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Determination of the Use of Herbal Products and Attitudes towards Healthy Eating in Patients with Digestive System Diseases

Sindirim Sistemi Hastalıkları Olan Hastalarda Bitkisel Ürün Kullanımı ve Sağlıklı Beslenmeye Yönelik Tutumların Belirlenmesi

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ÖZET

Amaç: Bu çalışmada sindirim sistemi hastalığı olan bireylerin bitkisel ürün kullanımı ve sağlıklı beslenmeye yönelik tutumlarının incelenmesi amaçlanmıştır.

Gereç ve Yöntem: İç hastalıkları-gastroenteroloji servislerinde yatan 215 hasta ile kesitsel bir çalışma yapıldı. Demografik özellikler, tıbbi öykü, bitkisel ürün kullanımı ve sağlıklı beslenmeye yönelik tutumlar hakkındaki veriler bir anket ve Sağlıklı Beslenmeye Yönelik Tutum Ölçeği kullanılarak toplandı.

Bulgular: Katılımcıların %36.3'ü en yaygın sindirim sorunu olarak şişkinlik bildirmiştir. Bitkisel ürünler %65,1 oranında kullanılırken, maden suyu (%55,4) ve Türk kahvesi (%27,7) en yaygın kullanılanlardır. Ortalama sağlıklı beslenme tutum puanı $66,07 \pm 8,38$ olup orta düzeyde olumlu tutumlara işaret etmektedir. Puanlar sindirim sorunları, öğün düzenliliği, yeme hızı ve bitkisel ürün kullanım sıklığı gibi faktörlere göre değişirken, bitkisel ürün kullanımının kendisine göre değişmemiştir.

Sonuç: Bitkisel ürün kullanımı yaygın olmakla birlikte, sağlıklı beslenmeye yönelik tutumları doğrudan etkilememiştir. Beslenme alışkanlıkları ve sindirim sağlığı bu tutumlar üzerinde daha büyük bir etkiye sahiptir. Gelecekteki çalışmalar bitkisel ürün kullanımı ve beslenme alışkanlıkları arasındaki ilişkiyi daha derinlemesine incelemelidir ve sindirim sağlığını iyileştirmek için bitkisel ürünlerin etkinliği ve güvenliği konusunda daha fazla araştırma yapılması önerilmektedir.

Anahtar Kelimeler: Bitkisel ürünler; sağlıklı beslenme; sindirim sistemi hastalıkları

ABSTRACT

Aim: This study aimed to examine the use of herbal products and attitudes toward healthy eating among individuals with digestive system diseases.

Materials and Methods: A cross-sectional study was conducted with 215 patients hospitalized in internal medicine-gastroenterology wards. Data on demographics, medical history, herbal product use, and attitudes toward healthy eating were collected using a questionnaire and the Attitude Scale Toward Healthy Eating.

Results: Among participants, % 36.3 reported bloating as the most common digestive issue. Herbal products were used by % 65.1, with mineral water (% 55.4) and Turkish coffee (% 27.7) being the most common. The mean healthy eating attitude score was 66.07 ± 8.38 , indicating moderate positive attitudes. Scores varied based on factors such as digestive problems, meal regularity, eating speed, and frequency of herbal product use, but not on herbal product use itself.

Conclusion: While herbal product use was common, it did not directly influence attitudes toward healthy eating. Dietary habits and digestive health had a greater impact on these attitudes. Future studies should delve deeper into the relationship between herbal product use and dietary habits, and further research is recommended on the efficacy and safety of herbal products for improving digestive health.

Keywords: Herbal products; healthy eating; digestive system diseases.

INTRODUCTION

It is known that physical activity has decreased, alcohol and tobacco use and daily calorie intake have increased with changing lifestyles worldwide (1). Due to various reasons such as the development of the food industry, the preferences of individuals who have to eat outside the home as a result of rapid urbanisation, the increase in the number of individuals living alone in society, the effect of mass media, it has been observed that there is an increase in the consumption of unhealthy foods that are made ready and semi-prepared (2). Due to this situation, it is seen from social and academic studies that the awareness of the concept of healthy eating has increased considerably (3,4). Many studies have shown that poor eating causes impairment of the immune system, either congenitally or through adaptation (5,6,7). It is extremely important that the digestive system is healthy as well as a balanced and adequate diet to maintain the health of the individual. Depending on the type, location and individual factors of many diseases that can occur in the digestive system from the mouth to the anus, the principles of nutritional treatment to be applied may also vary (8,9). Digestive system problems and diseases are among the common health problems (10). Acute complaints such as reflux, diarrhoea, constipation, gastroenteritis, gastritis and bloating occur for many reasons such as previous infections, stress, eating (8,11). Since digestive system diseases reduce the quality of life of the individual, cause loss of labour force, unnecessary examinations and drug consumption, their cost to societies is high. Although they are common diseases, not all patients consult a physician. However, % 15-50 of patients consult a physician due to lifelong complaints (12). Hearsay and traditional methods such as the use of herbal teas (e.g., sage, fennel, mint, chamomile), consuming baking soda for indigestion, using vinegar mixtures, or abdominal compresses are commonly applied to alleviate digestive system problems. However, many of these practices lack a solid scientific evidence base and may not only fail to reduce symptoms, but can also worsen the condition or lead to harmful interactions when used alongside medications. For instance, Aydos (2011) emphasized that interactions between herbal products and drugs can result in serious side effects, while Barlin and Ercan (2020) noted that individuals often rely on unverified methods such as herbal mixtures or traditional remedies in managing digestive issues (3,4,13,15). According to the World Health Organisation (WHO) defines Traditional and Complementary Medicine Practices (GETAT) as "a set of knowledge, skills and practices based on theories, beliefs and experiences specific to different cultures - which can be explained or not - that are used in maintaining good health as well as preventing, diagnosing, curing or treating physical and mental diseases" (14,15). Traditional and complementary medicine is generally used to improve the quality of life, reduce the side effects of drugs and symptoms of disease, and receive physical and psychological support (13). In a study conducted by Şimşek et al. (2017), the rate of GETAT use in Türkiye was found to be % 60.5. This rate showed that one out of every two patients used traditional and complementary medicine (16). The use of plants for therapeutic purposes varies according to the level of development of countries. In developing countries, 80 per cent of the population uses herbal products for therapeutic purposes (17). The fact that some medicines are made from plants, that they are stated to be of herbal origin and that plants are reflected as the miracle of nature increases the trust in herbal products (18). However, some plants can cause side effects by showing significant toxic effects. Companies that prepare medicines using herbal sources determine and analyse the active ingredients of these medicines, standardise the safe dose and predict the effects/adverse effects that the medicines may cause in the body. This is not the case with herbal supplements (19,20). At the same time, there are few studies on the interactions of plants used for therapeutic purposes in chemical drugs with other drugs taken. For this reason, it is often overlooked that the preparation used may cause different complications (21). The most important problem of treatment with herbal products is using herbs as medicines without adequate clinical research (22,23). Unlike diseases affecting other body systems, gastrointestinal diseases are directly affected by nutrient intake, digestion, and absorption, so the use of herbal products and nutrients in these diseases requires utmost care (9,10). In this context, when the literature is examined, ginger rhizome (*Rhizoma zingiberis*), which is widely used in many digestive system diseases from nausea to colitis, has been shown to inhibit thromboxane synthetase and affect bleeding times. Therefore, it should be used cautiously, especially in patients receiving anticoagulant therapy,

and under medical supervision (24). A study by Yilmazel and Nacar (2018) found that many individuals using ginger-containing herbal products were unaware of potential interactions with blood-thinning medications (40). Animal experiments have also shown that eucalyptus essence (*Aetheroleum eucalypti*) and leaf (*Folium eucalypti*) can stimulate liver enzymes, potentially accelerating drug metabolism and reducing therapeutic efficacy (25). Recent pharmacokinetic studies have confirmed that certain essential oils may alter cytochrome P450 enzyme activity, highlighting the need for careful monitoring when eucalyptus is used with conventional drugs (3, 15). Furthermore, herbal products with sedative effects such as valerian root (*Radix valerianae*), which are commonly used to relieve neurologically mediated gastrointestinal pain, can impair concentration and reaction time. This may pose serious risks for individuals operating vehicles or performing attention-demanding tasks. Recent studies suggest that valerian, when used concurrently with sedative-hypnotic medications, can exacerbate central nervous system depression (16, 15). Therefore, these products should not be co-administered with other sedative agents without medical supervision. In this context, when the literature is examined, ginger rhizome (*Rhizoma zingiberis*), which is widely used in many digestive system diseases from nausea to colitis, has been shown to inhibit thromboxane synthetase and affect bleeding times. Therefore, it should be used cautiously, especially in patients receiving anticoagulant therapy, and under medical supervision (24). A study by Yilmazel and Nacar (2018) found that many individuals using ginger-containing herbal products were unaware of potential interactions with blood-thinning medications (40). Animal experiments have also shown that eucalyptus essence (*Aetheroleum eucalypti*) and leaf (*Folium eucalypti*) can stimulate liver enzymes, potentially accelerating drug metabolism and reducing therapeutic efficacy (25). Recent pharmacokinetic studies have confirmed that certain essential oils may alter cytochrome P450 enzyme activity, highlighting the need for careful monitoring when eucalyptus is used with conventional drugs (3, 15). Furthermore, herbal products with sedative effects such as valerian root (*Radix valerianae*), which are commonly used to relieve neurologically mediated gastrointestinal pain, can impair concentration and reaction time. This may pose serious risks for individuals operating vehicles or performing attention-demanding tasks. Recent studies suggest that valerian, when used concurrently with sedative-hypnotic medications, can exacerbate central nervous system depression (16, 15). Therefore, these products should not be co-administered with other sedative agents without medical supervision.

In this direction, patients with digestive system diseases need to prefer herbal products, to use proven herbal products, to consult health professionals when receiving product recommendations and the attitudes of these patients towards healthy eating (4,31,40). Therefore, this study was conducted to determine the characteristics of herbal product use and attitudes towards healthy eating of individuals with digestive system diseases.

1. What is the status of herbal product use of patients with digestive system diseases?
2. What are the attitudes of patients with digestive system diseases towards healthy eating?
3. Is there a relationship between the use of herbal products by patients with digestive system diseases and their attitudes towards healthy eating?

METHODS

Design

Since the study focused on investigating the use of herbal products and the relationship between this use and attitudes towards healthy eating, it was carried out in a cross-sectional descriptive design.

Sample

The study was conducted between March 2022 and March 2023 in the Gastroenterology Unit of the Internal Medicine Department at Dr. Ersin Arslan Training and Research Hospital. The Gastroenterology Unit operates as a sub-department within the Internal Medicine service, dedicated specifically to the inpatient care of patients with digestive system disorders. During the study period, all adult patients hospitalised with a diagnosis of

gastrointestinal system diseases such as gastritis, peptic ulcer, inflammatory bowel disease (e.g., Crohn's disease, ulcerative colitis), gastroesophageal reflux disease, functional dyspepsia, and irritable bowel syndrome were evaluated for inclusion. The sample size was calculated in a computer programme (open.epi) using the frequency size formula in a population. Since it was determined that 250 patients were hospitalised in the Internal Medicine-Gastroenterology services in the last year, the sample of this study consisted of 215 individuals with a % 99.9 representation of the population. All patients aged 18 years and over who were in the gastroenterology inpatient service on the date of the study and who were willing to participate in the study were included in the study. Patients who did not want to participate in the study and who were unable to answer the questions asked (patients with a psychiatric diagnosis that may cause communication and perception problems, patients with diseases such as blurred consciousness, dementia or Alzheimer's disease) were excluded from the study. Patients who could not answer all the questions were excluded from the study.

Data Collection Tools

Questionnaire Form: This questionnaire, in which information about the descriptive and medical characteristics of the participants was asked, was created by reviewing the literature (2,4,40). The questionnaire included questions on age, gender, educational status, employment status, marital status, smoking and monthly income, digestive problems, eating habits (meals without eating, compliance with meal times, eating outside the home, eating speed), herbal product use (type of herbal product, frequency of herbal product use, place of procurement and purpose of use).

Attitude Scale Towards Healthy Eating (ASTHE): The Attitude Scale Towards Healthy Eating (ASTHE), developed by Özenoğlu et al., consists of four sub-dimensions: knowledge, emotion, positive eating, and poor eating (31). The original Cronbach's Alpha coefficient of the scale was reported as 0.90. In this study, the internal consistency reliability (Cronbach's Alpha) was found to be 0.69. Prior to the use of the scale, permission was obtained from the original authors via email correspondence.

Data Collection

The data were collected by the first researcher through face-to-face interviews conducted in each patient's room between 03 March and 01 September 2022. Interviews were conducted during the mid to late stages of hospitalization, typically after the patients' initial diagnostic and treatment planning phase had been completed but before discharge. Prior to data collection, the purpose and content of the study were explained in detail to each participant, and verbal informed consent was obtained in accordance with ethical research principles. Then, questionnaires were applied to patients who voluntarily agreed to participate in the study. The researcher read the questions in the questionnaire and scale to all individuals one by one and completed the forms by marking the answers they gave. The average study duration for each individual was 15 minutes.

Data Analysis

The analysis of the study data was carried out with SPSS 25 programme. Descriptive properties were analysed by number and percentage calculations and comparisons in independent paired groups were made by Whitney U test. Independent multiple-group comparisons were made with Kruskal Wallis test analysis. Spearman rank correlation coefficient was used to determine the relationship between the variables.

Ethical Principles

Before starting the study, ethical approval was obtained from the Inonu University Health Sciences Non-Interventional Clinical Research Ethics Committee (Session Date: 22.02.2022, Session Number: 4, Decision Number: 2022/3083). Official written study permission was obtained from Gaziantep Provincial Health Directorate and Dr Ersin Arslan Training and Research Hospital. Written permission was obtained from the owner of the scale to use the Attitude Scale Towards Healthy Eating (ASTHE). This study was conducted in line with the Declaration of Helsinki.

RESULTS

227 patients were assessed for eligibility. Of these, three patients with a psychiatric diagnosis that may cause communication and perception problems and four patients with diseases such as clouding of consciousness, dementia or Alzheimer's disease were excluded. The questionnaires of five patients who could not answer all the questions were not included in the analysis. As a result, 215 questionnaires were used in the final analysis. The mean age of the patients who participated in the study was 46.5 ± 13.14 years, % 53 of the patients were female, and % 29.3 had high school education. The majority (% 24.2) of the patients had a diagnosis of pancreatitis % 56.7 were not working and % 79.1 were married. It was determined that % 55.3 of the patients did not smoke (Table 1).

Table 1. Descriptive characteristics of participants (n=215)

Sociodemographic Characteristics		n	%
Gender	Male	101	47.0
	Female	114	53.0
Educational Status	Illiterate	34	15.8
	Literate	31	14.4
	Secondary School Graduate	57	26.5
	High School Graduate	63	29.3
	College/University Graduate	30	14.0
Diagnosis	Ulcer	21	9.8
	Reflux	13	6.0
	Diseases and Cancer of the Colon	15	7.0
	Haemorrhoids	8	3.7
	Digestive System Bleeding	39	18.1
	Cirrhosis and Other Liver Diseases	19	8.8
	Gallbladder and Bile Duct Stones	48	22.3
	Pancreatitis	52	24.2
Employment status	Employed	93	43.3
	Unemployed	122	56.7
Marital Status	Married	170	79.1
	Single	45	20.9
Smoking	Yes	96	44.7
	No	119	55.3
Monthly Income	4253 TL and below	41	19.1
	4254-5999 TL	107	49.8
	6000 TL and above	66	30.7
Total		215	100.0

It was determined that %36.3 of the patients who participated in the study had bloating as a common digestive problem, %54.9 rarely spent their meals without eating, %50.7 did not follow meal times and %38.1 ate outside the home 1-2 times a month. It was determined that %50.2 of the patients had a normal eating rate, %65.1 of them used herbal products, %46 of them used herbal products 2-5 times a week and %30.2 of them did not receive any advice from anywhere for the herbal products they used. It was determined that %68.8 of the participating patients used herbal products for digestive problems, %52.6 obtained herbal products from bazaars and %25.6 used herbal products to relieve indigestion (Table 2).

Table 2. Characteristics of patients related to disease and herbal product use

Disease-Related Characteristics		n	%
Common Digestive System Problem	Diarrhoea	20	9.3
	Constipation	50	23.3
	Heartburn	39	18.1
	Bloating	78	36.3
	Gastritis	11	5.1
	Reflux	7	3.3
	No Digestive Problems	10	4.7
Meals Without Eating	Never	15	7.0
	Rarely	118	54.9
	Often	69	32.1
	Always	13	6.0
Compliance with Meal Times	Yes	106	49.3
	No	109	50.7
Eating out	Never	11	5.1
	1-2 times a year	22	10.2
	1-2 times a month	82	38.1
	2-5 times a week	64	29.8
	Every Day	36	16.7
Eating Speed	Slow	40	18.6
	Normal	108	50.2
	Fast	67	31.2
Herbal Product Use	Yes	140	65.1
	No	75	34.9
Frequency of Herbal Product Use	Never	71	33.0
	1-2 times a year	6	2.8
	1-2 times a month	22	11.6
	2-5 times a week	99	46.0
	Every Day	14	6.5

Table 2. Characteristics of patients related to disease and herbal product use(continued)

Disease-Related Characteristics		n	%
Herbal Product Recommendations	From Family Elders	23	10.7
	From Social Media	47	21.9
	From Herbalist	14	6.5
	From Health Professionals	53	24.7
	Other Patients	13	6.0
	Do not take advice	65	30.2
Herbal Product Use in Digestive Problems	Not Available	67	31.2
	Available	148	68.8
Herbal Product Supply Place	Internet	4	1.9
	Herbalist	31	14.4
	Bazaars	113	52.6
	Pharmacy	2	0.9
	Do not supply	65	30.2
Product Intended Use	To Reduce Pain	1	0.5
	To relieve nausea	5	2.3
	For Psychological Relaxation	3.7	8
	For Disease Prevention	46	21.4
	To relieve indigestion	55	25.6
	To relieve constipation	27	12.6
	To relieve diarrhoea	6	2.8
	Do not use them	67	31.5

Our findings show that %68.8 of the study participants who had digestive system problems used the product, %27.7 of the patients used Turkish coffee, %10.8 used green tea, %10.8 used dry tea, %5.4 used flaxseed, %4.1 used melissa tea, %2.7 used thyme. The findings show that these patients also intensively resort to products other than herbal use. The most important of these products was mineral water with %55.4, followed by apricot (%16.2), apple (%12.2), lemon (%7.4), potato (%7.4) and fig (%2.7) (Table 3).

Table 3: Distribution of products used in digestive system problems

	Products	n	%
	Product Use in Digestive Problems	148	68.8
Herbal Products	Jasmine (Jasminum officinale)	1	0.7
	Thyme (Thymus sp.)	4	2.7
	Mint (Mentha rotundifolia)	1	0.7
	Ginger (Zingiber officinale)	1	0.7
	Daisy (Matricaria recutita)	1	0.7
	Melissa (Melissa officinalis)	6	4.1
	Flaxseed (Linum usitatissimum)	8	5.4
	Herbalist Blend	1	0.7
	Rhamnus (Rhamnus catharticus)	1	0.7
	Linden (Tilia sp.)	1	0.7
	Cinnamon (Cinnamomum zeylanicum)	1	0.7
	Turkish Coffee	41	27.7
	Lemon	11	7.4
	Felty Germander (Teucrium polium)	2	1.4
	Dry Tea	16	10.8
	Green Tea	16	10.8
	Potatoes	11	7.4
Other Products	Watermelon	2	1.4
	Apple	18	12.2
	Fruit	2	1.4
	Mineral Water	82	55.4
	Orange	2	1.4
	Plum	2	1.4
	Tangerine	1	0.7
	Apricot	24	16.2
	Banana	1	0.7
	Water	1	0.7
	Fig	4	2.7
	Melon	2	1.4

When we looked at the total mean scores of Attitude Scale Towards Healthy Eating (ASTHE) and its sub-dimensions of patients with digestive system diseases, we found that they scored 14.97 ± 4.36 in the sub-dimension of "information about eating", 17.84 ± 4.12 in the sub-dimension of "feelings towards eating", 16.98 ± 2.42 in the sub-dimension of "positive eating", 16.3 ± 3.64 in the sub-dimension of "poor eating" and 66.07 ± 8.38 in the total mean score of the scale (Table 4).

Table 4. The mean total scores of the attitude towards healthy eating scale and its sub-dimensions in patients with digestive system diseases

Scale	Mean $\pm$ ss	Min - Max	Cronbach α
Information About Eating	14,97 $\pm$ 4.36	7-45	0.679
Feeling towards eating	17,84 $\pm$ 4.12	7-29	0.711
Positive Eating	16,98 $\pm$ 2.42	10-25	0.469
Poor Eating	16,3 $\pm$ 3.64	5-25	0.799
Attitude Scale Towards Healthy Eating (ASTHE)	66,07 $\pm$ 8.38	37-99	0.690
Total Score			

When we looked at the effect of disease-related characteristics of patients with digestive system disease on the total score of the scale, a statistically significant difference was found between the groups according to ASTHE score ($p < 0.05$). The ASTHE scores of patients with bloating (68.13 ± 7.63), one of the frequently experienced digestive problems, were higher than those of patients without digestive problems (56.6 ± 13.18), and the differences between them were statistically significant ($p < 0.002$). The ASTHE scores of the patients who 'rarely' had meals without eating (67.1 ± 7.76) were higher than those of the patients who 'frequently' had meals without eating (63.24 ± 7.37) and the differences between them were statistically significant ($p < 0.008$). The ASTHE scores of the patients who followed the meal times (68.5 ± 8.9) were higher than those of the patients who did not follow the meal times (63.68 ± 7.11) and the differences between them were statistically significant ($p < 0.05$). The ASTHE scores of patients who ate out of home 1-2 times a year (70 ± 6.74) were higher than those of patients who ate out of home every day (61.72 ± 6.83) and the differences between them were statistically significant ($p < 0.005$). The ASTHE scores of the patients who ate 'slow' meals (68.28 ± 7.79) were higher than those of the patients who ate 'fast' meals (63.55 ± 8.79) and the differences between them were statistically significant ($p < 0.017$). No statistically significant difference was found between herbal product users and non-users according to ASTHE score ($p > 0.05$). According to the frequency of herbal product use, ASTHE was found to be higher in patients who used herbal products 1-2 times a month (70.32 ± 9.52) than in patients who used herbal products 2-5 times a week (64.42 ± 7.1), and the difference between them was statistically significant ($p < 0.05$) (Table 5).

Table 5. The relationship between disease and herbal product use characteristics and ASTHE total score of patients with digestive system diseases (n=215)

CHARACTERISTICS	ASTHE	
	Mean $\pm$ ss	M(Min-Max)
Common Digestive Problems	Diarrhoea	63.6 $\pm$ 8.12
	Constipation	65.86 $\pm$ 6.64
	Heartburn	67.18 $\pm$ 9.55
	Bloating	68.13 $\pm$ 7.63
	Gastritis	64.27 $\pm$ 5.08
	Reflux	61.86 $\pm$ 7.2
	Problem(-)	56.6 $\pm$ 13.18
KW		19.048
p		0.004

Table 5. The relationship between disease and herbal product use characteristics and ASTHE total score of patients with digestive system diseases (n=215)(continued)

CHARACTERISTICS		ASTHE	
		Mean±ss	M(Min-Max)
Meals Without Eating	Never	70.33 ± 14.46	70(38-99)
	Rarely	67.1 ± 7.76	67(53-97)
	Often	63.24 ± 7.37	63(37-84)
	Always	66.54 ± 5.88	65(57-76)
KW			13.095
p			0.004
Compliance with Meal Times	Yes	68.5 ± 8.9	67(38-99)
	No	63.68 ± 7.11	63(37-88)
t			3665.0
p			0.001
Eating out	Never	69.55 ± 12.52	65(57-99)
	1-2 times a year	70 ± 6.74	69(61-86)
	1-2 times a month	66.68 ± 7.29	67(38-88)
	2-5 times a week	65.76 ±	63(48-97)
	Every Day	61.72 ± 6.83	63(37-74)
KW			20.225
p			0.001
Eating Speed	Slow	68.28 ± 7.79	67.5(48-99)
	Normal	66.81 ± 8.02	66(38-97)
	Fast	63.55 ± 8.79	63(37-93)
t			15.771
p			0.001
Herbal Product Use	Yes	65.52 ± 7.86	65(48-97)
	No	67.08 ± 9.24	66(37-99)
t			4465.5
p			0.08
Frequency of Herbal Product Use	Never	67.04 ± 9.42	66(37-99)
	1-2 times a year	68.17 ± 6.11	66(63-80)
	1-2 times a month	70.32 ± 9.52	67(60-97)
	2-5 times a week	64.42 ± 7.1	63(48-88)
	Every Day	64.14 ± 7	65.5(53-74)
KW			12.612
p			0.013

Table 5. The relationship between disease and herbal product use characteristics and ASTHE total score of patients with digestive system diseases (n=215)(continued)

CHARACTERISTICS	ASTHE		
		Mean±ss	M(Min-Max)
Receiving Herbal Product Recommendation	From Family Elders	63.09 ± 8.78	63(48-84)
	From Social Media	65 ± 6.37	65(53-80)
	From Herbalist	67.64 ± 11.3	65(55-93)
	From Health Professionals	66.17 ± 7.68	65(53-97)
	Other Patients	66.31 ± 4.55	66(59-73)
	Do not take advice	67.4 ± 9.73	67(37-99)
KW			7.803
p			0.167
Place of Product Supply	Internet	68.25 ± 21.38	64(48-97)
	Herbalist	68.35 ± 9.86	66(55-93)
	Bazaars	64.46 ± 5.88	64(48-80)
	Pharmacy	72.5 ± 10.61	72.5(65-80)
	Do not supply	67.4 ± 9.73	67(37-99)
KW			8.438
p			0.077

DISCUSSION

The data obtained from this study, which was conducted to determine the use of herbal products and attitudes towards healthy eating in patients with digestive system diseases, revealed that patients with digestive system diseases use functional foods and herbal products, that the attitude towards healthy eating is important for these patients, and that there is a significant relationship between the frequency of herbal product use and healthy eating attitude.

The gastrointestinal tract (GIS) is vulnerable to viral, bacterial, and parasitic infections. Studies have shown that acute complaints such as bloating, constipation, diarrhoea, reflux, and gastroenteritis may occur as a result of infections, dietary factors, and stress (13, 26). Recent research highlights that both acute and chronic psychological stress can increase intestinal permeability and worsen gastrointestinal symptoms by disrupting gut-brain axis regulation (26). Furthermore, imbalances in the gut microbiota have been associated with functional abdominal bloating and distension, and microbiota-targeted interventions such as probiotics and dietary modifications have been found effective in alleviating these symptoms (4,9). In this study, it was found that the most common complaint of patients with digestive system diseases was 'bloating' and that they generally ate without skipping meals and without observing mealtimes. It is thought that irregular meals may cause frequent, acute gastrointestinal complaints. In these complaints, which are generally ignored, the temporary solutions that individuals resort to are unconscious and unreliable sensations from unreliable sources, which may pose a risk to health. It is known that individuals frequently use herbal products and nutrients in acute GIS complaints (13,27). In our study, it was determined that the patients mostly preferred herbal products for digestive problems and used these products without getting any advice from anywhere, generally to relieve indigestion and used 2-5 times a week. This revealed that the patients were aware of their problems but tried to solve their problems without professional support for temporary solutions. We have determined that the participants generally prefer bazaars while obtaining herbal products and it is thought that products that are not packaged in accordance with hygiene rules and sold in the open may increase the

complaints of the patients. Plant products and foods exposed to open air can be contaminated with pathogenic microorganisms such as *E. coli*, *B. cereus*, *Salmonella* spp., *C. perfringens*, etc. carried by dust, as well as wastes of insects and other living organisms (13). Contamination is known to be one of the main problems encountered in the use of herbal products and foods (24). Banerjee and Sarkar found that contaminated products can cause food poisoning and pose a health hazard (28).

It was determined that the most preferred product of the participants for digestive system problems was mineral water. When the literature is examined, it is seen that mineral water is frequently preferred for the elimination of digestive problems (13, 29). This can be explained by the fact that mineral water is a functional product in preventing digestive problems and is a product that is frequently consumed after meals in our society. In our study, it was determined that the other preferred products were Turkish coffee, apricot, apple, tea, and green tea. It is known that Turkish coffee has a high antioxidant capacity, is used for digestive problems, and reduces the risk of liver diseases (29,30). In studies, it has been found that apricot is protective against *Helicobacter pylori*-induced chronic atrophic gastritis that causes gastric cancer (31), polyphenols in apples are protective against peptic ulcer and reduce gastritis symptoms (32), and green tea is used as a functional product in bloating and dry tea is used as a functional product in diarrhoea (13). Mineral water consumption in Europe is 120 L per year, while in Türkiye the annual per capita consumption was 2.5 L in 2002 and reached 6.5 L in 2010 (33). Despite this, soda and fruit juices account for 37 per cent of the production capacity of the Turkish beverage industry (34). The use of Turkish coffee in our society has become a tradition in itself with rituals such as its preparation with a coffee pot over low heat, slowly pouring it into cups and sipping it little by little (35). Turkish tea has a history of about a hundred years in our society and has formed a culture of its own. It has become a tradition to drink tea during long conversations, at breakfast, and after a meal (36,37). It is thought that these products are consumed in excess in Turkish society, but individuals with digestive problems prefer these products due to the information obtained from reliable or unreliable sources regarding the beneficial effects of these products.

When we examined the Attitude Scale Towards Healthy Eating and its sub-dimensions, the scores obtained from the "information about nutrition" sub-dimension of the patients participating in this study were lower than the scores obtained in the study conducted by Çın with obese patients. When we evaluated the "poor eating" sub-dimension, it was determined that the scores of obesity patients were higher than the patients in our study (38). Sociodemographic characteristics are known to affect this situation (education, age, occupation, etc.) (40). However, since it is considered that patients with digestive problems may have been followed up less by health professionals than obesity patients, this may be due to the fact that digestive system symptoms are often perceived as temporary or functional in nature and therefore receive less structured follow-up and intervention in clinical settings (26), it can be expected that their level of knowledge may be lower. Since patients with digestive system diseases may experience the negative consequences of poor eating habits such as bloating, pain, and digestive discomfort more immediately and severely than obese patients, it is likely that they develop a more cautious and attentive attitude toward healthy eating as a result. In this study, it was determined that the total attitude score of the patients towards healthy eating was at a moderate level. In the studies conducted by Özenoğlu et al. with adults, Karaağaç and Çakır with individuals going to the gym, and Bıçakçı with health professionals, it was determined that the participants had high healthy eating scores (40). When it is evaluated that the participants in our study had a worse attitude than the other groups despite having digestive problems, it can be considered that they did not receive adequate education on the effects of healthy eating on the digestive system. It is thought that the insufficient level of attitude towards healthy eating may have triggered digestive problems.

In our study, the healthy eating attitude of patients with "bloating" problems was found to be higher than patients with other digestive problems. In the literature, it has been determined that those who have bloating problems prefer to consume functional products for digestion (13,40). This can be explained by the fact that

bloating is the most common and unpleasant digestive problem. The healthy eating attitudes of patients who rarely skipped meals and complied with meal times were found to be higher than those of patients who frequently skipped meals and did not comply with mealtimes. Skipping meals and irregular eating affect the type and amount of food consumed and cause the preference for foods with high carbohydrate and fat content in order to suppress hunger in between (33). It has been reported that the nutrient intakes of individuals who do not skip meals and eat regularly are higher than those of individuals who skip meals and eat irregularly (40). Regular meal consumption frequency and meal patterns are of great importance for adequate and balanced eating (15). In this direction, our finding is consistent with the literature. In a study conducted in the USA, it was found that the total energy, saturated fat, cholesterol, and sodium ratios of foods consumed outside the home were higher, calcium and pulp ratios were lower and nutritional quality was lower than those consumed at home (40). In our study, the healthy eating attitudes of patients who ate meals out of home 1-2 times a year were found to be higher than those of patients who ate meals out of home every day. This can be explained by the fact that the nutritional values and quality of the food consumed outside the home are low and may cause possible GIS problems. Eating the meal quickly causes an increase in the amount of food taken and excess energy intake, as the feeling of fullness will occur late (40). Güneş et al. found that obesity is more common in those who eat fast food. In his study, Barlin found that 19 out of 21 individuals (%90.5) who ate fast food experienced digestive problems. (13). In this study, the healthy eating attitudes of patients who ate slowly were found to be higher than those of patients who ate fast. It is considered that patients who think that slow consumption of meals is healthier may develop correct behaviours in terms of diet, and it is thought that these behaviours may be effective in high attitudes towards healthy eating. In our study, the healthy eating attitudes of patients who used herbal products 1-2 times a month were higher than those who used products 2-5 times a week. It has been stated that if there is no study on the dosage of herbal products, it is a serious problem to leave the amount of use to the initiative of the user. In the use of herbal products, it has been reported that products consumed frequently and in excessive amounts may lead to adverse effects such as digestive complaints, sleep disorders, and attention deficit. For instance, some herbal products with sedative properties such as valerian or passionflower can cause drowsiness and impair cognitive functions when overused or combined with other sedatives (15, 16). Additionally, herbal components such as eucalyptus and mint have been shown to interact with liver enzymes, potentially altering drug metabolism and leading to gastrointestinal side effects (3, 17). Inappropriate or unsupervised use of these products increases the risk of herb drug interactions and toxic effects, especially in patients with chronic diseases (4, 23, 40). The more controlled use of these products by patients with high attitudes towards healthy eating may be explained by the risk of reaction to nutrients when the products are taken in excessive amounts and the desire to avoid the harmful effects of the products (24,40).

Limitations

There are some limitations in this study. Firstly, the study was conducted in only one hospital; it may be recommended to conduct the study with larger samples. Secondly, comparisons of herbal product use among people with digestive system problems in different studies may show differences, although these differences may limit comparisons and inclusion/exclusion situations, they will not affect our findings. Third, most patients were asked about recent and lifetime use of herbal products and this may have led to recall bias in some patients. Fourthly, the participants were not asked which herbal products they used for which digestive system problems and many products may have been used for different digestive system problems. Finally, it cannot be assured that patients will be able to comprehend all the questions in the questionnaire and the attitude scale and give unbiased answers.

CONCLUSIONS

It was determined that the patients most frequently experienced bloating problems, could use herbal products and nutrients without advice, preferred mineral water the most and Turkish coffee, apricot, apple, tea, and green tea were among the products they preferred. It is recommended to obtain reliable information from the right sources about GIS problems, nutrients, and herbal product interactions. It was determined that patients developed positive attitudes towards healthy eating. It was found that they consumed meals outside the home, and it is recommended to reduce meals taken outside in terms of hygienic and quality food consumption. Healthy eating and herbal product use are considered to be effective in digestive problems. In solving these problems, it is recommended that instead of herbal products with unproven efficacy, products that are not harmful to health should be used carefully, lifestyle changes such as regular and balanced eating, increasing physical activity and consuming sufficient water should be made and patients should be informed by health professionals about healthy eating and the use of herbal products.

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