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The use of herbs in patients with inflammatory bowel disease in Türkiye: A cross-sectional study.

El uso de hierbas en pacientes con enfermedad inflamatoria intestinal en Türkiye: Un estudio transversal.

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ABSTRACT

Introduction: Ulcerative colitis (UC) and Crohn's disease (CD), known as inflammatory bowel disease (IBD), which are becoming increasingly common around the world, are chronic conditions that affect people's quality of life. This study aims to evaluate the use of herbal products by adults diagnosed with IBD in remission and to investigate the factors associated with the use of herbal products.

Methodology: This study was conducted on 425 adult participants aged 18-65 years (Males = 154, Females = 271) diagnosed with IBD (UC = 295, CD = 130) who were referred to the gastroenterology outpatient clinics of two university hospitals. Data were collected using a questionnaire with three parts: socio-demographic, disease-related, and use of herbal products.

Results: The most commonly used medicinal plants were *Zingiber officinale* Roscoe (40.5%), *Curcuma longa* L. (38.1%) and *Momordica charantia* L. (24.2%). There was a significant difference in the use of herbal products according to the presence of chronic diseases in addition to IBD (p<0.001). 44.4% of participants did not report their use of these herbal products to health professionals. The use of herbal products decreased with increasing age (95% CI:0.946-0.999) and educational level (for bachelor 95% CI: 0.141-0.857, for postgraduate 95% CI: 0.178-0.711) and increased with increasing duration of diagnosis (95% CI:1.049-1.134). In addition, the use of herbal products was higher in people who had not had surgery related to IBD (95% CI:1.658-11.628) and who did not have comorbidities (95% CI:1.836-11.607).

Conclusions: Age, educational level, duration of disease, undergoing surgery related to IBD and having comorbidities are factors affecting the use of herbal products in patients with IBD. However, studies with larger sample sizes are needed to fully elucidate these relationships.

Keywords: Inflammatory Bowel Disease; Ulcerative Colitis; Crohn Disease; Medicinal Plants

RESUMEN

Introducción: La colitis ulcerosa (CU) y la enfermedad de Crohn (EC), conocidas como enfermedades inflamatorias intestinales (EII), son enfermedades crónicas que afectan a la calidad de vida de las personas y cada vez son más frecuentes en todo el mundo. Este estudio pretende

evaluar el uso de productos a base de plantas por adultos diagnosticados de EII en remisión e investigar los factores asociados al uso de productos a base de plantas.

Metodología: Este estudio se realizó con 425 participantes adultos de entre 18 y 65 años (hombres = 154, mujeres = 271) diagnosticados de EII (CU = 295, EC = 130) que fueron remitidos a las consultas externas de gastroenterología de dos hospitales universitarios. Los datos se recogieron mediante un cuestionario dividido en tres partes: sociodemográfica, relacionada con la enfermedad y uso de productos herbales.

Resultados: Las plantas medicinales más utilizadas fueron *Zingiber officinale* Roscoe (40.5 %), *Curcuma longa* L. (38.1 %) y *Momordica charantia* L. (24.2 %). Se observó una diferencia significativa en el uso de productos a base de plantas según la presencia de enfermedades crónicas, además de la EII (p<0,001). El 44.4 % de los participantes no informó a los profesionales sanitarios sobre el uso de estos productos. El uso de productos a base de plantas disminuyó al aumentar la edad (IC del 95%: 0,946-0,999) y el nivel educativo (para licenciados IC del 95%: 0,141-0,857, para posgraduados IC del 95%: 0,178-0,711) y aumentó al aumentar la duración del diagnóstico (IC del 95%:1,049-1,134). Además, el uso de productos a base de plantas fue mayor en las personas que no se habían sometido a cirugía relacionada con la EII (IC del 95%: 1,658-11,628) y que no tenían comorbilidades (IC del 95%: 1,836-11,607).

Conclusiones: La edad, el nivel educativo, la duración de la enfermedad, haberse sometido a cirugía relacionada con la EII y tener comorbilidades son factores que afectan al uso de productos a base de plantas en estos pacientes. Sin embargo, se necesitan estudios con muestras de mayor tamaño para dilucidar plenamente estas relaciones.

Palabras clave: Enfermedad Inflamatoria Intestinal; Colitis Ulcerosa; Enfermedad De Crohn; Planta Medicinal

KEY MESSAGES

- *Zingiber officinale* Roscoe, *Curcuma longa* L. and *Momordica charantia* L. were the most commonly used plants by IBD patients.
- The use of herbal products decreased with increasing age and educational level and increased with increasing duration of diagnosis.

- About half of patients with IBD do not inform their health care professionals about their use of these herbal products.

INTRODUCTION

Inflammatory bowel disease (IBD) is a chronic inflammation of the gastrointestinal system (GIS) characterized by an influx of neutrophils and macrophages that produce cytokines, proteolytic enzymes, and free radicals, resulting in ulceration, abdominal pain, diarrhea, bleeding, fluid and electrolyte loss, and periods of relapse and remission. Both chronic and recurrent inflammation of the bowel result in different clinical pictures, which can be distinguished by the localization of the inflammation in the GIS and the histological changes in the bowel wall. Ulcerative colitis (UC) and Crohn's disease (CD) are the main clinical forms of IBD. Apart from these two main forms, about 10% of IBD is characterized by indeterminate (intermediate) colitis, which is not included in either of these two forms[1-5]. The incidence and prevalence of IBD have increased in recent years in both developed and developing countries. It has been reported to be more common in young adults, in urban areas, and cold climates, with a similar gender distribution. Treatment of IBD is important to improve quality of life and prevent disease progression[4,6-9]. Conventional therapies used in this process are not fully successful in maintaining remission and preventing disease progression and can cause serious side effects. The idea that herbal medicinal products (herbal drugs, herbal preparations, herbal medicines, phytotherapeutics, phytopharmaceuticals), food supplements (nutraceuticals, functional foods), herbal medicines and traditional herbal medicines, which are an important part of complementary medicine, are "more effective/beneficial/less harmful" compared to other treatments is an important point to consider[10]. Due to today's media, lack of control and regulation, and the sale of these products by herbalists and spice sellers, the use of these products has reached serious proportions[11,12]. It has been reported that up to 60% of IBD patients use complementary and alternative medicine and less than half of them report their use to their physicians[13-15].

Although the number of relevant clinical studies is relatively small, it is seen that the studies are mostly review articles[16-18]. Studies examining the use of herbal products by IBD patients and the factors affecting the use of herbal products are limited. Advice can be difficult without a proper

understanding of the research behind the use of herbs in IBD. It is imperative that healthcare professionals managing IBD understand the risks and benefits of using herbs as a complementary or monotherapy to manage IBD. In Türkiye, as in many other countries, herbal products are not registered or controlled and their markets are not adequately regulated. Therefore, it is important to have information about the most commonly used herbs and their prevalence of use, especially when evaluating potential adverse effects and herb-drug interactions in patients with IBD. Therefore, this study aims to evaluate the use of herbal products by adults diagnosed with IBD in remission and to investigate the factors associated with the use of herbal products.

METHODS

Study Design and Subjects

This descriptive cross-sectional study was conducted between 9 October 2023 and 1 March 2024 using a questionnaire in the form of a personal interview with adults diagnosed with IBD in remission who attended the gastroenterology outpatient clinics of two different university hospitals. The study population consisted of individuals aged 18-65 years (N=640) who had been clinically diagnosed with UC or CD by a gastroentrologist and were in remission at the time of data collection. Participants were excluded if they were pregnant, lactating, or experiencing severe IBD complications (such as hospitalization or emergency surgery requirements, fulminant colitis, massive bleeding, peritonitis, toxic megacolon, etc.). Additional exclusion criteria included severe physical or mental disorders and/or a refusal to take part in the study. According to the sample size calculation formula for a known population (N=640), which is based on a 95% confidence interval and a 5% margin of error, the target sample size was set at a minimum of 386 adults diagnosed with IBD in remission.

Ethical Aspect of the Research

The present study was conducted by the tenets of the Declaration of Helsinki, and all procedures involving research study patients were approved by the University Medical Research Ethics Committee (on 17-01-2024 and decision number 23-10T/25). Written informed consent was also obtained from all patients.

Data Collection

Data were collected using a questionnaire that was developed based on the literature review and the objectives of our study. Before initiating the study, the questionnaire's face validity was assessed by a panel of experts, including a dietitian, a pharmacist, and a physician. The comprehensibility and applicability of the questionnaire were pre-tested on 10 volunteers who were representative of the study population. Based on their feedback, the questions were revised to ensure clarity and appropriateness for assessing the use of herbal products in individuals with IBD. Data for the study were collected using a questionnaire consisting of three parts. The first part of the questionnaire contained sociodemographic and characteristic information about the participants, the second part contained information about the disease, and the third part contained information about the use of herbal products and the type and form of herbal products used.

Sociodemographics and Characteristics: In this part of the questionnaire, participants were asked about their age, gender, marital status, education, occupation, income, exercise habits, smoking, and alcohol consumption. Body mass index (BMI; kg/m^2) was calculated from self-reported weight and height.

Characteristics of the Disease: In this part of the study, participants were asked about their disease diagnosis, location of involvement, medication use, first sign, extraintestinal findings, IBD-related surgical status, presence of comorbidities, and presence of intestinal infection or inflammation.

Information on the Use of Herbal Products: This part of the study asked about the use of herbal products in IBD, the form and type of herbal product if used, the place where the herbal product was purchased, the person who recommended the herbal product, whether the herbal product was researched, the frequency of use of the herbal product, whether the herbal product was shared with the healthcare professional and the duration of use, and the medicinal plants and forms reported in the national and international literature for use in IBD.

Statistical Analysis

Data from the study were analyzed using SPSS (Statistical Package for Social Sciences) version 29. Categorical data were expressed as numbers and percentages. Pearson's Chi-squared test, Fisher's exact test, and T-test for independent groups were used to compare the means of two independent groups and to assess the relationship between two categorical variables. Binary logistic regression analysis was performed to determine the factors affecting the probability of the two-category dependent variable. The validity of the model was checked with Nagelkerke R^2, Cox & Snell R^2 and the Hosmer-Lemeshow Test. For all statistical tests, a confidence interval of 95% and a significance level of $p<0.05$ were accepted.

RESULTS

This study was completed with the participation of 425 adults diagnosed with IBD. The mean age of the participants was 37.98±14.21 years and the mean BMI was 25.30±7.53 kg/m^2. The sociodemographic characteristics of the participants are shown in Table 1.

Participants were diagnosed with IBD a mean of 6.63±6.07 years ago. The time since IBD diagnosis was made was significantly lower in herbal product users (5.88±5.79 years) than in non-users (7.88±6.33 years) (p=0.001). UC was diagnosed in 69.4% and CD in 30.6% of IBD patients. Colon involvement was observed in 68.5% of participants. Bloody diarrhea (33.4%), abdominal pain and/or weight loss (22.4%), mucusy stools and/or abdominal pain (22.1%), and diarrhea (22.0%) were the first symptoms or findings observed at diagnosis. The use of herbal products differed among those with bloody diarrhea or mucusy stools and/or abdominal pain at first diagnosis (p<0.001). The use of herbal products differed in people with IBD who had extraintestinal symptoms due to the disease (p=0.004). There was a statistically significant difference in the use of herbal products in people with extraintestinal symptoms such as nausea, vomiting, fever, fatigue, night sweats, anemia, eye symptoms, and skin problems (p<0.001). It was found that the use of herbal products was higher in people who had undergone surgery for the disease (p=0.002). There was a significant difference in the use of herbal products according to the presence of chronic diseases in addition to IBD (p<0.001). All individuals with thyroid disease in addition to IBD used herbal products (p=0.026) (Table 2).

Table 1. Distribution of socio-demographic characteristics of participants according to herbal product use.

	Total (n=425) $\bar{X}\pm SD$	Herbal Products User (n=266) $\bar{X}\pm SD$	Herbal Product Non-user (n=159) $\bar{X}\pm SD$	Test Value
Age (year)	37.98±14.21	39.19±14.39	36.78±13.78	t=1.696 p=0.091
BMI (kg/m²)	25.30±7.53	25.03±8.82	25.60±4.66	t=-0.755 p=0.450
	n (%)	n (%)	n (%)	
Gender				
Men	154 (36.2)	96 (36.1)	58 (36.5)	χ^2=0.006
Women	271 (63.8)	170 (63.9)	101 (63.5)	p=1.000
Marital Status				
Married	237 (55.8)	152 (57.1)	85 (53.5)	χ^2=0.547
Single	188 (44.2)	114 (42.9)	74 (46.5)	p=0.481
Educational Status				
≤High school degree	58 (13.6)	43 (16.2)	15 (9.4)	χ^2=5.613
Bachelor's degree	298 (70.1)	187 (70.3)	111 (69.8)	p=0.060
Postgraduate	52 (12.2)	26 (9.8)	26 (16.4)	
Employment Status				
Not Working	91 (21.4)	62 (23.3)	29 (18.2)	
Officer	179 (42.1)	108 (40.6)	71 (44.7)	χ^2=2.337
Student	104 (24.5)	62 (23.3)	42 (26.4)	p=0.505
Other	51 (12.0)	34 (12.8)	17 (10.7)	
Income Status				
Less than expenses	147 (34.6)	93 (35.0)	54 (34.0)	
Equal to expenses	183 (43.1)	109 (41.0)	74 (46.5)	χ^2=1.671 p=0.434
Higher than expenses	95 (22.4)	64 (24.1)	31 (19.5)	
Regular Physical Activity				
Yes	141 (33.2)	88 (33.1)	53 (33.3)	χ^2=0.003
No	284 (66.8)	178 (66.9)	106 (66.7)	p=1.000
Smoking				
Yes	116 (27.3)	70 (26.3)	46 (28.9)	
I smoked and quit	53 (12.5)	38 (14.3)	15 (9.4)	χ^2=2.210 p=0.331
I have never smoked	256 (60.2)	158 (59.4)	98 (61.6)	
Alcohol Consumption				
Yes	138 (32.5)	89 (33.5)	49 (30.8)	χ^2=0.317
No	287 (67.5)	177 (66.5)	110 (69.2)	p=0.594

*Independent sample t-test, Chi-square test, p<0,05. **BMI:** Body mass index.

Table 2. Distribution of participants' general information about their illnesses according to their use of herbal products.

	Total (n=425) $\overline{X}$±SD	Herbal Product User (n=266) $\overline{X}$±SD	Herbal Product Non-user (n=159) $\overline{X}$±SD	Test Value
Diagnosed with IBD (year)	6.63±6.07	5.88±5.79	7.88±6.33	t=-3.328 **p=0.001**[*]
	n (%)	n (%)	n (%)	
Diagnosis				
Ulcerative colitis	295 (69.4)	184 (69.2)	111 (69.8)	χ^2=0.019
Crohn's disease	130 (30.6)	82 (30.8)	48 (30.2)	p=0.914
Location of Involvement				
Terminal ileum	133 (31.3)	84 (31.6)	49 (49.8)	χ^2=0.635
Colon	291 (68.5)	181 (68.0)	110 (69.2)	p=0.728
Ileocolon	1 (0.2)	1 (0.6)	- (-)	
First Sign				
Diarrhea	94 (22.1)	61[a] (22.9)	33[a] (20.8)	**χ^2=29.046**
Bloody diarrhea	142 (33.4)	109[a] (41.0)	33[b] (20.8)	**p<0.001**
Abdominal pain and/or weight loss	95 (22.4)	56[a] (21.1)	39[a] (24.5)	
Mucusy stools and/or abdominal pain	94 (22.1)	40[a] (15.0)	54[b] (34.0)	
Medication Use Status				
I don't use	30 (7.1)	19 (7.1)	11 (6.9)	χ^2=0.008
I use	395 (92.9)	247 (92.9)	148 (93.1)	p=1.000
Extraintestinal Results Related to the Disease				
Yes	329 (77.4)	194 (72.9)	135 (84.9)	**χ^2=8.159**
No	96 (22.6)	72 (27.1)	24 (15.1)	**p=0.004**
Existing Extraintestinal Results				
Nausea and vomiting	71 (21.6)	31[a] (16.0)	40[b] (29.6)	
Fever, fatigue and night sweats	69 (21.0)	61[a] (31.4)	8[b] (5.9)	
Anemia	46 (14.0)	16[a] (8.2)	30[b] (22.2)	**χ^2=9.033**
Metabolic bone problems	47 (14.3)	31[a] (16.0)	16[a] (11.9)	**p<0.001**
Eye symptoms	25 (7.6)	1[a] (0.5)	24[b] (17.8)	
Oral and nasal diseases	24 (7.3)	16[a] (8.2)	8[a] (5.9)	
Skin diseases	22 (6.7)	22[a] (11.3)	-[b] (-)	
Cardiovascular diseases	25 (7.6)	16[a] (8.2)	9[a] (6.7)	
IBD Related Operation				
Yes	47 (11.1)	39 (14.7)	8 (5.0)	**χ^2=9.383**
No	378 (88.9)	227 (85.3)	151 (95.0)	**p=0.002**
Family History of IBD				
Yes	119 (28.0)	70 (26.3)	49 (30.8)	χ^2=1.000
No	306 (72.0)	196 (73.7)	110 (69.2)	p=0.318
Comorbidity				
Yes	73 (17.2)	64 (24.1)	9 (5.7)	**χ^2=23.682**

No	352 (82.8)	202 (75.9)	150 (94.3)	**p<0.001**
Existing Comorbidity				
Thyroid diseases	24 (32.9)	24 (37.5)	- (-)	**χ^2=5.028**
Cardiovascular diseases	49 (67.1)	40 (62.5)	9 (100.0)	**p=0.026**
Intestinal Infection				
Yes	187 (44.0)	114 (42.9)	73 (45.9)	χ^2=0.377
No	238 (56.0)	152 (57.1)	86 (54.1)	p=0.546

*Chi-square test, p<0.05 **IBD:** Inflammatory Bowel Disease.

Of those using herbal products for IBD, 38.7% obtained them from herbalists and/or market, 20.3% from pharmacies, and 17.7% from the media and/or social media. More than half of the participants reported that they chose to use/consume the herbal product they used (50.8%) and 94.0% of people reported that they used these herbal products through research. More than half of the participants used herbal products irregularly. 44.4% of participants did not report their use of these herbal products to health professionals. There was no statistically significant difference (p>0.05) between participants' attitudes towards the use of herbal products and clinical forms of the disease, except for the status of reporting the herbal products they used to healthcare professionals (p=0.016) (Table 3).

**Table 3.** Distribution of participants' information on herbal product use according to IBD type.

Variables Related to Herbal Product	Total (n=425) n (%)	UC (n=184) n (%)	CD (n=82) n (%)	Test Value
Where is it supplied?				
Transfer/Market	103 (38.7)	68 (37.0)	35 (42.7)	
Social environment	31 (11.7)	20 (10.9)	11 (13.4)	χ^2=3.332
Media/Social media	47 (17.7)	37 (20.1)	10 (12.2)	p=0.504
Pharmacy	54 (20.3)	36 (19.6)	18 (22.0)	
Market/Shop	31 (11.7)	23 (12.5)	8 (9.8)	
Recommender				
Relative	38 (14.3)	26 (14.1)	12 (14.6)	
Itself	135 (50.8)	100 (54.3)	35 (42.7)	χ^2=4.420
Physician	53 (19.9)	31 (16.8)	22 (26.8)	p=0.220
Pharmacist	40 (15.0)	27 (14.7)	13 (15.9)	
Research Status				
Yes	250 (94.0)	175 (95.1)	75 (91.5)	χ^2=1.333
No	16 (6.0)	9 (4.9)	7 (8.5)	p=0.270
Frequency of Use				

Every day	23 (8.6)	14 (7.6)	9 (11.0)	χ^2=2.076
2-3 times a week	71 (26.7)	46 (25.0)	25 (30.5)	p=0.557
1 time per week	22 (8.3)	16 (8.7)	6 (7.3)	
Irregular	150 (56.4)	108 (58.7)	42 (51.2)	
Situation of Sharing with Healthcare Professional				
Yes	148 (55.6)	93 (50.5)	55 (67.1)	**χ^2=6.279**
No	118 (44.4)	91 (49.5)	27 (32.9)	**p=0.016**
Usage Period (months)				
<1	123 (46.2)	85 (46.2)	38 (46.3)	
1-3	69 (25.9)	48 (26.1)	21 (25.6)	χ^2=0.191
≥3-12	17 (6.4)	11 (6.0)	6 (7.3)	p=0.979
≥12	57 (21.4)	40 (21.7)	17 (20.7)	

*Chi-square test, p<0.05 **UC:** Ulcerative colitis, **CD:** Crohn's disease.

When the type and form of herbal products used by the participants were examined, it was found that 34 of the 44 plants examined were used by the participants. Figure 1 shows the 10 most commonly used plants. The most commonly used herbal products were *Zingiber officinale* Roscoe (40.8%), *Curcuma longa* L. (30.8%), and *Momordica charantia* L. (28.5%). There was no statistically significant difference between the herbal products used by the participants and the clinical forms of the disease (p>0.05) (Figure 1).

Figure 1. Distribution of information on the type and form of herbal products used by participants.
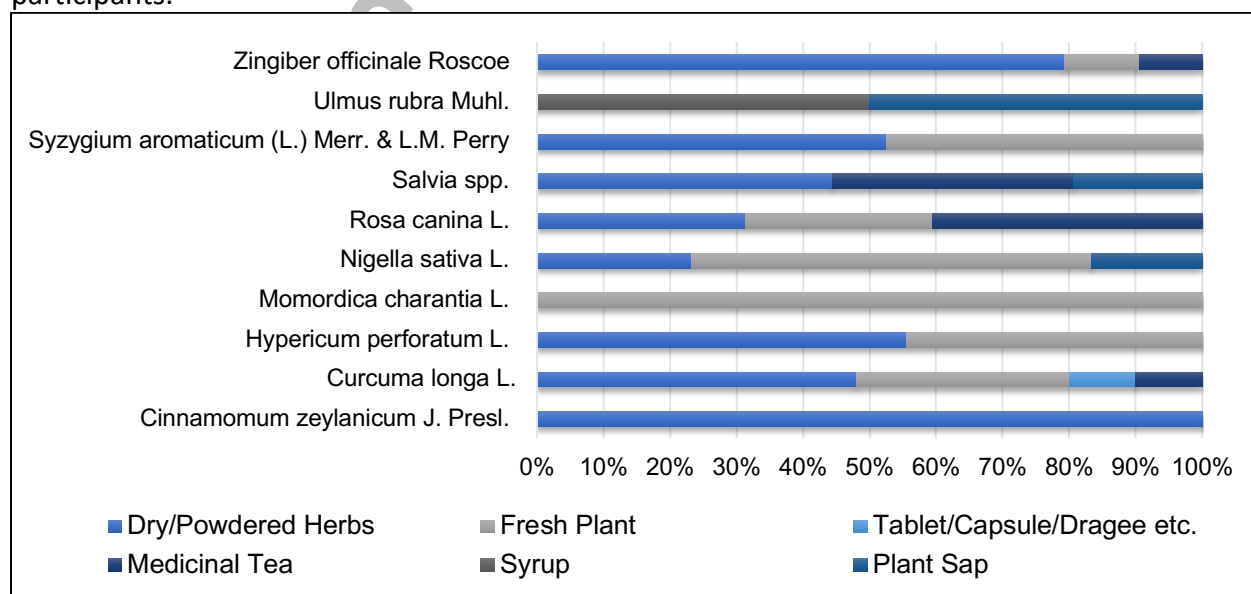
Logistic regression analysis of the factors associated with the use of herbal products by the participants is shown in Table 4. The logistic regression model is valid (p=0.416) and explains the use of herbal products at a moderate level (Nagelkerke R^2:0.301; Cox & Snell R^2:0.221). The use of herbal products decreases by 2.8% with increasing age (p=0.040). University graduates were 65.2% less likely to use herbal products than the reference group (≤High school degree) (p=0.022), and postgraduates were 64.4% less likely than the reference group (p=0.003). The use of herbal products increases by 9.1% as the time of diagnosis increases (p<0.001). In the first sign of the disease, 82.2% of those with bloody diarrhoea (p<0.001), 88.6% of those with abdominal pain and/or weight loss (p<0.001), and 65.6% of those with mucousy stools and/or abdominal pain (p=0.002), herbal product use was lower than in the reference group (diarrhoea). The use of herbal products was found to be 4.4 times higher in individuals without IBD related operation (p=0.003) and 4.6 times higher in individuals without comorbidity (p=0.001).

Table 4. Results of logistic regression analysis exploring factors associated with participants' use of herbal products

Variables	B	Wald	p-value	Exp (B)	%95 CI (min-max)
Constant	-20.560	0.000	1.000	0.000	
Age	-0.028	4.200	**0.040**[*]	0.972	0.946-0.999
Gender (Women)	0.168	0.471	0.493	1.183	0.731.913
Marrital Status (Single)	0.084	0.064	0.800	1.088	0.567-2.089
Educational Status (Bachelor's degree)	-1.056	5.263	**0.022**[*]	0.348	0.141-0.857
Educational Status (Postgraduate)	-1.034	8.564	**0.003**[*]	0.356	0.178-0.711
Employment Status (Officer)	-0.054	0.015	0.902	0.947	0.397-2.260
Employment Status (Student)	0.327	0.663	0.416	1.386	0.632-3.042
Employment Status (Other)	-0.083	0.030	0.863	0.921	0.359-2.359
Income Status (Equal to expenses)	0.041	0.016	0.899	1.042	0.549-1.980
Income Status (Higher than expenses)	0.396	1.619	0.203	1.486	0.808-2.733
Regular Physical Activity (No)	-0.047	0.037	0.848	0.954	0.587-1.549
Diagnosed with IBD	0.087	19.158	**<0.001**[*]	1.091	1.049-1.134
Diagnosis (Chron's disease)	-0.285	0.121	0,728	0,752	0.151-3.735
Location of Involvement (Colon)	19.734	0.000	1.000	371884837.4	0.000
Location of Involvement (Ileocolon)	19.966	0.000	1.000	468826857.9	0.000
First sign (Bloody diarrhea)	-1.724	22.761	**<0.001**[*]	0.178	0.088-0.362
First sign (Abdominal pain and/or weight loss)	-2.168	35.467	**<0.001**[*]	0.114	0.056-0.234
First sign (Mucusy stools and/or abdominal pain)	-1.067	9.391	**0.002**[*]	0.344	0.174-0.681

Medication Use Status (I use)	-0.001	0.000	0.998	0.999	0.397-2.516
IBD Related Operation (No)	1.480	8.865	**0.003**[*]	4.391	1.658-11.628
Comorbidity (No)	1.530	10.575	**0.001**[*]	4.617	1.836-11.607

Nagelkerke R^2:0.301; Cox & Snell R^2:0.221

Hosmer-Lemeshow Testi Chi-square: 8.184, p-value:0.416

[*]Binary logistic regression analysis, $p<0.05$

Reference category: "Gender (Men)", "Marrital Status (Married)", "Educational Status (≤High school degree)", "Employment Status (Not Working)", "Income Status (Less than expenses)", "Regular Physical Activity (Yes)", "Diagnosis (Ulcerative colitis)", "Location of Involvement (Terminal ileum)", "First sign (Diarrhea)", "Medication Use Status (I don't use)", "IBD Related Operation (Yes)", "Comorbidity (Yes)"

DISCUSSION

This study, designed and conducted to assess the use of herbal products and associated factors in IBD patients aged 18-65 years in remission, found that more than half of the participants (62.6%) used herbal products. Similar to this study, more than half (68.0%) of adults with chronic diseases reported using herbal products[19]. A study of people with chronic diseases found that about one-third of patients used herbal products[20]. In the United States, about 40.0% of adults with chronic conditions used complementary treatments, and one in five used herbal products[21]. In contrast to these studies, a study of Thai adults with chronic diseases found a higher proportion of those who had not used herbal products in the previous 12 months (64.1%)[22].

In the present study, the use of herbal products decreased with educational level. In an Italian study, higher levels of education were associated with increased use of herbal products[17]. Similar to our study results, a study of adults found that higher health literacy was associated with lower attitudes towards traditional and complementary medicine[18]. Although it is assumed that the use of herbal products has become popular among people with high levels of education, the literature shows that there is no parallel between education and the use of herbal products[19-25]. In many studies, younger age was an independent predictor of herbal product use in IBD patients. In a study from Hungary, complementary alternative medice use was associated with a younger age, and higher educational level[26,27]. In a multicenter study from Norway, high level of education and age between 35 and 50 years were independent factors for the use of complementary and alternative medicine[28,29]. In this study, it was determined that the use of herbal products was higher in younger age IBD patients in accordance with the literature.

Herbal product use is associated with disease duration and other factors. In a study from Korea, longer duration of IBD were found to be independent predictors of complementary and

alternative medicine use[30]. In a systematic review and meta-analysis, a disease duration of more than 5 years and the occurrence of complications were reported to be factors significantly associated with herbal medicine use[31]. In this study, consistent with the literature, herbal product use increased as the duration of diagnosis increased.

The current study found that more than a third of participants (38.7%) bought herbal products from herbalists or markets, and almost half of them (44.4%) did not discuss the herbal product they used with a doctor or pharmacist. Similar to this study, a study of herbal products used by adults for digestive problems found that 41.4% of participants obtained the herbal products they used from herbalists in the form of openly sold products (mixture, powder, tea)[32]. A similar cross-sectional study reported that the majority of adults purchased herbal products from spice shops/herbalists and used them for disease prevention. This widespread use among healthy people was associated with the idea that they could feel good about using herbal products because they did not have a disease[33]. Another study in adults reported that the majority of adults who used herbal products did not tell their doctors about the herbal product they were using, and the reason for not telling their doctors was that they thought their doctors would disapprove of their use of herbal products[34]. A survey of 3876 adults about the use of herbal products found that only 29.1% of participants had received information about herbal products from their doctors or other health professionals, and only 37.9% had told their doctors about the use of these products[35]. There may be various interactions between drug treatment and the herbal products used. Therefore, healthcare professionals should communicate with patients, not judge them in this regard, and have sufficient knowledge to explain the effects of these products to them.

In the current study, more than half of the participants (50.8%) reported that they chose to use herbal products by doing their research. In contrast to the current study, a study found that the most important factors influencing adults to use herbal products were other patients with the same condition, the internet, and spice/herb shops[33]. A study of diabetic patients reported that the majority of patients (82.4%) received information about herbal products from family, friends, and the Internet[36]. In a study of adults attending a family health center, the Internet was found to have the greatest influence on the use of herbal products[37]. A study of patients attending a

gastroenterology outpatient clinic found that about half of the patients used herbal products after hearing about them from their social environment[38]. A study of 400 Norwegian women found that the tendency to use herbal products was generally based on recommendations from friends and relatives[29]. The differences in the results of the studies may be due to the different levels of education of the participants. In this study, the fact that participants reported that they started using herbal products through their research could be related to the fact that more than half of them had a university degree. It should be borne in mind that interactions between herbal products and medicines may occur in patients who use herbal products obtained from herbalists/markets, media channels, and the internet without any knowledge of medicines.

This study has a several limitations. First, the cross-sectional design of this study limits the ability to make causal inferences. Second, data were obtained through self-reporting, which may lead to misreporting and recall bias due to the nature of the study. Third, this study sample included outpatients presenting at 2 different university hospitals in Izmir, so these results cannot be generalized.

CONCLUSIONS

This study demonstrated that Zingiber officinale Roscoe, Curcuma longa L. and Momordica charantia L. were the most commonly used plants by IBD patients. There was a significant difference in the use of herbal products depending on the presence of chronic diseases in addition to IBD. About half of patients with IBD do not inform their health care professionals about their use of these herbal products. The use of herbal products decreased with increasing age and educational level and increased with increasing duration of diagnosis. In addition, the use of herbal products was higher in people who had not had surgery related to IBD and who did not have comorbidities. Studies with larger sample sizes are needed to fully elucidate these relationships.

COMPETING OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

AVAILABILITY OF DATA

Data available on request to the author of the correspondence.

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