)*	Frequently *number (percentage)*	Rarely *number (percentage)*	Never *number (percentage)*
I take my medications regularly.	178 (75.4%)	45 (19.1%)	9 (3.8%)	4 (1.7%)
I forget to take my medications.	1 (0.4%)	5 (2.1%)	126 (53.4%)	104 (44.1%)
I cannot read the labels of my medications.	38 (16.1%)	11 (4.7%)	21 (8.9%)	166 (70.3%)
I mix up my medications.	2 (0.8%)	1 (0.4%)	9 (3.8%)	224 (94.9%)
I do not take my medications because I do not find them useful.	12 (5.1%)	18 (7.6%)	50 (21.2%)	156 (66.1%)
I do not take my medications because of the inconvenience of keeping to the schedule, their unpleasant taste, or their large size.	4 (1.7%)	8 (3.4%)	27 (11.4%)	197 (83.5%)
I consult healthcare professionals when I forget to take my medications.	27 (11.4%)	15 (6.4%)	31 (13.1%)	163 (69.1%)
When I forget to take my medications, I take two doses the next time.	6 (2.5%)	-	7 (3%)	223 (94.5%)
I read the instructions for the use of medications.	72 (30.5%)	48 (20.3%)	29 (12.3%)	87 (36.9%)
I take medications based on the recommendation of my relatives.	7 (3%)	8 (3.4%)	28 (11.9%)	193 (81.8%)
I recommend medications to others.	3 (1.3%)	6 (2.5%)	36 (15.3%)	191 (80.9%)
I keep leftover/unused medications.	42 (17.8%)	13 (5.5%)	11 (4.6%)	170 (72%)
I throw away leftover/unused medications.	45 (19%)	17 (7.2%)	12 (5%)	162 (68%)
I give leftover/unused medications to others.	64 (27%)	1 (0.4%)	8 (3.3%)	163 (69%)

The frequency of herbal product use was reported to be "always" by 40 (16.95%) of the participants, "frequently" by 36 (15.25%), "rarely" by 75 (31.78%), and "never" by 85 (36.02). The rate of herbal product use was found to be significantly higher among women (p = .364).

The majority of participants (n = 175, 74.15%) stated that they used linden for "colds, stress relief, stomach ailments, shortness of breath, cough, sore throats, and high blood pressure." While 135 (57.20%) of the individuals used lemon-and-mint tea for "colds, stress relief, high blood pressure, stomach diseases, flu, headaches, sore throats, fever, weakness, abdominal pain," 90 (38.13%) used rosehip for "colds, stress relief, stomach diseases, boosting the immune system, constipation, vitamin C supplementation, weakness, cough, and diabetes." Seventy (29.66%) participants used parsley for the "treatment of inflammation and rheumatic conditions, reducing edema, diarrhea, weight loss, urinary tract infections, colds and sore throats, arteriosclerosis, blood thinning, gastrointestinal diseases, vitamin D supplementation, high blood pressure, prostatic hypertrophy, and cancer prevention." In addition, 70 (29.66%) participants used garlic for "inflammatory conditions, infection, cancer prevention, heart diseases, blood thinning, diabetes, intestinal regulation, colds, headaches, and immune protection." Finally, 38 (16.10%) of the participants reported using nettle for "rheumatic conditions, reducing edema, cardiovascular diseases, diabetes, blood purification, kidney diseases, strengthening the immune system, facilitating breathing, bronchitis, regulating bowel movements, cancer prevention, and hair loss." Some of the survey participants expressed their preference for pharmaceutical products. Six of the participants used Fito® five used Daflon®, three used Hametan®, three used Pharmaton®, one used Passiflora®, and one used Tebokan®. These products were found to be used by patients in accordance with their clinical indications.

It was determined that 30 (12.71%) of the participants used walnuts for "vitamin–mineral supplementation, lowering cholesterol, boosting the immune system, improving brain function, and regulating bowel movements," while 27 (11.44%) used green tea for "calming, gastrointestinal and digestive regulation, weight loss, pain relief, reducing edema, cold symptoms, and facilitating breathing." In addition, 21 (8.89%) participants reported using chamomile for "calming, regulating sleep, colds and sore throats, suppressing cough, asthma, and regulating bowel movements" and cinnamon for "diabetes, boosting the immune system, colds, facilitating breathing, asthma and painful conditions, and weight loss." Finally, six (2.54%) participants used fennel for "colds, coughs, and sleep disorders," four (1.69%) used flaxseed for "weight loss and prostate diseases," four (1.69%) used sycamore leaf for "rheumatic diseases and migraine," and two (0.84%) used black cumin seeds for "painful conditions and weight loss."

4. DISCUSSION

In this study, the medication and herbal product use of geriatric patients who presented to an FHC in Trabzon province was analyzed. The geriatric population experiences a steady decrease in physical and cognitive functions. In addition, the incidence of chronic diseases in the geriatric population is gradually increasing. According to the findings obtained in the current study, the most common diseases in the geriatric population were hypertension (females: 70.4%; males: 48.6%), dyslipidemia (females: 28.6%; males: 15.9%), and diabetes (females: 25.5%; males: 27.5%). Hypertension,

dyslipidemia, thyroid diseases, osteoarthritis, and mood disorders were significantly common among women.

A cross-sectional study performed with 241 geriatric individuals in Bursa province (Türkiye) revealed that 86.3 % of the participants were diagnosed with at least one chronic disease by a physician, while the most common chronic diseases of the participants were hypertension (62.6 %), coronary artery disease (26.1 %), and diabetes mellitus (21.1 %) (10). In a study based on one-to-one interviews, pharmacists stated that hypertension, diabetes, cardiovascular diseases, asthma, and mood disorders were the most common diseases in the geriatric population (15). In another study from Türkiye conducted by Demirbag and Timur (2012), it was found that 67.8% of the geriatric patients who presented to an FHC used antihypertensives, 62.4% used antirheumatics, 46% used diuretics, 26.6% used antidiabetics, 7.8% used antipsychotics, and 5.4% used hypnosedatives (16). In another study conducted in Türkiye, it was shown that 64.5% of individuals in the geriatric population used antihypertensive drugs (17). In line with the data from the literature, our findings showed that the most commonly used medications in the geriatric population were antihypertensives. In a study conducted by Brown et al. (2011), it was found that 85% of patients aged over 60 had moderate–severe pain, while 28% had chronic pain. Therefore, paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) were frequently used by the geriatric population (18). In another study from Türkiye, the frequency of NSAID use among geriatric individuals in nursing homes was found to be 20.8% (19). It was reported that analgesic drug use was significantly higher in geriatric individuals living in the community compared with those living in nursing homes (17). In the present study, the rate of analgesic use was found to be 5.9%. In the literature, the most commonly used medications without prescription among geriatric individuals (40–60%) were reported to be analgesics, laxatives, and vitamins (20).

According to previous research, 48% of geriatric individuals who present to healthcare services have more than three chronic diseases, while 21% have more than five chronic diseases (21). Comorbidities resulting from a low quality of life, a sedentary lifestyle, and adverse drug reactions are common among geriatric patients. Known diseases present with different clinical symptoms in geriatric individuals, and these patients may attribute symptoms such as hearing loss, confusion, incontinence, and constipation to normal age-related changes and thus not disclose them to their physicians. This makes it difficult to diagnose their disease and prevents effective and safe treatment planning (20). Consequently, the pathogenesis of the disease worsens, and the need for medication increases due to reasons such as the specificity of treatment guidelines, the focus on a single disease in treatment planning, low treatment compliance, and multiple and complex treatment regimens (22).

In our study, the mean number of medications used by the participants from the geriatric population was found to be 3.17. This was partially consistent with the findings obtained from previous studies conducted in Türkiye. In a study evaluating geriatric individuals in nursing homes in Türkiye, it was determined that the mean number of medications used was 3.59 among women and 2.39 among men. The authors reported that 60.6% of the geriatric individuals staying in nursing homes used an average of four medications. On completion of the study, it was concluded that the use of multiple medications was significantly higher among individuals living in care homes compared to those living in the community (23). In a study conducted with geriatric individuals presenting to an FHC, 52.9% of the participants used three medications on average (16). Another study carried out in nursing homes located in 23 different cities in Türkiye reported that 11.7% of the participants used four medications, while 17.3% used five medications (19). In another study involving 1,433 participants from 12 different cities in Türkiye, it was found that 38.2% of the individuals used four medications (20). In a cross-sectional study conducted by Bahat-Öztürk et al. (2017) with geriatric individuals, the number of medications used was determined to be five in 62.3% of the participants, five to nine in 52.7%, and 10 in 9.7% (24). In a cross-sectional study undertaken by Golchin et al. (2015) involving 59 geriatric individuals, it was shown that 35.6% of the participants had polypharmacy, while 20.3% used drug combinations that were contraindicated (25).

In our study, the majority of the participants (97.9%) stated that they were informed about the warnings and instructions pertaining to their drug treatment. Of the participants, 87.3% reported receiving this information from a physician, 39.8% from a pharmacist, 2.1% from a nurse, and 3.8% from a relative, while the remaining 2.1% indicated that they were not informed about the medications they used. According to a study by Demirbag et al. (2012), 86% of the geriatric individuals who presented to an FHC stated that they did not use their medications regularly, while 61% did not receive information about the medications they were using (16). In a descriptive-type questionnaire study conducted with geriatric patients who presented to an FHC, it was found that 85.5% of the participants did not use their medications regularly, while 61.1% did not have information about the medications they used. The authors also determined that 61.3% of the participants knew the intended uses of the medications they used; however, 58.7% were not aware of their potential side effects (16). In another geriatric study, it was observed that 39% of the participants were unaware of the potential adverse effects of the medications they used, while all the participants knew the drug indications (26). In the current study, only 5.9% of the participants stated that they received information about the possible side effects of their medications.

In our study, it was found that 3.8% of the geriatric individuals recommended medications to other patients. In addition, previous research indicated that geriatric individuals alter their drug treatment without consulting a physician (24), leading to inappropriate and irrational drug use and

increasing the frequency of drug interactions and adverse effects in this population.

In our study, we determined that most of the participants (82.7%) stored their medications in various locations in their homes, 8.4% in the medicine cabinet, 6.8% in the refrigerator, and 2.2% in their bags, while 5.5% of the medications were stored under unsuitable conditions. In a 2010 descriptive survey study conducted with geriatric individuals who presented to an FHC, it was found that 47.3% of the patients kept their medications in the refrigerator (16). The storage of medicines under appropriate conditions is one of the most important factors for ensuring the efficacy and safety of drug treatments. It is the responsibility of pharmacists to inform patients about the storage conditions of medications while conveying instructions for the use of medications within the scope of pharmaceutical counseling. In addition, for medical products such as insulin derivatives that need to be kept in the cold chain or require a higher level of care in terms of storage conditions, detailed instructions should be given in accordance with the patient's sociocultural level and cognitive functions. For this purpose, pharmacists should closely follow developing technologies (e.g., the use of portable mini refrigerators while traveling with medical products and biosimilars), as they can make a significant contribution to effective and safe drug treatment through appropriate recommendations tailored to individual patients.

In our study, the medication use habits of geriatric patients presenting to an FHC were evaluated, and the data obtained were found to be comparable to those reported in existing studies. A study evaluating geriatric individuals who presented to an FHC revealed that 82% of the participants forgot to take their medications, while only 19.3% of geriatric individuals rarely forgot to take their medications (24). The authors also noted that 21.2% of the participants experienced confusion over their medication schedule, while 24% forgot to take their medications. In another study, it was found that 24% of geriatric individuals forgot to take their medications at least once (26). Polypharmacy increases the frequency of forgetting medication (24). According to a previous study, 67.9% of geriatric individuals who presented to an FHC self-monitored their medication use (9). As a result, they used various precautions to ensure the regular use of their medications. In a study conducted by Taskin-Sayir et al. (2014), it was found that 61% of the patients placed their medications where they could see them to prevent forgetting to take them, while 15% used a medicine box and 3% used a chart for the same purpose (26). It is important for pharmacists to create a medication use plan suitable for the daily routine of each patient while filling prescriptions.

In this study, we also evaluated the herbal product usage habits of the geriatric individuals, determining that 63.9% used herbal products. In a study conducted by Varli et al. (2017), 74.21% of the non-prescription products used by patients presenting to the geriatric outpatient clinic were herbal products (27). In another descriptive survey study, it was reported that 59% of geriatric individuals who presented to an FHC used herbal products (26).

A cross-sectional survey by Golden et al. (2023) found that the rate of complementary and alternative medicine (CAM) use in the geriatric population in the past year was 60.1% (among 104 participants). Herbal products/dietary supplements were the most common form of CAM used by 37% of participants (28). Another cross-sectional study conducted by Taneri et. al. (2021) in Bursa (Türkiye) announced that herbal product usage rate in geriatrics was 18.3% as well as the most common sources of information about herbs were television and radio (10).

In our study, the herbal products frequently used by the participants were linden, lemon-and-mint tea, rosehip, parsley, garlic, nettle, walnut, green tea, cinnamon, chamomile, and sage tea. It is well established that many of the herbal products interact with cytochrome P450 enzymes as well as with the cellular transporters. The concomitant use of herbal products with drugs such as anticoagulants, antivirals, antihypertensives, antidiabetics, and antineoplastics, which are metabolized by these enzymes, increases the risk of adverse drug reactions. Furthermore, some herbal products such as St John's-wort, cranberry juice and goji berry can lead to increased bleeding risk in the warfarin using patients, as well as some of those such as sage and Prickly pear cactus can lead to hypoglycemia in patients treated with sulfonylurea derivatives (29). Patient declarations form the basis of this study, no plant samples were taken from the participants, and botanical descriptions of the plant species used were not made, so it is not possible to draw conclusions about a specific plant species or product. In addition, the methods of preparation of the products prepared from raw herbs were not questioned, as they were outside the scope and purpose of the study. However, in general, the frequency of use of herbal products was found to be comparable to that in previous studies. In a study undertaken by Taskin-Sayir et al. (2014), the herbal products frequently used by geriatric individuals were found to be linden, sage, green tea, lemon-and-mint tea, olive leaf tea, chamomile, garlic, flaxseed, nettle, senna, and lemon balm (26). It was ruled out that the most prevalent herbal products used by geriatric individuals in Bursa (Türkiye) were plane tree leaves (*Platanus orientalis*), black cumin oil (*Nigella sativa*), cinnamon (*Cinnamomum verum*), sage (*Salvia officinalis*) and plantain (*Plantago lanceolata*) (10).

The most common health conditions in which complementary products were used in the United States were arthritis, pain syndrome, dyslipidemia, and neuropsychiatric conditions, such as mood disorders, insomnia, and migraine (30). Taneri et. al. (2021) announced that the most common reason for using herbal products from geriatrics in Bursa (Türkiye) was the 'failure of previous treatments' (10).

It is also important where the herbs used for therapeutic purposes are obtained. This is because factors that may occur during the use of herbal products, such as improper plant use, and herbal drug quality that is unsuitable for pharmaceutical

use may also adversely affect the treatment of the patient. The possible herbal-drug interaction was detected by Taneri et al. al. (2021) in 3 of 40 (16.6% of participants) geriatric individuals who used herbal products on their own initiative. Moreover, in this study, only 34.1% of herbal product users reported their herbal product use to their physician (10).

According to the results of a cross-sectional study conducted in Ankara in 2011, 50% of the patients who visited the pharmacy preferred to obtain herbal products from the pharmacy (31). In addition, only 8.8% of the patients who visited the pharmacy deemed the counseling provided by pharmacists about herbal products to be sufficient (31). In a randomized controlled clinical trial, patients with polypharmacy were divided into experimental groups, and the effect of pharmacist-delivered drug counseling on treatment adherence was evaluated. It was reported that drug counseling provided by the pharmacist increased treatment compliance and decreased mortality and morbidity (32). In the hypertension monitoring program implemented by pharmacists in the geriatric population, an 80% improvement was found in drug treatment and blood pressure control (33).

5. CONCLUSION

When we evaluated the findings of our study in light of the literature, we concluded that the drug and herbal product usage habits of the geriatric population should be improved. Healthcare professionals must be fully aware of the potential health complications arising from the combined intake of herbs and drugs to ensure optimal patient care, while considering the treatment regimen of patients in terms of dose, duration, and drug interactions. They should also provide medication and herbal product counseling to geriatric patients, including the necessary warnings and instructions, and assess patients' levels of knowledge about drug therapy, specifically in terms of the therapeutical and potential side effects of drugs.

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