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INVESTIGATION OF INCREASED LEVELS OF ANXIETY AND DEPRESSION IMPACT ON THE QUALITY OF LIFE IN PATIENTS WITH IRRITABLE BOWEL SYNDROME

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The purpose of the study was to determine the effect of elevated levels of anxiety and depression on the quality of life of patients with irritable bowel syndrome depending on the frequency of exacerbations of the disease. The study included 72 patients aged 18 to 67 years with a clinically confirmed diagnosis of irritable bowel syndrome. Patients were stratified into three groups according to the frequency of exacerbations: rare (group A), moderate (group B) and frequent (group C). The study included an assessment of quality of life using the SF-36 questionnaire, depression level using the Beck Depression Inventory and anxiety level using the GAD-7 scale. The results showed a significant decrease in all quality of life indicators in patients with frequent exacerbations of irritable bowel syndrome, especially on the scales of physical functioning, vital activity, mental health, and social functioning. At the same time, a statistically significant increase in Beck Depression Inventory and GAD-7 scores was noted in these groups, indicating a high level of emotional distress. Correlation analysis confirmed a close inverse relationship between anxiety/depression indicators and quality of life scales. The results obtained emphasise the need for a biopsychosocial approach to the treatment of patients with irritable bowel syndrome with mandatory screening of emotional state and the use of psycho-emotional support as a supplement to gastroenterological therapy. The introduction of multidisciplinary support improves quality of life, reduces the frequency of relapses and increases the effectiveness of treatment.

Key words: irritable bowel syndrome; quality of life; anxiety disorders; depression; SF-36; psychoemotional state.

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ДОСЛІДЖЕННЯ ВПЛИВУ ПІДВИЩЕНИХ РІВНІВ ТРИВОГИ ТА ДЕПРЕСІЇ НА ЯКІСТЬ ЖИТТЯ У ПАЦІЄНТІВ З СИНДРОМОМ ПОДРАЗНЕНОГО КИШЕЧНИКА

Метою дослідження було визначення впливу підвищених рівнів тривоги та депресії на якість життя пацієнтів із синдромом подразненого кишечника залежно від частоти загострень захворювання. У дослідження включено 72 пацієнти віком від 18 до 67 років із клінічно підтвердженим діагнозом синдрому подразненого кишечника. Пацієнтів було стратифіковано на три групи відповідно до частоти загострень: рідкісні (група А), помірні (група Б) та часті (група В). Обстеження включало оцінку якості життя за допомогою опитувальника SF-36, рівня депресії — за шкалою Бека, рівня тривоги — за шкалою GAD-7. Результати показали достовірне зниження всіх показників якості життя у пацієнтів із частими загостреннями синдрому подразненого кишечника, особливо за шкалами фізичного функціонування, життєвої активності, психічного здоров'я та соціального функціонування. Одночасно відзначено статистично значуще зростання балів шкалою Бека і GAD-7 у цих групах, що свідчить про високий рівень емоційного дистресу. Кореляційний аналіз підтвердив тісний зворотний зв'язок між показниками тривоги/депресії та шкалами якості життя. Отримані результати підкреслюють необхідність біопсихосоціального підходу до лікування пацієнтів із синдромом подразненого кишечника із обов'язковим скринінгом емоційного стану та застосуванням психоемоційної підтримки як доповнення до гастроентерологічної терапії. Впровадження мультидисциплінарного супроводу дозволяє покращити якість життя, знизити частоту рецидивів і підвищити ефективність лікування.

Ключові слова: синдром подразненого кишечника; якість життя; тривожні розлади; депресія; SF-36; психоемоційний стан.

The study is a fragment of the research projects "Comorbidity in internal medicine clinics and family medicine practice: characteristics of disease progression, strategies for providing medical care in times of global civilisational challenges", state registration No. 0123U100061 and "Influence of modern macrosocial factors on the development of clinical, psychopathological and therapeutic aspects of posttraumatic and neurotic disorders", state registration No. 0121U100134.

The modern life characterised by high levels of stress, socio-economic instability and relentless information pressure creates a favourable environment for anxiety disorders growth among population. Professional burnout, financial difficulties, chronic fatigue, and the influence of negative news spread through the media, especially social networks, significantly increase anxiety levels [2, 8].

From a medical point of view, anxiety is a physiological and psychological response to stress, characterised by a subjective feeling of fear, unease, anticipation of danger or discomfort, often accompanied by somatic manifestations such as tachycardia, hyperhidrosis, tremors or gastrointestinal disorders. Anxiety usually serves an adaptive function, warning a person of potential threats and mobilising the body to overcome them [5]. However, chronic or pathologically intense anxiety causes maladaptive changes in stress-realising systems, forming dysfunctional shifts in regulatory activity and the activity of

most internal organs, among which our attention was drawn to psycho-emotional states and changes in the functional activity of the digestive system [4].

Depression, which often accompanies anxiety, is an affective disorder characterised by persistent low mood, anhedonia, energy deficiency, feelings of hopelessness and, in severe cases, suicidal thoughts [9, 10, 15]. These conditions share common pathophysiological mechanisms, including dysregulation of monoaminergic neurotransmitter systems, dysfunction of the hypothalamic-pituitary-adrenal axis, and genetic predisposition. In the context of globalisation, urbanisation, and information overload, anxiety and depression have reached epidemic proportions, reflected in the increasing prevalence of comorbid somatic disorders, particularly irritable bowel syndrome (IBS), one of the most common functional gastrointestinal disorders [11].

The link between IBS and mental disorders, particularly anxiety and depression, is well documented and bidirectional [3]. On the one hand, anxiety and depression can act as triggers or modulators of IBS symptoms, increasing their severity and frequency [13]. On the other hand, chronic abdominal pain, bloating, diarrhoea or constipation, which are often resistant to treatment, can accelerate or exacerbate anxiety and depression, creating a "vicious circle" of mutually reinforcing pathophysiological mechanisms. Epidemiological data indicate a significantly higher prevalence of anxiety disorders and depression among patients with IBS compared to the general population. The neurobiological mechanisms underlying this association include dysfunction of the gut-brain axis, a bidirectional communication network linking the central nervous system, the enteric nervous system, and neuroendocrine pathways.

Elevated levels of anxiety and depression have a profound and multifaceted impact on the quality of life of patients with irritable bowel syndrome, worsening both subjective experience of symptoms and objective measures of well-being [7]. The bidirectional relationship between mental health and functional gastrointestinal disorders highlights the need for an integrative diagnostic and therapeutic strategy that encompasses not only gastroenterological interventions (dietary modification, antispasmodics, or probiotics), but also psychotherapeutic and psychopharmacological approaches aimed at alleviating anxiety and depression [12].

Recent studies indicate a high prevalence of these mental health conditions among patients with IBS, as well as their significant impact on quality of life (QoL), manifested in reduced social activity, productivity, and emotional well-being [1]. Therefore, mental health screening using tools such as the HAMA and HAMD scales, combined with the involvement of multidisciplinary teams (gastroenterologists, psychiatrists, and psychotherapists), is critical for improving prognosis and QoL in this patient population [6].

The purpose of the study was to determine the impact of elevated levels of anxiety and depression on the quality of life of patients with irritable bowel syndrome depending on the frequency of exacerbations of the disease, taking into account psychosomatic aspects and health indicators related to quality of life.

Materials and methods. The study was conducted on the basis of outpatient visits by patients with irritable bowel syndrome who were under the supervision of general practitioners – family medicine and therapists during 2019–2024. A total of 72 patients aged 18 to 67 years with a confirmed diagnosis of functional irritable bowel syndrome without signs of organic gastrointestinal pathology were examined. All patients provided written consent for the use of their examination results for scientific purposes.

The exclusion criteria for patients were as follows: the presence of organic diseases of the gastrointestinal tract (Crohn's disease, ulcerative colitis, coeliac disease), severe concomitant somatic pathology (NYHA functional class III–IV heart failure, malignant neoplasms, renal or hepatic failure), mental disorders requiring hospitalisation or specialised care, use of antidepressants, anxiolytics or other psychotropic drugs during the last three months prior to inclusion in the study.

Respondents were selected after careful review of medical records, medical history, and clinical observation data. All patients were divided into three clinical groups according to the frequency of exacerbations of clinical symptoms of IBS over the past five years: group A (n=18) included patients with infrequent exacerbations (no more than 3 visits for medical care), group B (n=31) – with an average frequency of relapses (4–10 visits), group C (n=23) – with frequent exacerbations (more than 11 visits) during the observation period.

All patients underwent comprehensive clinical, psychoemotional, and psychometric examinations using validated instruments for quantitative assessment of quality of life, anxiety, and depression. Quality of life was assessed using the SF-36 (Short Form Health Survey) questionnaire, which contains 36 questions grouped into 8 domains characterising physical (Physical Component Summary – PCS) and psychoemotional (Mental Component Summary – MCS) health. The results of the scales were evaluated according to the developer's methodology and analysed in absolute and aggregate terms.

Depressive symptoms were assessed using the Beck Depression Inventory (BDI), which includes 21 items with a rating scale for each symptom from 0 to 3 points. The indicators were interpreted according to clinical thresholds: minimal (0–13), mild (14–19), moderate (20–28) and severe depression (29–63).

The level of anxiety was determined using the GAD-7 (Generalised Anxiety Disorder-7) scale, which covers 7 symptoms of anxiety spectrum over the past two weeks. Each item was rated on a 4-point scale (0–3), and the total scores were classified as: minimal (0–4), mild (5–9), moderate (10–14), or severe anxiety (15–21).

Statistical analysis of the data was performed using SPSS v.26.0 software (IBM, USA). The Shapiro–Wilk test was used to check the normality of the distribution of variables. Intergroup comparisons were performed using the nonparametric Mann–Whitney and Kruskal–Wallis tests. Categorical variables were compared using the χ^2 test. The minimum statistical significance threshold was set at $p<0.05$.

Results of the study and their discussion. According to the results of a comprehensive psychometric assessment using the SF-36 questionnaire, patients with irritable bowel syndrome showed significant differences in quality of life indicators depending on the frequency of symptom exacerbations (Table 1).

Table 1

Quality of life indicators (SF-36) in patients with IBS depending on the frequency of exacerbations

SF-36 questionnaire index	The investigated indexes according to SF-36, M±m		
	Group A, n=18	Group B, n=31	Group C, n=23
Physical Functioning (PF)	62.11±2.67*	55.74±2.91*	49.93±3.05
Role-Physical Functioning (RP)	64.82±3.12*	53.61±3.27*	47.92±3.33*
Bodily pain (BP)	60.37±2.94*	52.33±3.18*	44.18±3.21*
General Health (GH)	65.01±2.85*	51.23±3.34*	45.96±3.12*
Vitality (VT)	67.45±2.43*	53.92±3.14*	45.57±3.06*
Social Functioning (SF)	65.28±3.08*	57.01±3.29*	46.84±3.38*
Role-Emotional (RE)	62.67±2.89*	55.93±3.04*	50.17±3.10*
Mental Health (MH)	64.28±2.68*	56.67±3.01*	52.23±2.97*
Physical health (PH)	63.07±2.89*	53.22±3.17*	46.99±3.17*
Mental Health (MH)	64.92±2.77*	55.88±3.12*	48.70±3.12*

Note: * – P<0.05 – statistical differences of the investigated parameters compared with the same in the control group.

Group A, consisting of patients who had no more than three visits to the doctor within five years, indicating less frequent exacerbations of symptoms, demonstrated significantly higher average scores on most SF-36 questionnaire items compared to groups B and C, which is an indicator of a more satisfactory functional status. The physical functioning score in group A averaged 62.11±2.67, while in group B it was 55.74±2.91, and in group C it decreased to 49.93±3.05 ($p<0.05$). A similar trend was observed in the area of role physical functioning (RP): 64.82±3.12 in group A, 53.61±3.27 in group B, and 47.92±3.33 in group C ($p<0.05$), indicating that patients with more frequent symptom recurrence experience greater limitations in daily physical activity.

Pain intensity and overall perception of health also decreased significantly with an increase in the frequency of IBS exacerbations. Patients in group A reported relatively lower pain levels (60.37±2.94) compared to group B (52.33±3.18) and group C (44.18±3.21, $p<0.05$), indicating a greater pain burden in patients with recurrent symptoms. The vitality index showed a similar decrease in all groups: 67.45±2.43 in group A, 53.92±3.14 in group B, and 45.57±3.06 in group C ($p<0.05$), reflecting a progressive decline in energy and vitality in patients with frequent relapses.

Indicators of social functioning, role-emotional and mental health showed a significant deterioration in patients with frequent exacerbations of IBS. In particular, in group B, mental health indicators were significantly lower (52.23±2.97) compared to group A (64.28±2.68) and group B (56.67±3.01), indicating psychological distress in patients with a more severe clinical course of the disease. These conclusions are also confirmed by composite indicators: the total physical component score decreased from 61.57±2.81 in group A to 50.71±3.04 in group B, while the total mental component score decreased from 63.94±2.59 to 51.28±3.16 ($p<0.05$), confirming the relationship between the frequency of exacerbations and a decrease in health-related quality of life.

Analysis of depressive symptoms using the Beck Depression Inventory (BDI) showed a gradual increase in the level of depression depending on the frequency of exacerbations of irritable bowel syndrome (Fig. 1).

Patients in group A, who had infrequent exacerbations, demonstrated minimal levels of depressive symptoms (10.87±1.96), indicating relative emotional stability and low levels of psychological distress.

Patients in group B showed a moderate increase in scores (15.94±2.24), while in group C there was a significant increase in the average BDI score to 22.51±2.62, which corresponds to moderate or severe depression ($p<0.05$ compared to group A). The data obtained confirm the hypothesis that repeated exacerbations of IBS, combined with poor quality of life, significantly contribute to the formation and deepening of depressive symptoms.

Assessment of anxiety levels using the GAD-7 scale also showed a clear tendency towards increased scores in patients with frequent exacerbations of IBS (Fig. 2).

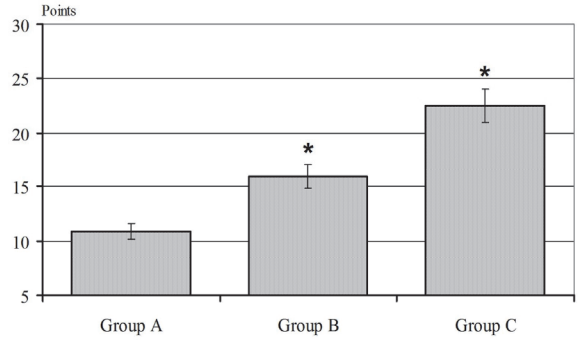

Fig 1. The level of depression in patients with IBS according to the Beck test results.

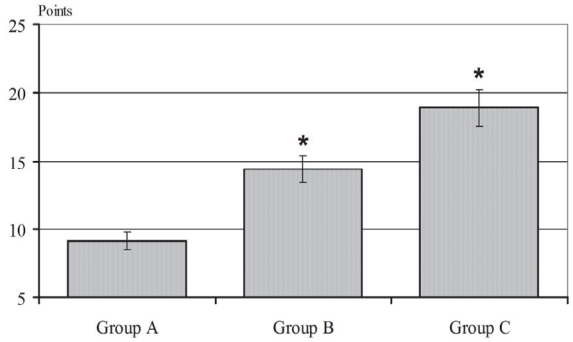

Fig 2. The anxiety levels in patients with IBS according to the GAD-7 questionnaire.

Note: * – $P<0.05$ – statistical differences of the investigated parameters compared with the same in the control group.

In group A, the average score was 9.12±2.13, which corresponds to a mild level of anxiety and has no significant clinical impact. In group B, the score was 14.38±2.45, which corresponds to moderate anxiety, while in group C, the average score was 18.91±2.97, indicating a pronounced state of anxiety ($p<0.05$). The increase in anxiety levels in patients with more frequent exacerbations indicates a close bidirectional relationship between the psychoemotional state and the severity of the clinical picture of IBS. Anxiety not only intensifies the subjective perception of somatic symptoms, but also contributes to an increase in the number of visits to seek medical help.

Correlation analysis of the data obtained confirmed the presence of a pronounced inverse relationship between the level of anxiety and depressive symptoms (according to the GAD-7 and BDI scales, respectively) and the quality of life indicators of patients with irritable bowel syndrome, which were obtained based on the SF-36 questionnaire. In particular, the lowest scores on the subscales of life activity, general health, social functioning, and mental health were recorded in patients who simultaneously had the highest scores on the GAD-7 and BDI scales.

Thus, the data obtained and their critical analysis indicate that patients with irritable bowel syndrome develop psycho-emotional disorders with pronounced manifestations of anxiety and depressive components of behaviour in the dynamics of the development and clinical manifestation of the syndrome. The correlation analysis showed that these psycho-emotional disorders significantly worsen the quality of life of this group of patients.

To discuss the data obtained, we consider it appropriate to focus on the following five aspects. First, our attention was drawn to a fairly common pathology – irritable bowel syndrome, the incidence of which currently ranges from 10 % to 15 % in countries around the world and is likely to increase [1, 7]. It is this chronic condition of functional gastrointestinal disorders, characterised by recurrent abdominal pain associated with defecation or changes in the frequency and consistency of stools, bloating and a feeling of incomplete emptying, that is the main reason for visits to gastroenterologists. The relevance of the problem under consideration is increased by the chronic nature and polymorphic symptoms of the clinical manifestation of IBS, which, in addition to worsening the quality of life of patients, cause their social maladjustment, decreased productivity, emotional distress, the appearance of mental behavioural disorders, etc which also stress clinicians [11].

Secondly, the pathophysiological mechanisms of IBS are currently explained and clarified one-sidedly, with an emphasis on intestinal motility dysfunction, visceral hypersensitivity, intestinal microbiota dysbiosis, and post-infectious changes [2, 5]. At the same time, little attention is paid to emotional and psychosocial aetiological factors, which are also capable of ‘triggering’ complex pathophysiological mechanisms with regulatory disorders, intraorganic dysfunction, mutually reinforcing positive feedback mechanisms and a ‘vicious circle’ pathophysiological mechanisms with the development of IBS.

Thirdly, the methodological basis of the conducted surveys is the use of the SF-36 questionnaire, the choice of which is justified by its ability to comprehensively assess the physical and psycho-emotional

aspects of quality of life [3, 6]. These are extremely important for assessing the quality of life of patients with IBS, whose clinical symptoms are somatic and psychogenic in nature. This tool demonstrates high reliability (Cronbach's coefficient α=0.85–0.95) and validity in studies of chronic diseases.

Fourthly, based on the IBS model in the examined patients with different terms of its manifestation, it has been statistically proven that emotional tension, internal mental exhaustion, and feelings of anxiety and depression are not only subjective in nature but also objectively affect an individual's ability to maintain daily activity, participate in social life, cope with life challenges, and realise professional and personal functionality.

Elevated anxiety levels, often combined with hypervigilance to bodily symptoms, can significantly modify the perception of somatic signals, lowering the pain tolerance threshold, increasing the focus on physical discomfort, and forming so-called ‘catastrophic thinking.’ Patients with high levels of anxiety tend to interpret normal or mild gastrointestinal symptoms as potentially threatening, which in turn forms a vicious circle of ‘anxiety symptom anxiety’ pathogenesis. Depressive disorders, in turn, are accompanied by energy deficiency, loss of interest in daily activities, depressed emotional background, and feelings of hopelessness. Against the background of a functional disorder such as IBS, these emotional disturbances play not only the role of a consequence of prolonged somatic complaints, but also an active pathogenetic factor that exacerbates the course of the disease.

We consider it important that the social functioning index is significantly reduced in patients with high levels of anxiety and depression. According to the SF-36, it was the social functioning scale that showed some of the lowest average scores in the group of patients with frequent exacerbations. This may be due to avoidance of social contact, reduced confidence in one's own body, and embarrassment about the presence of sensitive symptoms (e.g., diarrhoea, bloating) that often accompany IBS. Restrictions on social activity, in turn, reinforce feelings of isolation, which is a known risk factor for the worsening of both anxiety and depressive disorders.

Finally, based on the results obtained, we believe it is possible to formulate a clinical hypothesis that the management of patients with IBS should move away from a purely somatic approach to a model that takes into account the biopsychosocial nature of the disease [14]. This means that treatment should include not only drug therapy aimed at alleviating gastrointestinal symptoms (antispasmodics, prokinetics, prebiotics, etc.), but also psycho-emotional support, psychotherapeutic intervention (e.g., cognitive-behavioural therapy or psychodynamic counselling), as well as measures aimed at improving the quality of life of patients. We would like to note that the concept outlined above is in line with the fundamental principle of general and clinical pathological physiology regarding the pathogenetic rationale for the treatment of any pathological process, which we consider important when choosing a comprehensive treatment for this group of patients.

Moreover, the detection of high levels of anxiety and depression should be considered not as a random concomitant phenomenon, but as an important diagnostic, prognostic and therapeutic marker that determines not only the quality of life, but also the frequency of relapses, the degree of response to therapy and the level of patient compliance. Based on these data, it seems reasonable to include psycho-emotional screening (GAD-7, BDI, HADS) in the standard examination of patients with IBS at the primary care level.

The results of the study emphasise the need for an integrative interdisciplinary approach to the treatment of patients with irritable bowel syndrome. Ignoring the psycho-emotional component of the disease can not only reduce the effectiveness of treatment, but also lead to chronic symptoms, increased medical costs, impaired social functioning, and the development of comorbid mental disorders. Early diagnosis and correction of anxiety and depression are key components in improving the effectiveness of medical interventions and the quality of life of patients with functional gastrointestinal disorders.

Conclusions

1. Patients with irritable bowel syndrome demonstrate a significant decrease in quality of life in accordance with an increase in the frequency of exacerbations of the disease, manifested in a deterioration in physical functioning, vital activity, general health and psycho-emotional well-being according to the SF-36 questionnaire.

2. Psychoemotional disorders, in particular anxiety and depression, have a clear inverse correlation with most components of quality of life in patients with IBS. Elevated scores on the BDI and GAD-7 scales are accompanied by a significant decrease in the energy potential, social activity, and mental health of patients.

3. Frequent exacerbations of IBS are associated with higher levels of anxiety and depression, indicating the presence of a psychosomatic mechanism in the pathogenesis of the disease and emphasising the need for systematic psychoemotional monitoring in this category of patients.

4. The biopsychosocial model of managing patients with IBS should include not only drug therapy, but also psycho-emotional support and psychological counselling, which allows for greater treatment effectiveness, reduces the frequency of relapses and increases the overall level of patient satisfaction.

Prospects for further research aimed at detailed study of the possibility of both emotional and depressive disorders initiated by different mechanisms pharmacological correction in patients with irritable bowel syndrome which will certainly improve the main disease clinical manifestation.

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