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Gastrointestinal System Symptoms, Psychological Resilience, Emotional Self-Efficacy, and Healthy Living Behaviors in Patients Scheduled for Gastrosocopy/Colonoscopy

ABSTRACT

Gastrointestinal symptoms are very common worldwide. This study aimed to examine the relationship between gastrointestinal system symptoms, psychological resilience, emotional self-efficacy, and healthy living behaviors in patients. The study was conducted in a training and research hospital in Turkey with 258 patients who had experienced gastrointestinal symptoms and were scheduled for upper gastrosocopy and/or colonoscopy. The data were obtained by using an information form, the Brief Resilience Scale, the Emotional Self-Efficacy Scale, the Healthy Lifestyle Behaviors Scale, and the Gastrointestinal Symptom Rating Scale. A statistically positive and significant relationship was found between the Emotional Self-Efficacy Scale and the Healthy Lifestyle Behaviors Scale ($r = 0.376$; $p < .05$). There was a statistically significant negative relationship between the mean Brief Resilience Scale and the Gastrointestinal Symptom Rating Scale scores ($r = -0.150$; $p < .05$). In addition, a positive and significant relationship was found between the mean Brief Resilience Scale and the Emotional Self-Efficacy Scale scores ($r = 0.374$; $p < .05$). Psychological factors and healthy living behaviors thus clearly affect gastrointestinal system symptoms. Planning interventions to teach self-management through healthy living behaviors and promoting psychological resilience may reduce gastrointestinal system symptoms.

Gastrointestinal system (GIS) symptoms include abdominal pain, abdominal discomfort, nausea, distention, belching, diarrhea, and constipation (Clevers, Törnblom, Simrn, Tack, & Van Oudenhove, 2019). These symptoms are very common globally and the prevalence is reported to be approximately 11.2% (Mühlbacher &

Kaczynski, 2021). In the United States, 61% of individuals experience GIS symptoms once a week or more (Almario et al., 2018), whereas in Turkey, 70.6% of individuals experience GIS symptoms at least once a month (Sezgin et al., 2019). These symptoms, which are extremely common in daily life, are mostly due to diet, lifestyle, stress, and the side effects of medication,

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but they sometimes occur without any obvious reason (Walter et al., 2021).

Background

There is a close relationship between the brain and the gut. This relationship is involved in the pathogenesis of functional bowel disorders. Therefore, changes in bowel function are closely related to changes in moods (Farhadi, Banton, & Keefer, 2018; Walter et al., 2021). Kim and Lim (2021) reported that chronic diarrhea and constipation are more common in people with depression and anxiety than in those without. Similarly, Vork et al. (2020) found a significant relationship between stress and abdominal pain scores in their study with irritable bowel syndrome (IBS) patients, and a 1-point increase in average stress was associated with a 0.10-point increase in abdominal pain. Considering all these relationships, it is thought that psychological resilience, emotional self-efficacy, and healthy life behaviors may affect GIS symptoms.

Resilience

Resilience is a coping style characterized by the ability to adapt well and recover in response to stressful situations (Park et al., 2018). Resilience provides a buffer against the symptoms of stress and depression. There is neurobiological evidence showing that it achieves this effect by balancing catecholamine and cortisol responses in the face of stress and trauma, and working through various brain structures and neurotransmitters to reduce the long-term effects of such stressors on the body (Philippou et al., 2022). Psychological resilience therefore affects responses to diseases and the symptoms experienced. Park et al. (2018) found that psychological resilience was lower in those with irritable bowel disease than in healthy volunteers, and this was also associated with a worsening in the severity of symptoms and a lower quality of life. Similarly, Philippou et al. (2022) determined that there is a negative relationship between psychological resilience and anxiety and depression in inflammatory bowel diseases. When all these studies are evaluated, it is clear that resilience and other psychological variables have an impact on physical health. Additionally, emotional self-efficacy can have a positive effect on how individuals cope with negative situations that cause stress and trauma.

Self-efficacy

Self-efficacy is an individual's belief that they can perform a necessary task to achieve a desired result (Eindor-Abarbanel et al., 2020). Emotional self-efficacy can be defined as an individual's perceived confidence in their ability to regulate their negative

emotions when these are triggered by stressful or negative events (Galla & Wood, 2012). It also includes the individual's beliefs about their ability to overcome negative emotions and to use their emotional functioning to adapt to different situations. Individuals who believe that they can effectively cope with their negative emotions have less risk of sadness, anger, abandonment, and developing anxiety and depression, and are more able to express positive emotions (Thartori et al., 2021). Self-efficacy strongly influences health-promoting behaviors regardless of the severity of the disease (Eindor-Abarbanel et al., 2020).

In recent years, self-efficacy has been frequently studied in diseases related to the GIS (Dąbek-Drobny, Mach, & Zwolińska-Wcisło, 2020; Khalifesoltani, Hajjalizadeh, & Ahadi, 2021; Stone et al., 2022). In these studies, self-efficacy is accepted as a positive or potentially protective psychological quality. Because it is related to the belief that one can successfully manage one's own condition, it has been reported to have positive effects in chronic diseases, including improving mobility in poststroke patients, glycemic control in diabetic patients, physical functioning in cancer, and disease symptoms in patients with IBS (Stone et al., 2022). It also helps individuals to maintain a healthy lifestyle.

Lifestyle

Lifestyle is an effective factor in the emergence of many diseases and symptoms. It is reported that many gastrointestinal (GI) diseases and their symptoms are also affected by lifestyle behaviors (Guo et al., 2015; Jaber et al., 2016). Unhealthy food and drink, such as excessive consumption of fast food, coffee, tea, spicy or salty foods, alcohol, smoking cigarettes, and the use of banned substances play a role in the etiology of GIS symptoms. In addition, psychosocial factors such as stress, unhappiness, depression, and anxiety, as well as infections such as *Helicobacter pylori* infection are also involved in the etiology of GI symptoms and affect symptom severity (Jaber et al., 2016; Saneei et al., 2021). Saneei et al. (2021) concluded that healthy lifestyle behaviors reduce gastroesophageal reflux and functional dyspepsia symptoms.

Ohlsson and Manjer (2016) stated that there is a relationship between GIS symptoms, physical activity, and daily intake of breakfast, lunch, and dinner. They determined that irregular lunch was associated with diarrhea, and irregular breakfast with distention. In a study with the middle-aged and elderly, smoking was found to be associated with abdominal pain, constipation, and distention (Lundström, Manjer, & Ohlsson, 2016). Unhealthy eating, a sedentary lifestyle, smoking, and obesity are also known to have important

roles in the development of diverticulitis (Liu et al., 2017).

Based on this evidence, it can be said that in order to prevent many diseases and symptoms, it is necessary to acquire healthy lifestyle behaviors and make these behaviors into a lifestyle. A healthy lifestyle reduces the risk of becoming seriously ill or dying early, and adopting healthy living behaviors ensures that the individual experiences an acceptable level of physical, mental, and social well-being (Rippe, 2018). This study aimed to determine the relationship between GIS symptoms, which interact with physical, mental and social health, and psychological resilience, emotional self-efficacy, and healthy lifestyle behaviors.

Materials and Methods

This research was carried out as a descriptive and cross-sectional study in a training and research hospital in Turkey between September 2020 and September 2021. The study was conducted in accordance with the Declaration of Helsinki. Written permission was obtained from the Bilecik Şeyh Edebali University Ethics Committee (number: E.11668, date: 27/05/2020) for the ethical suitability of the study. After the approval of the ethics committee, institutional permission was obtained from the hospital where the study was conducted. Consent was obtained from the participants. All participants were included in the research on a voluntary basis.

Data Collection Forms

Information Form

This form addressed information about participants' sociodemographic characteristics and any behaviors thought to be related to the GIS.

Brief Resilience Scale

This scale was developed by Smith et al. (2008) in order to measure psychological resilience. The Turkish adaptation of the scale was conducted by Doğan (2015). The Brief Resilience Scale (BRS) is a 6-item and 5-point Likert-type scale, with answers ranging from "not at all appropriate" (=1) to "completely appropriate" (=5). Items 2, 4, and 6 are reverse-coded. A high score on the scale indicates high psychological resilience.

Emotional Self-Efficacy Scale

This scale was developed by Kirk, Shutte, and Hine (2008). It was adapted into Turkish by Totan, İkiz, and Karaca (2010). The Emotional Self-Efficacy Scale (ESES) is a 32-item and 5-point Likert-type scale, with answers ranging from "not at all sure" (=1) to "absolutely sure" (=5). The level of emotional self-efficacy

is determined by adding all of the items in the scale. High scores for the total score indicate that the respondent has a high level of emotional self-efficacy, while low scores indicate insufficient or limited emotional self-efficacy perception. The scale has the following subdimensions: regulating emotions (regulate—items: 1, 2, 8, 12, 16, 20, 24, 28, and 32); using emotions to assist thought (assist—items: 3, 6, 10, 14, 18, 22, 26, and 30); understanding emotions (understand—items: 4, 7, 11, 15, 19, 23, 27, and 31); and perceiving emotions (perceive—items: 5, 9, 13, 17, 21, 25, and 29).

Healthy Life Style Behavior Scale II

The first version of this scale was developed by Walker in 1987 and revised by Walker and Hill-Polerecky in 1996. It was adapted into Turkish by Bahar, Beşer, Gördes, Ersin, and Kışsal (2008). The scale is a 4-point Likert-type scale. It has ratings from "never" (=1) to "regularly" (=4). The Healthy Life Style Behavior Scale II (HLBS II) consists of 52 items, with subdimensions of health responsibility (items: 3, 9, 15, 21, 27, 33, 39, 45, and 51); exercise (items: 4, 10, 16, 22, 28, 34, 40, and 46); nutrition (items: 2, 8, 14, 20, 26, 32, 38, 44, and 50); spiritual development (items: 6, 12, 18, 24, 30, 36, 42, 48, and 52); interpersonal relations (items: 1, 7, 13, 19, 25, 31, 37, 43, and 49); and stress management (items: 5, 11, 17, 23, 29, 35, 41, and 47). High scores on the scale indicate that healthy lifestyle behaviors are being adopted.

Gastrointestinal Symptom Rating Scale

The Gastrointestinal Symptom Rating Scale (GSRS) was developed by Revicki, Wood, Wiklund, and Crawley (1998) in order to determine common symptoms of GI diseases, clinical experiences, and opinions regarding GI symptoms. The Turkish adaptation was conducted by Turan, Aştı, and Kaya (2017). The GSRS is a 15-item and 7-point Likert-type scale, and has response options ranging from "no problem" to "severe discomfort." On the basis of factor analysis, the GSRS has five subdimensions: diarrhea (items: 11, 12, and 14); indigestion (items: 6, 7, 8, and 9); constipation (items: 10, 13, and 15); abdominal pain (items: 1, 4, and 5); and reflux (items: 2 and 3). In the GSRS, the subject is questioned about how she or he feels regarding GI problems during the last week. The greater the scores are, the more intense the symptoms (Revicki et al., 1998).

Results

The mean age of participants in the study was 54.65 ± 14.91 (18–89), and 63.2% of them were women. Most of them (59.7%) were primary school graduates, and 78.3% of them had a moderate financial status. The

TABLE 1. Characteristics of Subjects

Characteristics		n	%
Gender	Female	163	63.2
	Male	95	36.8
Marital status	Single	30	11.6
	Married	228	88.4
Education level	Not literate	11	4.3
	Primary school	154	59.7
	Middle school	33	12.8
	High school	27	10.5
	University	33	12.8
Economic situation	Low	45	17.4
	Middle	202	78.3
	High	11	4.3
Smoking	Not smoking	140	54.3
	I used to before	70	27.1
	Still regularly	48	18.6
Drinking alcohol	I don't use	226	87.6
	I used to before	9	3.5
	I often use	7	2.7
	I use occasionally	16	6.2
Healthy eating	Yes	113	48.3
	No	74	28.7
	Partially	71	27.5
Exercise	Yes	80	31.0
	No	178	69.0

majority of subjects did not smoke (54.3%) and did not use alcohol (87.6%) (Table 1).

The mean scores of subjects on the BRS, ESES, HLBS II, and GSRS were 15.19 ± 7.29 (6–30), 105.47 ± 21.72 (32–160), 130.86 ± 16.29 (52–208), and 65.00 ± 18.19 (15–105), respectively (Table 2). The Cronbach's α coefficient of the BRS was determined as 0.98. Cronbach's α coefficients of the total ESES and its subdimensions were 0.97 and between 0.82 and 0.92, respectively. The Cronbach's α coefficient was determined as 0.89 for the total HLBS-II and between 0.70 and 0.89 for its subdimensions in the present study. Cronbach's α coefficients of the total GSRS and its subdimensions were 0.90 and between 0.84 and 0.91, respectively.

There was a statistically significant positive relationship between the BRS and ESES total scores of subjects ($r = 0.374$; $p < .05$). A statistically significant negative correlation was determined between the BRS and GSRS total scores ($r = -0.150$; $p < .05$). There was a statistically significant positive correlation between the ESES and the HLBS II total ($r = 0.376$;

$p < .05$) (Table 3). In addition, there was a positive and significant relationship between the BRS and ESES's subdimensions of regulating emotions, using emotions to assist thoughts, understanding emotions, and perceiving emotions ($r = 0.399$, $r = 0.339$, $r = 0.341$, $r = 0.377$; $p < .05$).

There was a positive and significant relationship between the spiritual development and interpersonal relations subdimensions of the BRS and HLBS II ($r = 0.130$, $r = 0.134$; $p < .05$). A statistically significant negative correlation was found between the BRS and GSRS diarrhea and constipation subdimensions ($r = -0.205$, $r = -0.148$; $p < .05$). There was a statistically positive and significant relationship between the ESES and HLBS II's subdimensions of health responsibility, physical activity, spiritual development, interpersonal relationships, and stress management ($r = 0.282$, $r = 0.269$, $r = 0.535$, $r = 0.479$, $r = 0.411$; $p < .05$). A statistically significant negative correlation was found between the ESES and the reflux and abdominal subdimensions of the GSRS ($r = -0.149$, $r = -0.198$; $p < .05$).

A statistically significant difference was found between the gender of subjects with regard to the BRS and HLBS II ($Z = -3.47$, $Z = -2.35$; $p < .05$). Male subjects had higher BRS and HLBS II scores than female subjects. Single subjects' GSRS scores were higher than those of married subjects, and this difference was statistically significant ($Z = -2.60$; $p < .05$). A statistically significant difference was found between regular exercise and the HLBS II and GSRS scores ($Z = -4.54$, $Z = -2.24$; $p < .05$). Subjects who regularly did sports had higher HLBS II scores and lower GSRS scores than those who did not regularly participate in sports.

There was a statistically significant difference between educational status and the ESES and HLBS II ($\chi^2 = 13.35$, $\chi^2 = 19.06$; $p < .05$). The HLBS II score of secondary-school graduates was significantly higher than that of primary school graduates ($Z = -2.48$; $p < .05$). In addition, the ESES and HLBS II scores of primary school graduates were significantly lower than those of the high school graduates ($Z = -2.18$; $p < .05$), whereas the ESES and HLBS II scores of primary school graduates were significantly higher than those of illiterate (unable to read) subjects ($Z = -2.81$; $p < .05$). ESES scores of primary school graduates were significantly lower than those of university graduates ($Z = -1.99$; $p < .05$). HLBS II scores of those who had graduated from secondary school were significantly higher than those who were illiterate ($Z = -2.87$; $p < .05$). In addition, the ESES and HLBS II scores of high school and university graduates were found to be higher than those who were illiterate ($Z = -3.09$, $Z = -3.16$, $p < .05$; $Z = -2.97$, $Z = -2.75$, $p < .05$).

TABLE 2. Scale Scores

Scales	<i>M ± SD</i>	Min	Max
BRS	15.19 ± 7.29	6	30
ESES	105.47 ± 21.72	32	160
Regulating emotions	29.87 ± 6.36	9	45
Using emotions to assist thought	26.26 ± 5.56	8	40
Understanding emotions	26.27 ± 5.53	8	40
Perceiving emotions	23.05 ± 4.92	7	35
HLBS II	130.86 ± 16.29	52	208
Health responsibility	23.72 ± 3.08	9	36
Exercise	14.86 ± 5.34	8	32
Nutrition	27.39 ± 3.73	9	36
Spiritual development	24.04 ± 3.41	9	36
Interpersonal relations	24.91 ± 2.77	9	36
Stress management	18.66 ± 3.93	8	32
GSRS	65.00 ± 18.19	15	105
Diarrhea syndrome	8.60 ± 6.00	3	21
Indigestion syndrome	19.00 ± 5.99	4	28
Constipation syndrome	14.19 ± 4.39	3	21
Abdominal pain syndrome	13.51 ± 4.77	3	21
Reflux syndrome	9.55 ± 3.67	2	14

Note. BRS = Brief Resilience Scale; ESES = Emotional Self-Efficacy Scale; GSRS = Gastrointestinal Symptom Rating Scale; HLBS II = Healthy Life Style Behavior Scale II.

There was a statistically significant difference between alcohol use of subjects and their ESES scores ($\chi^2 = 10.61$; $p < .05$). ESES scores of those who never used alcohol were lower than those who used it occasionally ($Z = -3.12$; $p < .05$). ESES scores of occasional alcohol users were higher than those who used alcohol frequently and had used alcohol before ($Z = -2.04$, $Z = -2.12$; $p < .05$). There was a statistically significant difference between healthy nutritional status and the HLBS II and GSRS scores ($\chi^2 = 8.19$, $\chi^2 = 12.21$; $p < .05$). HLBS II scores of subjects who

had a healthy diet were higher ($Z = -2.20$; $p < .05$), and GSRS scores were lower ($Z = -3.35$; $p < .05$). In addition, HLBS II scores of those who ate healthily were statistically significantly higher than scores of those who ate in a partially healthy way ($Z = -2.55$; $p < .05$). GSRS scores of subjects who ate healthily were found to be statistically significantly lower than scores of those who ate in a partially healthy way ($Z = -2.46$; $p < .05$) (Table 4).

Discussion

GI disorders are important health problems. Symptoms such as GIS-related malignancies, nutritional disorders, diarrhea, constipation, and stomach and abdominal pain cause a decrease in the quality of life of patients, and even death, throughout the world (Milivojevic & Milosavljevic, 2020; Nag et al., 2020). For this reason, it is recommended that individuals with GIS symptoms undergo endoscopy/colonoscopy (U.S. Preventive Services Task Force, 2021) and that the psychological aspects of GIS symptoms also be examined (Hill et al., 2021; Maret-Ouda, Markar, & Lagergren, 2020; Marsh, Eslick, & Eslick, 2016; Pasandideh & SaulekMahdee, 2019). In line with this literature, the present study was conducted to

TABLE 3. Correlations Among Scales

	1	2	3	4
BRS (1)	1	0.374**	0.025	-0.150*
ESES (2)		1	0.376**	-0.107
HLBS II (3)			1	0.070
GSRS (4)				1

Note. BRS = Brief Resilience Scale; ESES = Emotional Self-Efficacy Scale; GSRS = Gastrointestinal Symptom Rating Scale; HLBS II = Healthy Life Style Behavior Scale II

* $p \leq .05$ Spearman's correlation

** $p \leq .01$

TABLE 4. Comparison of the Characteristics and Scale Scores

Characteristics	BRS			ESES			HLBS II			GSRs		
	M ± SD	Z _{MWU} , p	χ ² , p	M ± SD	Z _{MWU} , p	χ ² , p	M ± SD	Z _{MWU} , p	χ ² , p	M ± SD	Z _{MWU} , p	χ ² , p
Gender	Female	14.00 ± 7.06	-3.47, .00	104.59 ± 21.67	-1.32, .18		129.25 ± 16.14	-2.35, .01		65.96 ± 18.48	-1.08, .27	
	Male	17.24 ± 7.26		106.99 ± 3.64			133.63 ± 16.26			63.36 ± 17.68		
Marital status	Single	15.18 ± 7.30	-0.03, .97	104.94 ± 22.07	-1.40, .16		130.42 ± 16.37	-1.38, .16		66.26 ± 17.15	-2.60, .00	
	Married	15.27 ± 7.32		109.53 ± 18.67			134.27 ± 15.53			55.40 ± 22.88		
Exercise	Yes	16.49 ± 8.15	-1.65, .09	104.77 ± 20.74	-0.00, .99		137.61 ± 13.37	-4.54, .00		61.46 ± 16.71	-2.24, .02	
	No	14.61 ± 6.81		105.79 ± 22.20			127.84 ± 16.61			67.59 ± 18.65		
Education level		M ± SD	χ ² , p	M ± SD	χ ² , p		M ± SD	χ ² , p		M ± SD	χ ² , p	
	Not literate	15.27 ± 8.64	7.51, .11	93.09 ± 13.43	13.35, .01		118.09 ± 16.51	19.06, .00		69.54 ± 18.29	2.74, .60	
	Primary school	14.54 ± 7.11		103.98 ± 22.00			128.83 ± 15.48			65.30 ± 16.96		
	Middle school	16.06 ± 8.06		104.94 ± 22.57			135.54 ± 16.04			61.30 ± 19.88		
	High school	18.59 ± 6.26		111.63 ± 19.13			138.59 ± 16.28			67.85 ± 18.48		
	University	14.57 ± 7.21		112.06 ± 21.72			133.64 ± 16.48			63.42 ± 21.78		
Drinking alcohol	Never used	14.95 ± 7.29	4.17, .24	104.67 ± 21.57	10.61, .01		130.53 ± 15.76	4.93, .17		65.24 ± 17.84	2.42, .48	
	Uses occasionally	18.50 ± 6.63		121.50 ± 16.08			137.00 ± 18.79			66.87 ± 23.62		
	Uses frequently	17.14 ± 7.29		97.43 ± 29.74			121.85 ± 27.13			57.14 ± 17.89		
Healthy eating	Previously used	14.00 ± 7.94		103.33 ± 19.94			135.55 ± 12.43			61.67 ± 17.96		
	Yes	16.18 ± 7.55	3.48, .17	108.51 ± 18.89	3.94, .13		134.11 ± 15.10	8.19, .01		61.72 ± 18.14	12.21, .00	
	No	14.43 ± 7.12		103.00 ± 25.29			128.73 ± 18.16			70.30 ± 19.47		
Partially	14.40 ± 6.96		103.21 ± 21.64			127.92 ± 15.33			64.70 ± 15.70			

Note. BRS = Brief Resilience Scale; ESES = Emotional Self-Efficacy Scale; GSRs = Gastrointestinal Symptom Rating Scale; HLBS II = Healthy Life Style Behavior Scale II.

determine the relationship between GIS symptoms and psychological and physical health in patients who were scheduled for endoscopy/colonoscopy due to these symptoms.

According to the results of this study, the majority of our subjects did not use cigarettes or alcohol (Table 1), a result different from the literature. Milivojevic and Milosavljevic (2020) reported that drinking alcohol is a risk in the development of GIS symptoms. In addition, looking at the mean scores of subjects for the BRS, ESES, HLBS II, and GSRS scales (Table 2), the psychological resilience, emotional self-efficacy, healthy lifestyle behaviors, and GIS complaints of subjects in the study were all at a moderate level.

According to another result obtained from this study, there was a significant positive relationship between the BRS and ESES total score and ESES's subdimensions of regulating emotions, using emotions to assist thoughts, understanding emotions, and perceiving emotions ($p < .05$). In addition, there was a positive and significant relationship between the spiritual development and interpersonal communication subdimensions of the BRS and HLBS II in this study ($p < .05$). This result suggests that psychologically strong people make the best choices in their life habits. Some studies of early adulthood suggest a positive relationship between resilience and healthy lifestyle habits. It has been stated that behaviors such as avoiding smoking and alcohol, healthy eating, and physical activity are associated with higher resilience (Gage, 2017; Green, Beckham, Youssef, & Elbogen, 2014; Goldstein, Faulkner, & Wekerle, 2013; Lutz et al., 2017).

Psychological resilience is the process of adapting to any adverse or stressful situations. It helps to regulate emotions, strengthen interpersonal relations, improve problem-solving skills, and thus has a positive impact on one's ability to cope with stress (Babanataj, Mazdarani, Hesamzadeh, Gorji, & Cherati, 2019; Chen & Kuo, 2020). In particular, it has been determined that there is a positive relationship between GIS symptoms and stress. Midenfjord, Borg, Törnblom, and Simrén (2021) reported that psychological changes have an effect on the emergence of severe GIS symptoms. Krzystek-Korpacka, Kempin'ski, Bromke, and Neubauer (2020) reported that stress causes inflammation in inflammatory bowel disease. They explained that infiltration of mucosal tissue by activated phagocytic immune cells produces prooxidants of reactive oxygen and nitrogen species, damages macromolecules, impairs cellular homeostasis, and increases cell damage and the permeability of the mucosal barrier.

In this study, it was determined that there was a significant negative relationship between the BRS and GSRS total and diarrhea and constipation subdimensions, and between emotional self-efficacy and reflux

and indigestion, which are GSRS subdimensions ($p < .05$). This result shows that the psychological characteristics of patients with GIS complaints are important. As the psychological resilience and emotional self-efficacy in this study increased, digestive system symptoms, especially diarrhea, constipation, reflux, and indigestion decreased. Parker et al. (2021) determined that psychological resilience is lower in patients with IBS, and the severity of IBS symptoms increases as the psychological resilience of patients decreases. In a study with patients with inflammatory bowel disease, it was determined that high self-efficacy was associated with a lower risk of exacerbation (Stone et al., 2022). Jang, Ryu, Choi, Lee, and Lee (2018) determined that psychological characteristics have an effect on functional GI disorders, and there is a significant relationship between anxiety, depressive symptoms, and psychological resilience. They reported that patients with functional GI disorders improved their quality of life as psychological resilience increased. The findings of the present study are compatible with the literature: GIS symptoms decreased as psychological resilience and self-efficacy increased.

When scores of our subjects were examined according to their sociodemographic characteristics, it was determined that the mean BRS scores of men were higher than those of women. In addition, it was concluded that male subjects had higher HLBS II scores than female subjects in the study (Table 3). Health is not only about the prevention of disease, but also about physical, mental, and social well-being. Adopting healthy lifestyle behaviors ensures physical, mental, and social well-being (Rippe, 2018). In the present study, women experienced more GIS symptoms (Table 4). Narayanan, Anderson, and Bharucha (2021) also reported that functional GI diseases are more common in women than in men. In a study of patients with IBS, female patients experienced more fatigue, depression, and anxiety and had a lower quality of life than male patients (Kim & Kim, 2018). The results obtained from this study are important in terms of showing the positive effect of psychological resilience on GIS symptoms. The men obtained higher scores on the BRS, which is compatible with the literature. It can be said that acquiring healthy lifestyle behaviors has positive effects not only on physical but also on psychosocial health.

In terms of the other results, HLBS II scores of subjects who exercised regularly and ate healthily were statistically significantly higher than those of the others (Table 4). This score increased as the education level of subjects increased ($p < .05$). There were also fewer GIS symptoms in subjects who did sports and ate healthily. Single subjects had higher GIS scores than married subjects ($p < .05$) (Table 4). Similarly, in a study with

adults with GIS diseases, male, married, physically active, and university graduates had high healthy lifestyle scores (Saneei et al., 2021). In the study by Hajishafiee et al. (2020) of patients living with IBS, at people who were married, physically active, and had a high level of education had high healthy lifestyle scores.

In this study, a statistically significant relationship was determined between alcohol use and ESES scores. Subjects who never drank alcohol had lower ESES scores than subjects who used alcohol occasionally. This result may be related to the characteristics of these participants. However, ESES scores of the occasional alcohol users were higher than those who used alcohol frequently and those who had previously drank it but no longer did so ($p < .05$). These results support the idea that there is a close relationship between alcohol use and mood (Jakubczyk et al., 2018). According to Bradizza et al. (2018), the most important reason to use alcohol is regulating emotions and alcohol consumption continues due to difficulties in regulating emotions, solving problems, and coping with stress. The results of the present study are compatible with the results of other studies in the literature and they show that GI symptoms are related to psychological resilience, healthy lifestyle behaviors, and emotional self-efficacy.

Implications for Practice

GI symptoms negatively affect people's lives. Therefore, preventing symptoms is important for maintaining quality of life. This study determined that healthy living behaviors and self-management, as well as psychological resilience, are factors that reduce GI symptoms. For this reason, it is important that people with GIS symptoms are able to increase their psychological resilience and emotional self-efficacy, and develop healthy lifestyles. Nurses should therefore evaluate patients both physically and psychosocially before endoscopy and colonoscopy procedures. They should plan interventions to provide these patients with healthy behaviors and psychological support.

Limitations and Implications for Future Research

There are some limitations in our study. The research was conducted in only one center. Only patients who volunteered were studied. Another limitation is the absence of a control group in the study. Therefore, the results of this study cannot be generalized to other patients. Also, use of alcohol tends to be minimized by patients; this could be one limitation of the study. This may have affected individuals' GIS symptoms and this result should be tested further in future studies. In addition, the data of this study are limited to answers

given by the subjects. Other physical and psychological factors that may have affected the results of this study could not be controlled.

In this study, it was determined that there is a relationship between GIS symptoms and emotional self-efficacy, psychological resilience, and lifestyle. Therefore, it is important to psychologically evaluate patients and support lifestyle changes in the prevention, treatment, and care of GIS symptoms. In line with these results, it is recommended that interventions be planned to promote healthy lifestyles, resilience, and self-efficacy in order to control GIS symptoms and tested through randomized controlled studies.

Conclusion

In this study, it was determined that there is a significant negative relationship between GIS symptoms, emotional self-efficacy, and psychological resilience, and a significant positive relationship between GIS symptoms and healthy lifestyle behaviors. Based on these we recommend that psychological support be provided to patients and that healthy lifestyle behaviors be supported to prevent GI symptoms. Counseling services for at risk patients may be beneficial. 🌟

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