

The Effectiveness of Cognitive-Behavioral Therapy on Chronic Pain and Cognitive-Emotional Regulation in Patients with Irritable Bowel Syndrome

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Abstract

Objective: Irritable bowel syndrome is a chronic and debilitating digestive disorder that is more common in people with psychological disorders than in the general population. This study is aimed at the effectiveness of cognitive-behavioral therapy in the mitigating of chronic pain and cognitive-emotional regulation in patients with Irritable bowel syndrome.

Method: This study investigates the efficacy of cognitive-behavioral therapy on chronic pains and cognitive emotion regulation in patients with IBS. The research method is quasi-experimental with a pretest-posttest and control group and a six-month follow-up. All patients with IBS who had presented to the Shariati Hospital of Tehran and Masoud Gastroenterology and Liver Clinic from autumn 2019 to winter 2020 comprised the statistical population. The sample size was 48 people selected by convenience sampling, then divided into an experimental group and a control group using a block randomization procedure (with each group containing 24). Chronic Pain Grade Scale and Cognitive Emotion Regulation Questionnaire were the research tools provided to the two groups. However, the control group remained on the waiting list and received no interventions. The cognitive-behavioral therapy intervention was performed for the experimental group for eight 90-minute sessions. Descriptive statistics and Repeated Measures analyzed research data.

Results: Findings indicated that cognitive-behavioral therapy reduced chronic pain and increased cognitive regulation ($p < 0.01$). This efficacy remained stable until a six-month follow-up ($p < 0.05$).

Conclusion: This finding can also be associated with reducing and improving cognitive emotion regulation within psychological interventions planning vision among patients with IBS, and thus have clinical usages.

Keywords: Irritable Bowel Syndrome, Cognitive Behavioral Therapy, Chronic Pain, Cognitive Emotion Regulation.

Introduction

Irritable Bowel Syndrome (IBS) is categorized as a Somatic Symptom Disorder in DSM-5. Somatic Symptom Disorder is diagnosed when positive

signs and symptoms are present; however, the medical explanations for these somatic symptoms are absent. Moreover, distressing somatic symptoms such as dysfunctional thoughts, emotions, and maladaptive behaviors in response to the symptoms are significantly presented. Notably, the presence of the somatic symptoms and how individuals present and interpret these symptoms are vital (APA, 2013). According to the International Classification of Diseases 10th (ICD) definition, IBS is a form of chronic Somatic Symptom Disorder that commonly devastates gastrointestinal functions.

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According to the significant number of evidence, IBS's symptoms include abdominal pain, diarrhea, and constipation. For instance, Ford et al. (2020) reported that IBS might affect 5-10% of healthy people and mainly is experienced as a period of relapse and recovery.

Additionally, IBS is known as a high-prevalence disorder and the prevalence could vary in different countries (Oka et al., 2020). However, the frequency of this disorder is estimated at roughly 11.2% across the world (Aljammaz et al., 2020). Epidemiological studies indicate that the prevalence of IBS is higher among people with psychological difficulties than individuals without psychological issues (Ford et al., 2020). However, the pathophysiology of IBS is not yet completely understood. Much evidence highlights the problematic interaction between the gut and the brain. For instance, Ford et al.'s (2020) result highlighted the problematic interaction between the gut and brain would lead to motility disturbances, increased visceral hypersensitivity, and altered CNS processing, along with gastrointestinal microbiota and disturbances in mucosal and immune function.

Chronic pain is the most common symptom reported by IBS patients (Stemboroski & Schey, 2020). Pain is an unpleasant sensory or emotional experience that is associated with actual or potential injury. In addition, pain contains two sensory and emotional dimensions. The sensory dimension of pain refers to the intensity of pain, and the emotional dimension refers to the degree of unhappiness that a person experiences. Notably, Chronic pain is a debilitating condition that causes significant problems in a variety of aspects of individuals' lives. Living with chronic pain can put considerable emotional pressure on individuals who suffer from chronic pain. Consequently, their abilities to manage their unpleasant emotions might decline. Therefore, this reduction can ultimately lead to helplessness, depressed mood, and a significant

reduction in the quality of life of individuals who live through IBS symptoms (Aljammaz et al., 2020; Lacy, et al., 2021).

The pain severity ranges from moderately annoying to severely debilitating, and various factors such as emotional stress and eating may exacerbate the pain (Feldman et al., 2006). Studies (Fernandez et al., 2017; Feingold et al., 2017; Stubbs et al., 2016; Barry et al., 2016) suggest that levels of psychological symptoms are high in patients with chronic pain. Psychological factors are other essential and important factors in the occurrence and persistence of IBS, which are always considered (Kwon, et al., 2011). Many people with IBS report significant symptoms of mental disorders, abnormal personality traits, and psychological distress. In contrast, people with mental disorders such as panic attacks and anxiety disorders have reported gastrointestinal symptoms consistent with IBS (Kwon, et al., 2011).

Conversely, published evidence indicates the high prevalence of all-incidence between psychological difficulties, especially anxiety and depression with IBS (Aljammaz et al., 2020). Moreover, numerous studies have emphasized that emotional regulation techniques are involved in the expansion of issues such as cancer, cardiovascular, gastrointestinal, and intestinal diseases (Aslani et al., 2020; Kawashima et al., 2020). Emotional regulation includes the continuity of conscious and unconscious cognitive-behavioral mechanisms that are applied to emotional adjustment and adaptation to the conditions (Haj Sadeghi et al., 2018). It is noteworthy that when pain is defined as a sensory and emotional experience, researchers commonly consider it as an independent phenomenon from emotions (Gilam, et al., 2020). Conceptual and mechanical relationships between the two structures of pain and emotions require a clear explanation of this interactive mechanism. However, this interactive mechanism has received not considerable attention (Pirnia et al., 2020). Throughout the emotional regulation studies,

cognitive reassessment has been recognized as an effective strategy for coping with painful emotions (Doukas et al., 2020). However, when individuals are asked to articulate their problems, they frequently experience a painful process in which physical pain is presented.

Furthermore, through a variety of studies, Cognitive-Behavioral Therapy (CBT) is known as an effective psychotherapy approach for IBS. Through the CBT approach, behavioral and cognitive changes support individuals with chronic difficulties in coping with their pain efficiently. Findings from systematic reviews indicate the effectiveness of CBT on abdominal functions in service users with IBS (Black et al., 2020).

For decades the concept of pain management has been challenged by therapeutic approaches from different theoretical perspectives (Pirmia et al., 2019). Cognitive-behavioral interventions emphasize that thoughts and cognitive distortions have significant effects on the quantity and quality of perceived pain. Given the importance and prevalence of IBS, several treatments have been developed to improve psychological symptoms in addition to physical symptoms. One of these treatments is CBT, which has a strong theoretical basis and research background. Cognitive behavioral therapy includes behavioral and cognitive changes that are used in the area of chronic diseases to reduce pain (Black et al., 2020). Cognitive behavioral therapy emphasizes that cognitive errors and automatic negative thoughts have a quantitative and qualitative impact on pain perception. The cognitive model of IBS hypothesizes that dysfunctional and contextual thoughts and cognitive processes (thinking, memory, and attention) interfere with feelings and intestinal function and cause symptoms of the disorder through neural communication between the brain and the intestine in biological systems (Craske et al., 2011).

Additionally, pain in these patients is not necessarily the result of tissue damage, but the result of a complex

interaction among emotional, cognitive, and sensory components, and is reinforced by beliefs about the catastrophic symptoms and feelings of uncontrollable disease (Lackner, 2005). Cognitive behavioral therapy in patients with IBS seeks to identify and correct dysfunctional thoughts and core beliefs that cause severe emotional and psychological reactions and gastrointestinal symptoms. There are several systematic studies on their effectiveness. (Chey et al., 2021; Ambrose, 2020; Black et al., 2020; Palsson and Ballou, 2020; Aghalar et al., 2019; Naddafnia et al. (2019), Surdea-Blaga et al., 2016).

The prevalence of IBS is increasing. This disease affects all aspects of the lives of the patients, and patients suffer from a high level of stress and pain. Limited psychological studies have been conducted on IBS patients in Iran and a large number of patients report the continuation of symptoms after intervention, which requires the identification of effective treatments. This goal will be achieved through conducting clinical studies for the development and evaluation of therapeutic information derived from theories. Also, the growth and excellence of a society depend on the health of the people of that society, and the identification and related determining factors play a significant role in the health of the society. Thus, we should take the necessary measures to achieve this goal both in the area of research and education and treatment. Hence, the present study aims to evaluate the effectiveness of CBT on chronic pain and cognitive regulation of emotion in patients with IBS.

Method

The current research was quasi-experimental with a pre-test-post-test design, a control group, and a 6-month follow-up. The statistical population included all patients with IBS referred to Tehran Shariati Hospital and Masoud Gastroenterology and Liver Clinic from fall 2019 to Winter 2020. The sample size was 48 people selected by convenience sampling, then divided into an experimental group

and a control group using a block randomization procedure (with each group containing 24). Thus, after obtaining permission from Shariati Hospital and Masoud Gastroenterology and Liver Clinic in Tehran, 113 referring patients met the inclusion criteria of the study and registered for three months by making the necessary arrangements. Then, the researcher made the necessary arrangements during a phone call, explaining the goals and ethical considerations of the research to hold an individual interview session and examining the written agreement and consent for participation in the study. After checking the criteria, we selected 48 samples who met the desired criteria and randomly assigned them to two groups (an experimental group and a control group). The experimental group underwent cognitive-behavioral therapy during eight sessions of 90 minutes once a week.

Inclusion criteria: 1) Diagnosis of IBS by a gastroenterologist based on ROME III diagnostic criteria; 2) Receiving drug treatment under the supervision of a specialist; 3) Failure to receive psychological treatment for the past three months;

4) Level of education, at least diploma; 5) Age range of 20 to 50 years and; 6) Written agreement and consent to participate in the research;

Exclusion criteria: 1) Use of other psychological therapies during the study; 2) People who were absent more than twice during the intervention sessions; 3) Failure to complete the questionnaires and cooperation during the study.

Ethical statements

All methods have been carried out under relevant guidelines and regulations, and informed consent was obtained from the participants. All research procedures involving humans were consistent with the National Research Committee's ethical standards, the Helsinki Declaration of 1964, subsequent revisions, or equivalent ethical norms. Participants were free to leave it at any research stage and were not charged for participating in the research project.

Cognitive-Behavioral Therapy: This therapy was based on the general modeling of the total available resources and treatment package of Kennedy et al.

Table 1: Cognitive-Behavioral Therapy (CBT) Intervention Protocol

Session 1: Detailed clinical history of the patient to diagnose and identify important environmental, social, biological, and psychological factors of his/her behaviors, setting realistic goals and expectations of treatment method, initial explanation of treatment, training in relaxation techniques, abdominal breathing, homework and familiarity with the form of weekly activities
Session 2: Reviewing the weekly activity form and help to reinforce positive behaviors and monitor clients' relaxation training,
Session 3: Helping to reinforce positive behaviors in the weekly activity form and teaching the cognitive pattern, providing negative automatic thoughts recording sheets— Identifying thoughts that provoke symptoms and unpleasant feelings —Investigating possible problems in recording thoughts and identifying emotions, and helping to solve them.
Sessions 4, 5, 6, and 7: Evaluation of the form of negative automatic thoughts and teaching how to evaluate thoughts (verbal challenge and behavioral testing), using methods such as down-arrow, analysis of advantages and disadvantages, and Socratic questioning of thoughts that create unpleasant feelings. Provide a progressive muscle relaxation training tape and encourage the person to do so.
Session 8: Summarizing the contents of the last seven sessions — Paying attention to patients' intermediate beliefs and underlying assumptions —Getting feedback from patients on treatment sessions.

(2007) and Zomorodi, Abdi, & Tabatabaee(2014). Changes were made according to the conditions, culture, and nature of IBS in Iranian patients, and behavioral and educational methods were integrated. As a psychosomatic disease, CBT was done in eight therapy sessions, once a week, each for 1.30 hours (table 1).

Demographic checklist: This checklist was prepared and used by the researcher to assess the demographic characteristics of study participants such as age, sex, level of education, and duration of illness.

Chronic Pain Grade Scale (CPGS): Von Korff et al. designed this tool in 1992 to evaluate the severity of chronic pain. This scale evaluated three main themes: pain intensity, disability score, and degrees or levels of disability. The scoring of this tool occurs as a visual discrimination scale (0-10). The person's score on the test is calculated through three subscales: pain intensity, disability score, and degrees or levels of disability. The psychometric study conducted by Papajoano et al. (2018) shows that this tool is valid, reliable, and sensitive to changes. The researchers have standardized the Persian version of the scale in Iran; it has validity and Cronbach's alpha by 0.88 (Daniali, 2017). It is noteworthy that Cronbach's alpha of the scale was 0.91 in the present research.

Cognitive Emotion Regulation Questionnaire: Granfsky, Krich, and Spinhaven (2001) prepared this questionnaire. It is a self-report tool with 18 items and examines two positive and negative cognitive regulation factors in nine subscales. Positive cognitive regulation subscales include positive refocusing, positive appraisal, and acceptance, and negative cognitive regulation subscales include self-blame, other-blame, rumination, and catastrophizing. Each item ranges from one (never) to five (always).

The score on the subscales is obtainable through the sum of the scores of the items and the total score of the subscales. Granfsky et al. (2001) have reported the alpha coefficient for the subscales of this questionnaire in the range of 0.71 to 0.81. The researchers have reported the validity of the subscales of the Persian version of the questionnaire by 0.76 to 0.92 based on the internal consistency and 0.51 to 0.77 in the retest. Its criterion validity was desirable based on the calculation of its correlation with the scores of Bam's second list of depression, and its structure was favorable based on principal components analysis through Varimax rotation (explaining 74% of the variance) (Hasani, 2010). In the Hashemi, Darvizeh, and Yazdi (2018) research, Cronbach's alpha value was 0.73. It is noteworthy that Cronbach's alpha of the questionnaire was 0.78 in the present research.

Statistical Analysis

Repeated measures analysis of variance was used to analyze using SPSS-25 software. We used longitudinal multilevel modeling (LMLM) for the primary analysis of CBT directions of improvement. All data were checked for normality distribution using the Shapiro–Wilk test. For small sample sizes, the Shapiro–Wilk test is usually used for detecting normality.

Results

The results are presented in three sections. The first section reports the sample characteristics and PSM analysis, the second section gives the LMLM results, and the final part summarizes the effect sizes and the dropout rates for the one therapy and one control group. In this study in the first step, 113 (64%) patients screened for eligibility were randomized: 67% women, 33% men, and age mean of 37.13 years, (48) 85% completed six months of follow-up. Participants in this study were 48 patients with IBS

who were randomly assigned into two groups of 24 people. During the treatment, three people in the CBT group and four people in the control group were excluded from the study. At last, 21 people in the CBT group and 20 people in the control group remained. Finally, 41 people participated in this study, of which 64% were women, and 36% were men. The average age of participants was 35.34 years, and the standard deviation was 7.33. Demographic information is reported by experimental and control groups in Table 1. The Chi-square test also showed that there is no significant difference between gender, age, marriage, education, and duration of illness between research groups (table 2).

The results of the M-box test ($F=1.238$, $P=0.283$) were not significant for the research variables, so the condition of homogeneity of variance-covariance matrices was established, and also the results of Muly's, sphericity test ($\text{Chi-Square}=1.629$,

$P=0.443$) showed that the assumption of the equality of variances within the subjects is valid. Chronic pain showed that there is a significant difference between the mean scores of pre-tests, post-tests, and follow-ups in the two groups. Other results show that the interactive effect of group membership and the test was significant in chronic pain with an effect size of 0.38. Also, intergroup results for chronic pain showed that the effect of the group variable was significant $P = 0.0001$ (table 4).

The effects of intra-subjects for adapted cognitive emotion regulation showed a significant difference between the mean scores of pre-tests, post-tests, and follow-ups in the three groups ($P = 0.028$). Other results show that the interactive effect of group membership and test with the effect size of 0.111 was significant. $P = 0.014$. Also, the results between the subjects for adapted cognitive emotion regulation showed that the effect of the group variable was

Table 2: Demographic characteristics of people with irritable bowel syndrome Characteristics

Characteristics	CBT	Control	Total	P value
Gender				
Female	14 (67%)	13 (65%)	27 (66%)	0.899
Male	7 (33%)	7 (35%)	14(34%)	
Age				
20-29	5 (24%)	6 (30%)	11 (27%)	0.053
30-39	9 (43%)	8 (40%)	17 (41%)	
40-49	7 (33%)	6(30%)	13 (32%)	
Marriage				
Single	9 (43%)	8 (40%)	17 (43%)	0.950
married	12 (57%)	12 (60%)	24 (57%)	
Education				
Diploma	6 (29%)	7 (35%)	13 (32%)	0.701
Associate	2 (9.5%)	2 (10%)	4 (10%)	
BSc	8 (38%)	5 (25%)	13 (32%)	
MSc	4 (19%)	5 (25%)	9 (21%)	
PhD	1 (4.5%)	1 (5%)	2 (5%)	
Duration of illness				
5<	8 (38%)	5 (25%)	13 (32%)	0.899
5-10	10 (48%)	7 (35%)	17 (41%)	
>10	3 (14%)	8 (40%)	11 (27%)	

significant $P = 0.008$ (Table 4). Also, the effects of intra-subjects for un-adapted cognitive emotion regulation showed a significant difference between the mean scores of pre-tests, post-tests, and follow-ups in the three groups. $P = 0.011$. Other results showed that the interactive effect of group membership and test with a side effect of 0.27 is significant. $P = 0.0001$. It is also significant for the intergroup factor for un-adapted cognitive emotion regulation un-adapted cognitive emotion regulation. $P = 0.005$. The Bonferroni post hoc test was used to compare the effect of experimental and control groups on pain and cognitive emotion regulation (Table 5).

versus post-test means that changes in experimental groups over time have a lasting effect.

Discussion

The present study examined the effect of cognitive behavioral therapy on pain indicators and Cognitive-Emotional Regulation in patients with IBS. The results showed that cognitive-behavioral therapy significantly affected chronic pain and Cognitive-Emotional Regulation in patients with IBS. The lack of significant difference in the comparison of follow-up and post-test scores showed that the changes in the experimental group had a lasting effect over time. The findings obtained are consistent with the research

Table 3. Descriptive indicators of pre-test, post-test, follow-up of three groups in chronic pain and cognitive emotion regulation

Group	Variable	Pre-test		Post-test		Follow-up	
		Mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation
Experiment (n=21) Cognitive-behavioral therapy	Chronic pain	32.76	13.01	17.04	15.94	17	14.32
	Adapted cognitive emotion regulation	31.47	7.13	34.42	8.82	33.95	9.08
	Un-adapted cognitive emotion regulation	26.90	5.55	22.47	6.87	22.95	5.94
Control (n=20)	Chronic pain	32.15	15.56	38.15	15.55	37.95	14.39
	Adapted cognitive emotion regulation	31.65	7.51	30.3	8.32	28.55	7.66
	Un-adapted cognitive emotion regulation	23.7	6.34	26.75	6.25	27.9	5.55

Comparison of adjusted means shows that the experimental group is significantly effective on chronic pain, adapted and un-adapted cognitive emotion regulation in patients with IBS, cognitive-behavioral therapy with an effect size of 0.35 in reducing chronic pain, 0.28 decrease in un-adapted cognitive emotion regulation and with an effect size of 0.09 is effective in increasing adapted cognitive emotion regulation. Also, the lack of significant differences in the comparison of follow-up scores

results of Chey et al. (2021), Ambrose (2020), Black et al. (2020), Palsson and Ballou (2020), Aghaler et al. (2019), Naddafnia et al. (2019), Surdea-Blaga et al. (2016), and inconsistent with the findings of the study by Edbol Karlman et al. (2017) that showed that CBT did not have a significant effect on the index of pain.

These results are in line with Palsson and Ballou's (2020) study showing that CBT could considerably improve gastrointestinal symptoms, psychological

Table 4. Findings of analysis of variance test with repeated measures of chronic pain variables and cognitive emotion regulation of three experimental and control groups

Variable	Time stages			Group			Interaction of stages * group		
	F	P value	Eta	F	P value	Eta	F	P value	Eta
Source of change									
Chronic pain	5.385	0.006	0.121	10.934	0.002	0.219	26.040	0.0001	0.400
Adapted cognitive emotion regulation	3.611	0.037	0.088	3.698	0.008	0.160	3.613	0.014	0.111
Un-adapted cognitive emotion regulation	5.044	0.011	0.080	5.873	0.005	0.168	10.746	0.0001	0.270

Table 5: Bonferroni post hoc test for chronic pain and cognitive emotion regulation variables in research groups

Variable	I	J	Mean difference of I-J	Standard error	P value
Chronic pain	Pre-test	Post-test	4.857	2.005	0.020
		Follow-up	4.981	1.976	0.016
	Post-test	Follow-up	0.124	1.032	0.905
Adapted cognitive emotion	Pre-test	Post-test	2.234	0.961	0.017
		Follow-up	2.725	0.599	0.011
	Post-test	Follow-up	0.509	0.860	1.0000
Un-adapted cognitive emotion regulation	Pre-test	Post-test	2.076	0.713	0.015
		Follow-up	2.301	0.729	0.007
	Post-test	Follow-up	-0.775	0.518	0.420

well-being, and quality of life of people with gastrointestinal (GI) problems. Moreover, IBS is a subcategory of the GI difficulties. Therefore, CBT improves individuals' quality of life and psychological well-being it is noteworthy that emotion regulation strategy plays a significant role in quality of life and psychological well-being. In this regard, the findings of Chey et al's (2020) study showed that behavioral interventions along with a suitable diet and medication could increase the likelihood of success in the management of patients with IBS. Furthermore, Surdea-Blaga et al (2016) study indicated that the rate of catastrophizing in persons with IBS is highly common. Notably, the CBT is effective for these individuals.

In explaining the results of the study, it can be stated that psychological and physiological evidence related to the body has shown the association between anxiety and attention biases (Sheikhan &

Mohammad Khani, 2013), and self-focused attention is related to depression and anxiety (Mor & Winqvist, 2002). If patients experience particularly unpleasant symptoms, they may focus on more symptoms that exacerbate symptoms of IBS. This state is called the focus on symptoms. It does not mean that IBS is only a product of the mind, but CBT assumes that a person's behaviors, thoughts, and feelings will exacerbate many of the symptoms of IBS and cause them to continue (Kennedy et al., 2006). Patients are irritable, which is why they cannot function well in these situations. CBT can regulate the emotions of these individuals thanks to an emphasis on cognitive processes and changing people's thoughts and attitudes. CBT includes several strategies such as breathing training, relaxation training, behavioral tests, stress and anxiety management, and changing cognitive structure.

The primary goal of this intervention is to correct

false beliefs about physical symptoms and reduce the patient's catastrophic thoughts (Shelby, Summers, Kief, et al., 2009). During CBT, problem-solving techniques help patients increase their self-efficacy. Also, cognitive reconstruction requires identifying the current maladaptive cognitions that the patient is involved with and the patterns of thoughts to replace adaptive cognitions and thoughts. Thanks to cognitive reconstruction exercises, patients become increasingly skilled at recognizing that their interpretations of the disease or environment are causing maladaptive emotions (Hoffman, Pappas-Chatkof, & Kerns, 2007). In general, it can be stated that CBT causes maladaptive emotional responses such as blaming others, rumination, and catastrophizing so that people are not able to use the necessary logic to examine the problems. Thus, in light of CBT and changing irrational cognitions, the cognitive regulation of maladaptive emotions in these people can be reduced. Thus, it can be stated that CBT prevents catastrophizing and reduces the level of inconclusive and irrational thoughts. This treatment tries to improve emotions by increasing the acceptance of problems, attention positive appraisal, and re-attention to problems.

There are limitations in conducting this study. Due to the convenience sampling method, age regression could be mentioned as one of the limitations of the present study and was considered uncontrolled. Another limitation of this study was the implementation of the study during the spread of the Coronavirus pandemic and the high anxiety caused by it and its other negative consequences. The diet level was unavailable, and the effectiveness of interventions in this research was evaluated without considering the severity of the diet. It is suggested that this issue be considered in future research since mental disorders such as anxiety and emotional disorders are related to the severity of IBS. To improve the patients better and more effectively,

the role of psychological treatments along with medical treatments of these patients is important. This goal can be achieved with the cooperation of gastroenterologists, psychologists, and psychiatrists.

Conclusion

This study showed that the use of psychological interventions, especially CBT in refractory IBS patients, can effectively reduce the frequency and severity of symptoms in these patients. On the other hand, cooperation between gastroenterologists, psychologists, and psychiatrists in treating some gastrointestinal diseases in which psychological factors play an essential role in the occurrence and severity of their symptoms is necessary. With sufficient attention to these two priorities — improving access and reducing cost and empirical validation of efficacy for more GI disorders— CBT is poised to become an increasingly valuable and more widely available option for enhancing outcomes for patients with the most challenging and common GI disorders in the coming years. CBT could be considered a therapeutic intervention for abdominal pain and composite primary IBS symptoms in patients who fail medical treatment. These interventions have the potential to become widely available options for improving clinical outcomes for patients with hard-to-treat IBS.

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