

Psychological Interventions for Irritable Bowel Syndrome

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ABSTRACT

Irritable bowel syndrome (IBS) patients often present psychoform symptoms or psychiatric disorders. Among the psychological factors studied in IBS patients, two seem to influence mostly its severity: catastrophizing and somatization. Somatization is an independent risk factor for IBS. In addition, somatization more than the severity of IBS influences the way the patients perceive their illness, the outcome and the efficacy of treatment. Irritable bowel syndrome patients demonstrate greater catastrophizing scores than controls, and pain catastrophizing is a significant predictor of gastrointestinal symptoms related to pain. In this context we analysed the data regarding the efficacy of two psychological treatments in IBS: cognitive behavioral therapy and hypnosis. Cognitive behavioral therapy is focused on replacing maladaptive coping strategies with more positive cognitions and behaviors. Several studies showed that cognitive behavioral therapy is effective in reducing bowel symptoms in IBS, both post-treatment and short-term follow-up. Gut-directed hypnotherapy has beneficial short-term effects in improving gastrointestinal symptoms of patients with IBS, and the results are maintained after one year in half of the patients. Psychological treatments are a suitable option for selected IBS patients.

Key words: irritable bowel syndrome – somatization – catastrophizing – cognitive behavioral therapy – gut-directed hypnotherapy.

Abbreviations: CBT: Cognitive Behavioral Therapy; FGIDs: functional gastrointestinal disorders; GDH: Gut-Directed Hypnotherapy; GI: gastrointestinal; HRQoL: health related quality of life; IBS: irritable bowel syndrome; ICBT: Internet-delivered CBT; ISM: Internet-delivered Stress Management; NNT: number needed to treat; PROs: Patient-reported outcomes; QoL: Quality of Life; SD: Somatization Disorders; SMT: Supportive Medical Treatment.

INTRODUCTION

The advent of the biopsychosocial model of functional gastrointestinal disorders (FGIDs) represented a milestone in the understanding, diagnosis, and management of these disorders. Since the development of the biopsychosocial model, about 30 years ago, there is increasing evidence that psychological factors play an important role in the pathogenesis and outcome of FGIDs, especially in irritable bowel syndrome (IBS).

Very often there is an association between IBS and

psychiatric disorders. Even if most IBS patients do not have psychiatric illnesses, they do manifest psychoform symptoms and somatoform complaints [1]. There are some unanswered questions regarding the association observed between psychological factors and IBS. Is this high occurrence of psychiatric disorders or maladaptive coping in IBS a characteristic of IBS patients, or do they represent a risk factor? Do these factors influence the self-reported severity of IBS? Do they modify the self-reported outcomes of IBS, i.e. general health status, quality of life (QoL)? Which of these factors can we influence through therapy to obtain symptom alleviation?

Interestingly, van Tilburg et al. [2] developed a model of psychological influences on IBS. The authors collected data regarding several psychological factors such as neuroticism, abuse history, life events, anxiety, somatization and catastrophizing from 286 IBS patients. In their model, the two most important variables associated with IBS severity were catastrophizing and somatization. Anxiety had an important but indirect effect because it was associated with

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both increases in catastrophizing and somatization. Other psychological variables such as neuroticism and stressful life events also play a role in IBS patients by increasing anxiety. The authors concluded that “the most fruitful approach to curb the effects of psychological factors on IBS is to reduce catastrophizing and somatization” [2]. This model did not include depression, but there are data showing that depression favors catastrophic thinking and through this thinking style patients experience more intense pain [3]. In a previous paper [4], all the psychosocial factors studied throughout the time in relation with IBS were presented and analysed. This review will focus on the latest data since 2010 on catastrophizing, somatization and psychological treatment in IBS.

SOMATIZATION AND IBS

Somatization disorder (SD) is the tendency to report multiple unexplained physical symptoms (e.g. headache, back pain, fatigue), without the evidence of a medical condition that could explain them [5]. Up to one quarter of IBS patients referred to tertiary care centers have SD, but the prevalence of SD in population-based samples vary from less than 1% to 10% [6, 7]. Somatization explains the frequent extra gastrointestinal (GI) symptoms reported by IBS patients: musculoskeletal complaints, urinary and sexual symptoms, headaches and fatigue [8]. Several papers have shown that psychosocial factors indicative of somatization (such as illness behaviour scores, anxiety, sleep problems and somatic symptoms) and somatization are independent risk factors for IBS [7, 9, 10]. In a large community based study from England, subjects free of IBS that reported all markers of somatization at baseline (i.e. high illness behavior scores, anxiety, sleep problems and somatic symptoms) were six times more likely to develop IBS five months later when compared to those who were exposed to none or only one marker. Among these markers, the illness behavior scale was the stronger predictor of outcome (OR = 5.2, 95%CI 2.5-11.0) [9]. Similar results were reported by a recent study that included 2769 subjects from a screening program, among which 258 had IBS. Irritable bowel syndrome was associated with somatization, with an adjusted OR = 2.88, and 95%CI 1.55-5.36 [7].

One important observation that can be drawn looking at the research in the last years is that somatization more than the severity of IBS influences the way the patients perceive their illness, the outcome, the efficacy of treatment or interventions and the impact on their lives [11-13]. It is generally accepted that patients with IBS have a poor quality of life [14]. Vu et al. [15] looked for the impact of psychiatric (anxiety, depression, somatization) and extra-intestinal functional disorders on the health-related quality of life (HRQOL) in patients with FGIDs (functional dyspepsia and IBS). In a cohort of 606 FGIDs outpatients, more than 70% had at least one of the above mentioned comorbidities. The presence of these comorbidities influenced the QoL independent of GI symptoms. In addition, comorbidities were stronger predictors of HRQOL than GI symptoms in FGIDs patients [15]. In another study, the presence of somatic and psychological complains (somatization, anxiety, stress, depression) and medical comorbidities, and not the severity of IBS symptoms,

correlated with the scores of self-rating of health. The authors concluded that the severity of IBS symptoms has a modest role in how IBS patients describe their health in general [16].

Patient-reported outcomes (PROs) are instruments developed by FDA and are used to capture clinically important information regarding the therapeutic benefit of treatment in FGIDs. Lackner et al. [17] studied the influence of cognitive processes on PROs in IBS. The authors examined how factors related with the respondent, such as pain catastrophizing, somatization and anxiety sensitivity are associated with PRO endpoints of severity and concluded that these dysfunctional cognitions observed in IBS influenced patients' judgments of pain, bloating or bowel habit, in the end affecting the PROs. It is interesting to mention the role of somatization in predicting each GI symptom. Every one unit increase of somatization predicted an increase in IBS severity scores by >0.33, or just over 1/3 of a scale unit. In the end, higher scores of somatization were associated with higher ratings of IBS symptoms [17]. Similar results upon the interplay between somatization and IBS severity are reported by other studies published in the last years [18].

CATASTROPHIZING AND IBS

Catastrophizing is a maladaptive coping strategy defined as “a negative cognitive process of exaggerated negative rumination and worry” [19]. Pain catastrophizing is the tendency to magnify the seriousness of pain, or feel helpless about it either in direct response to pain or in anticipation of painful stimuli [20]. Irritable bowel syndrome patients demonstrate greater catastrophizing scores than controls [21]. Pain catastrophizing is a significant predictor of GI symptoms related to pain [17]. Catastrophizing, more than pain severity, influences the variance of QOL in IBS [22] and mediates the relationship between depression and pain severity. Patients with IBS who experience higher levels of depression engage in more catastrophic thinking specific to pain, and partly through this thinking style experience more intense pain and greater activity limitations due to pain [3]. These results of Lackner et al. from 2004 are supported by the work of van Tilburg et al. who showed that catastrophizing and somatization play an important and direct role in IBS symptom severity [2]. A recent paper showed different catastrophizing levels in different countries: the highest scores were observed in China and Romania, compared to other countries [23]. A hypothetical explanation is the influence of living in a specific political regime.

A brief questionnaire to assess catastrophic cognitions in IBS has been developed and validated by Hunt et al. [24]. This is called GI-Cognitions Questionnaire and is able to discriminate between IBS and inflammatory bowel disease patients.

PSYCHOLOGICAL TREATMENT IN IBS

Catastrophizing, somatization and anxiety sensitivity influence patients' judgments of pain, bloating and bowel habit, thus affecting the PROs [17]. This observation highlights the value of cognitive-behavioral interventions that address the way that patients with IBS experience, interpret, and respond

to their symptoms. The model proposed by van Tilburg et al. pointed out two modifiable psychological factors, which have a major influence on IBS: catastrophizing and somatization [2]. To reduce catastrophizing one can try to „reduce stress”, or better, to improve coping with stress. Cognitive behavioral therapy (CBT) is focused mainly on replacing maladaptive coping strategies with more positive cognitions and behaviors. Among psychological therapies, CBT and hypnosis have been used in research studies and showed the highest rates of positive results, and both will be discussed in this article.

HOW DO CBT AND GUT-DIRECTED HYPNOSIS WORK?

There is no clear consensus in the literature with regard to the mechanism of CBT on reducing IBS symptoms. The biopsychosocial model explains how an increased IBS susceptibility is influenced by the interactions between early life factors (genetic predisposition and environmental factors), psychosocial risk factors (e.g. depression and anxiety, coping styles) and physiological dysfunctions (e.g., motility, visceral sensitivity) via the brain–gut axis [25, 26]. At the same time patient responses to IBS symptoms influence the evolution of the disease. Everitt et al. [27] explained how a patient’s emotions, cognitions and behaviours regarding the symptoms, can increase anxiety and maintain symptoms through the link between the heightened autonomic nervous system and the enteric nervous system. Cognitive behavioral therapy supposedly reduces the impact of CNS activity on gut function [26] and intervenes on IBS clinical manifestations through education, behavioural and cognitive techniques [27].

With regard to the CBT mechanism in IBS, several studies suggest that the change may occur through: (1) improvement in psychological distress which leads to improvement in GI symptoms [26]; (2) direct effect of CBT on GI symptoms that in turn may lead to reductions in psychological distress [28, 29]; (3) changes first of the behaviour, then of the cognition, before impacting on treatment outcome [28, 30]; decrease of visceral sensitivity and of catastrophic cognitions [31]. An interesting aspect mentioned by the authors of a 2015 meta-analysis [32] is that psychological treatments for IBS, which have the same treatment labels (e.g. cognitive therapy), may not be comparable. The improvements of IBS symptoms may be due not to just one reason, but to several. For example, one reason might be the different hypothesis tested (e.g. improving depressive symptoms versus reductions in visceral hypersensitivity), another reason might be in regard to different techniques applied for the same intermediate theoretical predictors, or a third reason could be that two treatments with different labels may actually target the same intermediate theoretical constructs and utilize the same intervention techniques [32].

Identifying and understanding the active ingredients of psychological therapies on IBS is crucial [32], but the differences in the design studies may transform this into an objective hard to complete. These differences start from the diagnostic procedures: according to the NICE (National Institute for Health and Care Excellence) guidelines [33] the diagnosis is recommended to be made in a positive manner,

considering the symptoms which point towards the diagnosis, but in practice exclusion diagnostic procedure is still in use [34]. Studies do not differentiate between the IBS subtypes (IBS-constipation, IBS-diarrhoea, IBS-mixed and IBS-unclassified), which recently have been identified as having different impacts on the QoL [35]. Also some design studies include different diagnostic criteria for IBS (Rome I, II or III) [32], while others have focused on different mediators. For example, one study showed that change in illness perceptions, catastrophizing, damage beliefs and fear avoidance predict improved work and social adjustment in IBS patients [28]. Another mediation study, that used a protocol focused on changing distress, disagreed with previous findings and argued that the pathway to improvement in IBS was through distress [26, 28]. While some say that symptom-focused approaches [32] may be ineffective, others state that focusing solely on psychological variables could potentially be ineffective. For example, the IBS patients with purely somatic illness attributions have difficulty in acknowledging the role psychological variables play in maintaining IBS symptoms [32, 36, 37].

Thus, future investigations on the processes and mechanisms through which CBT operates should: (1) have better research designs, with appropriate control groups [8], (2) investigate which CBT technical components are the keys in making changes (e.g. on bowel symptoms) [26, 29], (3) analyse if the specific skill used in treatment improves after treatment (e.g. mindfulness) [38], (4) make attempts to measure intermediate constructs at baseline and post-treatment, and (5) try to examine the mediation of symptom improvements through these intermediate constructs quantitatively [39].

The mechanism through which **gut-directed hypnotherapy** (GDH) works on IBS symptoms is also not clear. As stated above, hypnotherapy is a form of intervention where suggestibility is used in order to “disable” the more active and analytical aspects of the patient’s mind, whereas aspects of the normally subconscious mind is activated [38].

The central pain amplification (part of IBS symptom generation), includes increased emotional arousal, cognitive abnormalities (hypervigilance, catastrophizing) and related alterations in the balance of descending inhibitory and facilitatory systems [40, 41]. Functional MRI studies have demonstrated that hypnotherapy appears to lead to normalization of abnormal central pain processing [33, 40], and that amitriptyline reduces brain activation during painful rectal distension [33, 42]. Meanwhile, a report where recording of cerebral-evoked potentials in normal individuals undergoing rectal electrical stimulation was made before and after hypnotherapy, suggested that hypnotherapy reduced cerebral responsiveness [43, 44]. Gerson et al. [44] believe that the visualization which accompanies gut-directed hypnotherapy reconfigures associations between pain, urgency, and self-control, relieving a level of anxiety that may perpetuate a negative brain-gut interaction.

Cognitive behavioral therapy is a form of psychotherapy where the therapist helps patients to actively dispute their irrational beliefs and to assimilate more efficient rational beliefs, with a positive impact on their emotional, cognitive, and behavioral response [45]. There are different forms of CBT; it is usually administered over weekly sessions (may vary

from 8 to 20 sessions), and can be combined with behavioral interventions such as encouraging patients to engage in activities that counter the disability associated with the bowel disorder [46]. Almost all studies published so far showed that CBT is efficient: it reduces the bowel symptom score, improves the QoL [29, 46, 47] and also help patients to better cope with their chronic illness [48]. In general, most studies were small-to-medium-sized trials and most small studies may not have been adequately powered [46]. Only a few studies failed to show the superiority of CBT versus standard care on bowel symptom severity or HRQoL [49].

Table I shows the studies performed in the last six years, which compared different forms of CBT (internet delivered, based self-management, using personal digital assistant or sessions with a trained psychotherapist) either with usual medical care, or with other interventions (i.e. relaxation therapy). The majority of these studies showed the superiority of CBT in improving bowel symptom severity and some changes in cognition when compared with usual medical care or patients on waiting lists, both in short and long term follow-up. A meta-analysis from 2014 showed that CBT is more effective in reducing IBS bowel symptoms than waiting list controls both at post-treatment and short-term follow-up, but it is not superior to other psychological treatments. The study included 18 randomized controlled trials (RCTs) [50].

An interesting paper comes from Craske et al. who compared different protocols of CBT [58]. Twenty five

patients underwent CBT-interoceptive exposure that targeted erroneous beliefs about IBS symptoms, hypervigilance to IBS symptoms, hypersensitivity to visceral sensations, fear of IBS symptoms, and maladaptive behavioural responses to IBS symptoms. Bowel symptom severity index, visceral sensitivity index, pain vigilance and awareness, IBS-QoL were determined pre-, mid-, post- CBT and at follow-up. The intervention was superior to control intervention addressed to stress management or attention control [56].

Another therapeutic option in IBS is GDH. The first report about the efficacy of hypnosis in IBS dates from 1984 [60] and since then a high number of clinical trials have supported its effectiveness. Through hypnosis patients are brought to a special mental state where they are intensely focused and receptive, followed by deep relaxation and use of gut-directed imagery and suggestions related to symptom control and normalization of gut function [61]. The treatment requires approximately 7 sessions (each session lasts 30-40 minutes), either weekly or every other week. How GDH improves the symptoms of IBS remains a dilemma. Palsson et al. showed that hypnosis improved both IBS symptoms and general bodily symptoms, but did not affect rectal pain thresholds, rectal smooth muscle tone, and autonomic functioning (sweat gland activity, heart rate, blood pressure, skeletal muscle tension, and skin temperature). The authors concluded that the positive effect of hypnotherapy could be the consequence of the reductions in psychological distress and somatization [62].

Table I. Studies published in the last 5 years which evaluated the efficacy of cognitive behavioral therapy in patients with irritable bowel syndrome

Study	Number of patients	Type of therapy	Main results / conclusions
Jang et al. [51]	76	8 weeks CBT / general information on IBS	Bowel symptom severity, distress, disability, interference with activity, healthy worry, body image improved
Chilcot et al. [30]	64	CBT / treatment as usual	Change in cognition rather than mood mediated treatment-related improvements
Ljotsson et al. [52]	195	Internet-delivered CBT / internet-delivered stress management, 10 weeks	The improvement on the gastrointestinal symptom rating scale-IBS version was higher in ICBT when compared with ISM, both post-treatment and at 6 months follow-up
Andersson et al. [53]	85	Internet-delivered CBT/ discussion forum	Symptom improvement (> 50% reduction in the symptom score) - 36% vs. 2% of patients Significant cost reductions for the treatment group at \$16,806 per successfully treated case; reduced work loss in the treatment group. Results were sustained at 3-month and 1 year follow-up. NNT = 2.99 (95% C 2-5)
Oerlemans et al. [54]	37 / 38	CBT on personal digital assistants / control, 4 weeks	CBT group showed more improvement in QoL, catastrophizing thoughts, and more pain improvement Only improvement in catastrophizing thoughts persisted in the long-term
Jones et al. [26]	34 / 36 / 35	CBT / relaxation therapy / usual medical care	CBT operates via changes in mood state (most clearly anxiety)
Ljotsson et al. [55]	85	Internet-CBT / discussion forum	Participants in the treatment arm reported 42% decrease in IBS-symptoms, while the control group reported a 12% increase in symptoms
Lackner et al. [56]	71	Wait list/10 weekly sessions CBT / four CBT sessions over 10 weeks	Rapid positive response to CBT at 4 weeks is associated with sustained IBS symptom reduction
Moss-Morris et al. [57]	64	7 weeks CBT based self-management/ treatment as usual	At 3 and 6 months post-treatment 76% of CBT patients reported symptom relief vs. 21% in the treatment as usual group
Hunt et al. [31]	28/26	5 weeks internet CBT	Improvement in symptoms score and QoL after 3 months
Hunt et al. [24]	60	CBT; selfhelp	Improvement of symptoms, visceral sensitivity, catastrophization, QoL at 6 weeks
Ljotsson et al. [59]	417	Internet CBT with/without systematic exposure	10 weeks internet-delivered intervention with exposure is superior

CBT: cognitive behavioural therapy; IBS: irritable bowel syndrome; ICBT: Internet-delivered CBT; ISM: internet-delivered stress management; NNT: number needed to treat; QoL: quality of life

A study that included 204 IBS patients reported that 71% of patients treated with hypnosis responded to treatment (they considered their symptoms very much or moderately better). Among the responders, 81% fully maintained improvement at follow-up 1 to 5 years later. Treatment responders used significantly less medication and had fewer health care visits [63]. Hypnosis improves not only the IBS symptom score, but also the IBS-related cognitions score and the total cognitive score, suggesting that symptom improvement in IBS with GDH is associated with cognitive change [64]. Moser et al. compared GDH (46 patients) in 10 weekly sessions within 10 weeks with supportive talks with medical treatment (SMT – 44 patients), and showed that a higher rate of patients improve after GDH, both after treatment (60.8% vs 40.9%) and after 15 months (54.3% vs. 25.0%) [65]. The effects of GDH are long lasting. Vlioger et al. reported that after a mean duration of 4.8 years (3.4–6.7) 68% of patients treated with GDH were in remission vs. 20% of patients that received conventional therapy ($p=0.005$). The study was conducted on 52 children with IBS or functional abdominal pain. Remission was defined as > 80% improvement in pain scores compared with baseline. Pain scores and somatization scores were also significantly lower in the GDH group compared with conventional therapy group [66].

Two meta-analyses published in 2014 tried to establish if GDH is superior to conventional therapy in IBS patients [67, 68]. One meta-analysis included 7 RCTs and 374 patients among which 191 were in the hypnotherapy group. The studies targeted refractory IBS. There was a high variability among studies with regard to duration (30 to 60 minutes) and frequency (5 to 12 sessions) of GDH sessions. Gut-directed hypnotherapy significantly improved the following parameters at three months: the overall gastrointestinal symptom score, abdominal pain and several aspects of QOL. The authors underlined that firm conclusions cannot be drawn given the small number of studies, but GDH has beneficial short-term effects in improving GI symptoms of patients with IBS [67]. The second meta-analysis included 8 RCTs and 464 patients. This meta-analysis showed beneficial effects of GDH compared with conventional therapy both at the end of therapy (GDH determined symptom relief and reduced global GI score) and at 1 year follow-up, when symptoms were still alleviated compared with controls in half of the patients. Number needed to treat (NNT) was 5 (at 3 months) and 3 (at 1 year follow-up) [68], comparable with NNT with antidepressants [69]. Another meta-analysis from 2014 concluded that CBT, hypnotherapy, multicomponent psychological therapy, and dynamic psychotherapy were all beneficial in the treatment of IBS [70].

Currently, psychological interventions (CBT, hypnotherapy and/or psychological therapy) for IBS treatment are included in 2015 NICE guidelines. The guideline recommends that patients with refractory IBS, who do not respond to pharmacological treatments after 12 months should be referred for psychological interventions [33].

As resumed in Table II, somatization and catastrophizing influence the severity of IBS and impact several aspects of IBS patients life. So far, the exact mechanism explaining the interaction between IBS and psychological factors, their

frequent association (even with psychiatric disorders) is not known, but recent data suggest that molecular or genetic changes could be involved [71].

Table II. Somatization and catastrophizing in relation to irritable bowel syndrome (IBS) and psychological therapies

Somatization and factors indicative of somatization (esp. a high illness behavior score) are independent risk factors for IBS

Presence of somatization influences the way the patients perceive their illness, the outcome and the impact on their lives

Catastrophizing influences the variance of quality of life in IBS

Catastrophizing and somatization play a direct role in IBS symptom severity

CBT aims to replace maladaptive coping strategies with positive cognitions and behavior

CBT is effective in reducing IBS bowel symptoms

GDH has beneficial short-term effects in improving gastrointestinal symptoms of patients with IBS

After GDH, IBS symptoms are alleviated in 50% of patients after 1 year follow up

CBT: cognitive behavioral therapy; GDH: Gut-directed hypnotherapy

CONCLUSIONS

The biopsychosocial model of IBS remains valid through decades of research. Among psychological factors, two appear to influence mostly IBS outcome and the way patients with IBS interpret their illness: somatization and catastrophizing. In addition, somatization is an independent risk factor for the development of IBS. Luckily there are methods to diminish their “effect” on IBS through psychological therapies. Although the exact mechanism is not yet known, CBT and GDH have proved to be efficient in the majority of studies and their beneficial effects last sometimes for years. For IBS patients who fail to respond to standard medical treatment, we should keep in mind these alternatives.

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Intervențiile psihologice în Sindromul Intestinului Iritabil

ABSTRACT / REZUMAT

Pacienții cu sindrom de intestin iritabil asociază frecvent simptome sau afecțiuni psihice. Doi dintre factorii psihologici studiați la pacienții cu sindrom de intestin iritabil par a influența cel mai mult severitatea afecțiunii: catastrofizarea și somatizarea. Somatizarea este un factor de risc independent pentru sindromul de intestin iritabil. În plus, somatizarea, mai mult decât severitatea sindromului de intestin iritabil, influențează modul în care pacienții își percep boala, rezultatul și eficacitatea tratamentului. La pacienții cu sindrom de intestin iritabil s-au observat scoruri de catastrofizare mai mari decât la loturile martor, iar catastrofizarea durerii este un predictor semnificativ de simptome gastrointestinale legate de durere. În acest context, am analizat datele referitoare la eficacitatea a două tratamente psihologice în sindromul de intestin iritabil: terapia cognitiv comportamentală și hipnoza. Terapia cognitiv-comportamentală se bazează pe înlocuirea strategiilor de coping maladadaptativ cu cogniții și comportamente pozitive. O serie de studii au arătat că terapia cognitiv comportamentală este eficientă în reducerea simptomelor intestinale în sindromul de intestin iritabil, atât post-tratament cât și pe termen scurt. Hipnoterapia focalizată pe funcționarea digestivă are efecte benefice pe termen scurt în ameliorarea simptomelor gastrointestinale la pacienții cu sindrom de intestin iritabil, iar rezultatele sunt menținute după 1 an la jumătate din pacienți. Tratamentele psihologice sunt o opțiune potrivită pentru pacienți selectați cu sindrom de intestin iritabil.