

Selected personality traits and emotional disorders of women diagnosed with gastrointestinal disease – a pilot study

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Gastroenterology Rev 2023; 18 (3): 300–307
DOI: <https://doi.org/10.5114/pg.2022.118015>

Key words: psychological factors, satisfaction with life, personality traits, emotional disorders, gastrointestinal disease, personalised approach.

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Abstract

Introduction: There are many studies on the influence of psychological factors in the appearance of symptoms and their treatment among gastroenterological patients. It is increasingly indicated that these factors are of great importance also for the quality of life of people struggling with a chronic disease.

Aim: To evaluate personality traits and emotional disorders in female patients with gastrointestinal conditions such as functional dyspepsia (FD), irritable bowel syndrome (IBS), or inflammatory bowel disease (IBD).

Material and methods: The sample of 28 patients was verified in terms of the disease using the GAST questionnaire and assessed by personality questionnaires and psychological tests: the Spielberger State-Trait Anxiety Inventory (STAI), EAS Temperament Survey, Eysenck Personality Inventory (EPQ-R), Coping Inventory for Stressful Situations (CISS); Beliefs about Pain Control Questionnaire (BPCQ), General Self-efficacy Scale (GSES), and Satisfaction with Life Scale (SWLS).

Results: The control group was recruited from female university students declaring full health. The conducted statistical analysis showed that there is a significant relationship between personality traits, psychological predispositions, and both the experience of illness and satisfaction with life among this specific group of patients.

Conclusions: This pilot study demonstrated the need for a personalized approach to gastroenterological patients, also based on their personality characteristics. Such an approach may increase the effectiveness of therapy and bring benefits in long-term treatment.

Introduction

“The more we know about the digestive tract, the more beautiful it seems to us,” wrote gastroenterology researcher Giulia Enders in the book *Internal History. Intestines — the most fascinating organ of our body* [1].

The author emphasizes that the disruption of communication between the intestine and brain may be the cause of an increase in negative emotions, meaning that this group of patients is often treated – due to the

lack of confirmed organic markers of the illness – as hypochondriacs.

The author also points out that stress is “unhygienic” because it changes the conditions in the intestine, supporting the development of unfavourable intestinal bacteria, which may also affect our wellbeing [1]. There are great links between the intestines and our psychological functioning, and reading Enders’ book was an inspiration to undertake empirical research.

There is growing interest in the term “gut brain”, also known as “second brain” – a term coined by Mi-

chael Gershon from Columbia University Medical Centre. He estimates that our intestines may have up to 100 million neurons, more than, e.g., in the spinal cord, which proves that the function of the intestines is not only digestion. They are related to the brain and act as a kind of command centre, being co-responsible for stress and immune responses [2]. Much has been written about the influence of the intestinal bacterial flora on the central nervous system (CNS) and its importance in the treatment of mental disorders [3, 4], indicating – like Enders – the frequent coexistence of inflammatory bowel diseases (including ulcerative colitis/UC or Crohn’s disease/CD) or in the gut (as in IBS/irritable bowel syndrome) and mental disorders, mainly depressive or anxiety disorders.

Simultaneously, the intestinal bacterial flora – microbiota – affects the CNS, as well as mood and behaviour, so it has antidepressant and anxiolytic potential [5–7]. The number of people suffering from chronic diseases of the digestive system, including Crohn’s disease, ulcerative colitis, and irritable bowel syndrome, is continually increasing, and the highest incidence of UC is recorded in Europe (average 24.3/100,000 people). For comparison, in Asia and the Middle East the figure is 6.3/100,000 people, and in North America it is 19.2/100,000 people, which is also associated with additional costs [8, 9].

The impact of irritable bowel syndrome on the patients’ quality of life has also been discussed; for example, Quality Adjusted Life Years (QALY), which measures treatment outcomes and refers to Health-Related Quality of Life – HRQL. This number is based on patients’ self-assessment of their health status, population data, and information from doctors [10, 11].

It was shown that people with IBS who received medical care from a gastroenterologist, compared to those who did not visit a specialist, had a QALY index of 0.03 after 1 year. This means that the provision of appropriate medical care extends the life of a patient and increases its quality, and measurably affects the costs of caring for such a patient [9, 12].

The frequency of functional disorders (FGID) is estimated at 25–24% in Western countries and 5–10% in Asian countries. Disorders related to functional diseases are more often found in women in Western populations (this ratio is estimated at 2–3 : 1, 1.2 : 1) than in Asian countries, where the frequency is estimated at 1.2 : 1. About 40% of reported complaints are to do with the digestive tract. Functional ailments are found mainly in young and working-age people. In recent decades, there has also been a greater incidence of inflammatory bowel diseases, especially in people between the second and fourth decade of life [13, 14].

Demonstrating the similarities and differences in psychological assessment, combined with neuroimaging in these subjects, will provide important data for future immunological research and will be an important voice in the polemic about common and different aspects of the pathophysiology of these diseases [15, 16].

The aetiology of both functional dyspepsia and irritable bowel syndrome is unknown; these are heterogeneous diseases. Functional diseases of the gastrointestinal tract are assessed as immunohormonal mucosal disorders or functional mucosal syndromes.

Fear (anxiety), pessimism (symptoms of depression), and emotional tension dominate among this group of patients. There are coincidences here with “fear of failure” but also “doubt.”

Material and methods

Twenty-eight patients with functional gastrointestinal diseases, i.e. functional dyspepsia, irritable bowel syndrome, and inflammatory bowel disease (Crohn’s disease and ulcerative colitis). The patients were classified as having functional diseases of the gastrointestinal tract in accordance with the Roman Criteria, i.e. functional dyspepsia cases comprise people reporting epigastric pain of at least moderate intensity or a feeling of postprandial fullness or early satiety, taking into account the time frame, i.e. symptoms persisting for the last 3 months, but with symptoms present for at least 6 months before diagnosis of functional dyspepsia. In the case of irritable bowel syndrome, colon complaints, i.e. defecation disorders, changes in the frequency of bowel movements, and changes in the appearance of stool, of a recurrent nature for at least 3 of the last 6 months, with 2 or more of the above symptoms.

The group of patients with inflammatory bowel diseases was classified based on clinical history and additional tests, i.e. colonoscopy including histological evaluation, gastrofibroscopy, MRI enterography, or endoscopic capsule, taking into account the time elapsed since the diagnosis, in order to exclude the stress related to diagnosis. We will assume the minimum duration of the illness at 3 years, to standardize the time of adaptation to the illness.

Later, the group of functional diseases of the gastrointestinal tract was verified using the GAST questionnaire developed by the contractor, in which the study group was verified in terms of having functional diseases, and which was used to characterize the course of illness to date, as well as other past illnesses, and to assess socio-demographic factors.

The entire 28-person group was assessed with the use of personality questionnaires:

– Spielberger State-Trait Anxiety Inventory (STAI) by Spielberger, C.D.; Gorsuch, R.L.; Lushene, R.E.;

- adapt. Spielberger, C.D.; Strelau, J.; Tysarczyk, M.; Wrześniewski, K.
- EAS Temperament Survey by Buss, A.H.; Plomin, R.; adapt. Oniszczenko, W.
 - Eysenck Personality Inventory (EPQ-R) by Eysenck, H.J.; Eysenck, S.B.G.; adapt. Jaworowska, A.
 - Coping Inventory for Stressful Situations (CISS) by Endler, N.S.; Parker, J.D.A., adapt. Szczepaniak, P.; Strelau, J.; Wrześniewski, K.
 - Beliefs about Pain Control Questionnaire (BPCQ) by Skevington, S.; adapt. Juczyński, Z.
 - Satisfaction with Life Scale (SWLS) by Diener, E.; Emmons, R.A.; Larson, R.J.; Griffin, S., adapt. Juczyński, Z.
 - General Self-efficacy Scale (GSES) by Schwarzer, R.; Jerusalem, M.; Juczyński, Z.

The control group was recruited from among the university students as a potentially healthy group, which was verified using the GAST Questionnaire to eliminate people with illnesses and then assessed using the above-mentioned psychological tests.

Statistical analysis

Descriptive statistics were computed. *T*-test for independent groups was performed for analysis of differences in age between groups. With the purpose of comparing groups regarding the results of psychological questionnaires, analysis of variance (ANOVA) was conducted. To control differences in age between the groups, analysis of covariance (ANCOVA) was applied, with age as the covariate. Variance and covariance analysis assumptions were tested before conducting proper analysis. The statistical analysis was performed using IBM SPSS 20 for Windows. An α level of 0.05 was used; however, because of the relatively small sample related to the fact that it is a pilot study, an α level > 0.1 is also indicated as worth attention. The limited statistical power of the conducted analyses due to small samples should not influence adequate interpretation of potentially meaningful differences in terms of effect size. Omega squared was computed as an indicator of effect size. Two-sided tests were applied.

Results

For several years, there has been a clear predominance of women among those reporting to the Gastroenterology department. A group of 28 women, that is

Table I. Levels of anxiety

No.	Variable	Patients group		Control group		Statistical significance
		μ	δ	μ	δ	
1	State Anxiety	30.89	16.82	41.20	9.77	0.002
2	Trait Anxiety	45.21	9.23	43.73	9.42	0.51

80% of patients with symptoms of functional disorders of the gastrointestinal tract and inflammatory bowel diseases, were included in the pilot study.

Among the selected group of 28 patients, 3 subgroups were distinguished:

- women with an established diagnosis of functional dyspepsia (FD; 35.7%),
- women diagnosed with irritable bowel syndrome (IBS; 25%),
- women diagnosed with inflammatory bowel disease (IBD; 39.3%).

Separated subgroups of women did not differ statistically significantly in terms of age (this ranged from 30 to 34 years, mean age – 31.96 years).

The age difference between these groups (FD, IBS, IBD) and the group of women constituting the so-called control group (mean age: 20.39) was statistically significant. Almost 85% of patients and all women in the control group were well educated.

The tables below present data obtained from patients and women from the control group in terms of individually measured psychological variables. The Table I presents data on the measurement of anxiety understood as a mental state that changes from situation to situation (the so-called anxiety state) and anxiety responsible for individual disparities, referred to as the anxiety trait. This type of anxiety is characterized by high trans-situational stability.

The data in Table I clearly show that healthy women exhibited a significantly higher level of State Anxiety. The differences between the compared groups in this variable turned out to be statistically significant.

Women suffering from illnesses/patients showed a higher level of Trait Anxiety (relatively constant), but the differences between the groups did not exceed the required threshold of statistical significance.

The obtained results show that the healthy women showed a higher level of tension and anxiety during the test, which could result from the feelings of higher risk generated by the test situation itself. In turn, women suffering from illnesses perceive a higher level of Trait Anxiety, which is confirmed by the analysis of covariance (Table II).

This means that these women are probably characterized by acquired behavioural dyspepsia (as defined by C. Spilberg), perceiving a wide range of factors or situations as very threatening and hence causing a high state of anxiety, which is disproportionate to the level of the actual risk.

The following table (Table III) presents the means and standard deviations of comparable groups of women in terms of 5 temperamental properties distinguished by A. Buss and R. Plomin.

The studied groups of women did not differ in terms of 3 temperamental traits, namely: dissatisfaction, anxiety, and anger. Women suffering from illnesses showed a slightly higher level of activity, and women in the control group showed a slightly higher level of sociability.

It turns out, therefore, that none of the temperamental features differentiate statistically significantly between women suffering from illnesses and healthy women, but the noticeable differences in activity, sociability, and dissatisfaction deserve attention (when it comes to the dispersion index of results, it is clearly higher in women suffering from illnesses).

The higher activity index of patients is associated with the expenditure of physical energy, so it applies only to motor activities. The higher sociability index of healthy women indicates their greater tendency to avoid loneliness and seek contact with people. The level of dissatisfaction in women suffering from illnesses (a component of temperamental emotionality) appears differently in light of the covariance analysis (Table II). The results of the measurement of extraversion and neuroticism are presented in Table IV.

It turns out that neither the level of extraversion nor neuroticism differ in a statistically significant way in the comparable groups of women.

Therefore, it can be said that the external orientation of the activity of the studied groups of women is similar. Both show a very similar level of interest in the outside world, aspirations, a tendency to establish social contact, and openness.

The second feature – neuroticism – it should be noted, also appears differently in light of the results of covariance (Table II). It is a known fact that stress is a ubiquitous phenomenon, it affects all of us to a greater or lesser extent, and it cannot be avoided. It is important to find the most effective method of dealing with stress. The data in Table V concern the defence strategies/coping mechanisms used by patients and healthy women.

Women suffering from illnesses exhibit higher levels of the task-focused and the emotion-focused coping strategy. The differences between the 2 groups in this variable appear statistically significant. The other 3 methods of coping: avoidance-oriented and its variants, substitute activities and search for social contacts are used in the same way in both groups.

The indicated statistical differentiation requires a few words of explanation. The results show that women suffering from illnesses are prone to search both actively and rationally for a solution to a stressful situation and the choice of an emotional coping strategy. The latter is more clearly marked in women with illnesses, which is confirmed by the result of the covariance analysis (Table II).

Table II. Temperamental traits

No.	Variable	Patients group		Control group		Statistical significance
		μ	δ	μ	δ	
1	Dissatisfaction	10.0	4.58	10.12	3.12	0.18
2	Anxiety	10.08	1.98	10.00	2.79	0.90
3	Anger	11.64	2.77	11.68	2.63	0.95
4	Activity	14.36	2.68	13.32	2.64	0.13
5	Sociability	14.32	1.95	15.02	2.03	0.17

Table III. Levels of extraversion and neuroticism

No.	Variable	Patients groups		Control group		Statistical significance
		μ	δ	μ	δ	
1	Extraversion	10.61	3.3	10.96	3.96	0.70
2	Neuroticism	12.46	3.78	12.17	3.60	0.74

This emotion-oriented strategy means a person focuses on himself or herself and their emotional experiences – mainly anger, guilt, and anxiety. This focus on the emotional may be accompanied by tendencies to wishful thinking and fantasizing designed to minimize emotional tension. It can be assumed that this is the way of coping often used by the studied patients.

Table IV. Methods of coping with stress

No.	Variable	Patients group		Control group		Statistical significance
		μ	δ	μ	δ	
1	Task-oriented	50.86	12.12	47.96	12.03	0.32
2	Emotion-oriented	41.71	10.22	38.7	10.73	0.24
3	Avoidance-oriented	44.25	13.99	44.83	13.72	0.86
4	Substitute activity	20.39	7.47	20.80	7.55	0.82
5	Search for social contact	15.79	6.98	15.63	6.76	0.93

Table V. Pain control and acceptance of illness

No.	Variable	Patients group		Control group		Statistical significance
		μ	δ	μ	δ	
1	Personal sense of pain control	16.57	5.0	16.48	4.69	0.94
2	Pain controlled by a doctor	13.11	5.06	11.48	4.25	0.14
3	Pain controlled by chance	12.54	4.13	11.20	4.54	0.21
4	Acceptance of illness	28.11	9.12	30.74	7.34	0.183

The belief that a doctor best controls pain is clearly more pronounced in the group of patients. The group of these respondents accept their disease to a lesser extent. However, neither of these variables are statistically significant.

The obtained data shows that the internal location of health control (it is believed that it is the most advantageous because it prompts people to be more responsible for their health) does not differ among the studied groups of women. The second variable is clearly differentiated. Here, the examined patients manifest more clearly the belief that their pain is best controlled by doctors due to their knowledge, skills, and recommendations.

The results presented in Table VI confirm the earlier findings that lower acceptance of one's own illness goes hand in hand with an increased importance of pain control attributed to the influence of doctors and chance, as well as a worse assessment of one's own health (not studied here).

The data in Table VII concerns the results of measuring life satisfaction and the sense of self-efficacy in patients and healthy women.

Proponents of the theory of social learning (especially A Bandura, the creator of this concept) have contributed to the popularization of the belief that one's sense of self-efficacy plays a significant and positive role.

This sense means, among others, to be conducive to controlling one's own actions, to boost the pursuit of goals, and increase faith in the value of personal resources and activities. The results of measuring this variable do not confirm the differentiation between patients and healthy women in this respect.

Table VI. Satisfaction with life and self-efficacy

No.	Variable	Patients group		Control group		Statistical significance
		μ	δ	μ	δ	
1	Satisfaction with life	19.25	6.14	22.65	5.43	0.15
2	Self-efficacy	29.14	4.66	28.72	5.81	0.74

Table VII. The results of the covariance analysis

No.	Variable	Patients group		Control group		Statistical significance
		μ	δ	μ	δ	
1	Trait Anxiety	47.27		42.42		0.085
2	Dissatisfaction	12.28		9.50		0.004
3	Neuroticism	13.53		11.52		0.06
4	Emotion-oriented	43.96		37.33		0.04
5	Satisfaction with life	19.56		22.46		0.09

The second variable shown in Table VII – life satisfaction – which differentiates the 2 groups of women (although it is not statistically significant). The examined patients show a significantly lower level of satisfaction with life (which seems to be in line with expectations) than healthy women. It can be added that wellbeing and satisfaction with life are considered important elements of health, and sometimes are equated with health. The Table II shows the results of covariance analysis.

To better describe the personality of women with functional disorders of the gastrointestinal tract, the more authoritative analysis of covariance has been used – a method that combine elements of analysis of variance, correlation, and regression. After taking into account the significant age difference between the patients diagnosed with functional dyspepsia, irritable bowel syndrome, and inflammatory bowel diseases, and the group of healthy women, the effect sizes for individual variables were determined.

It transpired that the magnitude of the effect is greatest when it comes to dissatisfaction, emotion-oriented coping with stress, and neuroticism. A slightly lesser effect, although also significant, was noted in relation to the degree of satisfaction with life and anxiety perceived as trait anxiety.

The results of this analysis allow for more certain inference and repetition of some already formulated judgments and anticipations.

The above-mentioned variables will now be the subject of our attention and description. The greatest differentiation between the studied groups of women concerns dissatisfaction – a temperamental trait understood as one of the 3 (apart from anxiety and anger) manifestations of human emotionality (i.e. the first component of temperament in terms of A Buss and R Plomin).

Dissatisfaction means a tendency for easily provoked, strong anxiety reactions and discomfort in response to certain stimuli.

This tendency may reveal itself as soon as in early childhood. Its behavioural indicators are a sometimes difficult to control readiness to cry, crying, screaming, and bouts of bad mood.

The obtained results clearly indicate that such a way of reacting is displayed by the examined patients suffering from the above-mentioned illnesses of the gastrointestinal tract. Their low score on satisfaction with life may confirm this. Decreased “wellbeing” may facilitate the emergence of discouragement, aboulia, and sub-depression.

Trait anxiety is another psychological variable that significantly differentiates healthy women and women

suffering from gastrointestinal disorders. The level of this anxiety is clearly higher in women suffering from illnesses, which means that they are sensitized to the effects of “anxiety-generating” stimuli or situations perceived as threatening. A high level of anxiety usually goes hand in hand with a tendency to worry, insecurity, hypersensitivity, and the persistence of negative emotional states. The image presented so far is consistent with the results of the studied groups of women in terms of neuroticism. It turns out that dyspeptic patients exhibit significantly higher levels of anxiety than healthy women. This means that women suffering from illnesses are less emotionally stable, moody, prone to suppress anger and prone to experiencing anxiety. It is also assumed that elevated neuroticism is conducive to the appearance of a stress reaction in difficult situations.

The preferences for emotion-oriented coping strategies are the last measured variable that differs between healthy women and patients. The latter are more likely to choose an emotional way to deal with stress in difficult situations, including illness. It has already been noted that this way is less effective than a rational, task-oriented strategy, especially when used habitually.

It is worth emphasizing that the 3 subgroups of patients (with functional dyspepsia, irritable bowel syndrome, and non-specific bowel diseases) do not differ significantly in terms of the measured personality traits. We can therefore say that in this respect they constitute a homogeneous group.

The presented results demonstrate that women suffering from functional disorders of the gastrointestinal tract are characterized, compared to healthy women, by a higher level of neuroticism, trait anxiety, and dissatisfaction, and a lower level of satisfaction with and a preference for emotion-oriented stress coping strategies.

Discussion

Functional diseases of the digestive tract are common throughout the globe. They have a negative impact on the quality of life and contribute to high health care expenses. In 1915, Walter Alvarez of the Mayo Clinic popularized the term “functional dyspepsia”, the most common disorder from the group of functional disorders. Reported dyspeptic ailments are not correlated with specific physiological disorders, although a relationship has been found between the symptoms of premature satiety and disorders of gastric accommodation, in gastroduodenitis, genetic studies are also carried out, or links between bacterial inflammation of the upper and lower gastrointestinal tract and functional disorders [17–24]. There are no objective diagnostic tools;

the symptomatic criteria for functional disorders based on the Roman Criteria are expert consensus excluding organic causes of ailments [25–27].

The most common illness from the group of functional disorders is functional dyspepsia, estimated at about 25% of the population; the frequency of irritable bowel syndrome is estimated at 15–24% of the population of Western countries. Disorders related to functional diseases, as also shown in our study, are more common in women than in men (it is estimated in the case of IBS that the incidence of symptoms for women : men is 2–3 : 1 in Western countries); they are also more common in young people [28, 29]. Emotional disorders, stress and mood, style of coping with stress, and negative life events may affect the functions of the gastrointestinal tract; hence, complaints about pain and lower quality of life are also more common, which was also found in this study [30]. There is no influence of symptoms related to functional disorders on survival [31, 32].

Recent studies indicate that complex interactions of biological and behavioural mechanisms are the cause of the development of ailments in functional disorders of both the lower and upper gastrointestinal tract. The stress-related mental state of a patient may influence biological processes in the central nervous system and, through the visceral autonomic system, induce somatic reactions in the gastrointestinal tract [33].

Many studies have suggested that psychological factors may be the cause of dyspeptic symptoms. There was a correlation between anxiety and a reduction in pain threshold, epigastric discomfort, burning sensation, and early satiety. People with functional disorders of the gastrointestinal tract are less able to cope with the problems of everyday life. They are dominated by guilt, greater self-criticism, and catastrophic thoughts focusing on failures. The influence of disturbances of the brain-gut connection on the symptoms of functional gastrointestinal diseases is considered, mainly in relation to lowering the pain threshold [34].

The overlapping of different functional disorders raises the question of how different these disorders really are. This is in line with the general trends of perceiving functional disorders as a cover for many other disorders and their possible psycho-emotional background. The issues of psychosomatic medicine and health psychology are important for understanding health and disease, as well as a preference for so-called comprehensive (holistic) patient care. Moreover, the success of both these disciplines depends on making better use of the biopsychosocial model in research and clinical practice [35]. Simultaneously, it is emphasized that there are 2 directions of research in clinical health psychology.

The first focuses primarily on psychosomatic dependencies, i.e. the role of psychological factors in both the emergence and course of somatic diseases and dysfunctions. The second direction of research covers the psychological consequences of diseases, i.e. emotional reactions, cognitive representation, and organization of behaviour aimed at overcoming the disease. It also shows the two-way relationship between stress and disease [36].

Chronic illness is a complex, difficult situation that creeps into life, whether cognitively, emotionally, socially, or existentially. It requires the patient and his/her environment to cope with this challenge. What is more, we can define a chronic disease as a chronic stressor, a critical life event, and a burden in life [37], which is tantamount to the fact that each of us will face at least one disease of this type in the course of our life. It is also an internal event that depletes our existing resources.

Our study included 28 female patients diagnosed with either functional gastrointestinal diseases (i.e. functional dyspepsia, irritable bowel syndrome) or inflammatory bowel disease (i.e. Crohn's disease, ulcerative colitis), and a control group (28 potentially healthy university student). The entire group was assessed with the use of personality questionnaires to measure the level of state-trait, temperament, coping strategies for stressful situations, beliefs about pain control, general self-efficacy, and satisfaction with life. Above all, the obtained results showed that healthy women exhibited a significantly higher level of state anxiety, and a higher level of tension, and in turn, women suffering from illnesses perceive a clearly higher level of trait anxiety. Women with gastrointestinal diseases manifested a slightly higher level of activity, and healthy students showed a slightly higher level of sociability. The higher activity index of patients could be associated with the expenditure of physical energy, so it applies only to motor activities. The higher sociability index of healthy women indicates their greater tendency to avoid loneliness and seek contact with people.

Female patients exhibited higher levels of the task-focused and the emotion-focused coping strategy; moreover, they were prone to both active and rational search for a solution to a stressful situation and the choice of an emotional coping strategy. It can be assumed that an emotion-oriented strategy of coping (mainly anger, guilt, and anxiety) is often used by them also. This focus on the emotional may be accompanied by tendencies to wishful thinking and fantasizing designed to minimize emotional tension. The examined gastroenterological patients manifested more clearly the belief that their pain is best controlled by doctors due to their knowledge, skills, and recommendations.

Lower acceptance of one's own illness goes hand in hand with an increased importance of pain control attributed to the influence of doctors and chance. It transpired that the magnitude of the effect is greatest when it comes to dissatisfaction, emotion-oriented coping with stress, and neuroticism. The greatest differentiation between the studied groups of women concerns dissatisfaction (a tendency for easily provoked, strong anxiety reactions and discomfort in response to certain stimuli), and such a way of reacting is displayed by the examined patients suffering from illnesses of the gastrointestinal tract. What is more, their low score on satisfaction with life may confirm this.

The level of trait anxiety is clearly higher in women suffering from illnesses, which means that they are sensitized to the effects of "anxiety-generating" stimuli or situations perceived as threatening. A high level of anxiety usually goes hand in hand with a tendency to worry, insecurity, hypersensitivity, and the persistence of negative emotional states. The image presented so far is consistent with the results of the studied groups of women in terms of neuroticism. It transpires that dyspeptic patients exhibit significantly higher levels of anxiety than healthy women. This means that women suffering from illnesses are less emotionally stable, moody, prone to suppress anger, and prone to experiencing anxiety. It is also assumed that elevated neuroticism is conducive to the appearance of a stress reaction in difficult situations. The presented results demonstrate that women diagnosed with functional disorders of the gastrointestinal tract are characterized, compared to healthy women, by a higher level of neuroticism, trait anxiety, and dissatisfaction, and a lower level of satisfaction with and a preference for emotion-oriented stress coping strategies.

Conclusions

Based on our research, we feel that there is a great need to create personalized psychotherapeutic programs to support the treatment of gastroenterological patients, as well as help them maintain their quality of life at an appropriate level, regardless of the disease.

Conflict of interest

The authors declare no conflict of interest.

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Received: 19.04.2022

Accepted: 21.06.2022