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A Review of the Effectiveness of Acceptance and Commitment Therapy on Symptoms and Outcomes of Irritable Bowel Syndrome

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A B S T R A C T

The present study was conducted to review the effectiveness of Acceptance and Commitment Therapy (ACT) on the symptoms and outcomes of Irritable Bowel Syndrome (IBS). This review study examined the available literature on Acceptance and Commitment Therapy and Irritable Bowel Syndrome from 2000 to 2024 in both Persian and English languages. The keywords "therapy," "acceptance and commitment," "acceptance and commitment therapy," and "irritable bowel syndrome" were searched in reputable databases such as Science Direct, Wiley, PubMed, SID, and Magiran. A total of 25 articles addressing the effectiveness of Acceptance and Commitment Therapy on the symptoms and outcomes associated with Irritable Bowel Syndrome were identified. The results of these studies indicated that group-based or individual ACT interventions positively affected various aspects, including symptom severity, pain intensity, disease perception, immune function, body image, blood cortisol levels, treatment adherence, stress, anxiety, depression, rumination, cognitive flexibility, irrational beliefs, emotional regulation, schemas and emotional processing, experiential avoidance, sleep quality, hope, social capital, life satisfaction, psychological well-being, and quality of life in patients with IBS. The findings of this study suggest that Acceptance and Commitment Therapy can be utilized alongside pharmacotherapy and dietary modifications to alleviate symptoms and outcomes of Irritable Bowel Syndrome.

Keywords: *Acceptance and Commitment Therapy, gastrointestinal system, Irritable Bowel Syndrome.*

1. Introduction

Irritable Bowel Syndrome (IBS) is one of the most common disorders related to brain-gut interaction (1, 2). This disorder is defined by chronic, recurrent abdominal pain accompanied by changes in bowel habits in the absence of any diagnosable organic disease. It can also be disabling in a small number of patients; however, it is mild to moderate in most affected individuals (1). Key pathophysiological features of this disorder include evacuation disorders, abnormal colonic transit, bile acid diarrhea, increased sensitivity of the colon and rectum, disaccharidase deficiency, localized immune reactions to food, and altered microbiota (3). According to the Rome diagnostic criteria, a diagnosis can be made when an individual experiences recurrent abdominal pain for at least three months, occurring at least once a week, accompanied by complaints related to defecation, changes in the frequency of defecation, or changes in stool consistency (4). Nevertheless, the current diagnostic criteria limit the diagnosis to recurrent abdominal

pain associated with changes in bowel habits, whereas most patients report non-painful abdominal discomfort, associated psychological conditions (anxiety and depression), and other symptoms related to visceral and bodily pain (1). Based on the predominant stool pattern reported by individuals, IBS is divided into four subtypes: IBS with constipation, IBS with diarrhea, IBS with a mixed bowel habit, and unclassified IBS (where the individual's stool pattern does not clearly fit into any of the other three subgroups) (1, 5).

Despite many other non-communicable chronic diseases—such as metabolic, neurological, and cardiovascular disorders, and certain types of cancer—having shown progressive increases in prevalence over the last 75 years, no such steady increase has been observed in IBS (1). However, due to physicians' growing awareness of this disorder, Westernization, and changes in diet and lifestyle, IBS prevalence appears to be rising over time (2). It affects 5% to 10% of the global population (1, 2). In one review and meta-analysis, the worldwide prevalence of IBS was reported to be 11.2% (ranging from 1.1% to 45% across different countries) (6). Another study indicated its prevalence to be between 3.8% and 9.2% according to the Rome III and IV diagnostic criteria. The prevalence of the four subtypes—IBS with diarrhea, IBS with constipation, IBS with a mixed bowel habit, and the unclassified type—among those affected was 31.5%, 29.3%, 26.4%, and 11.9%, respectively. In contrast, the overall prevalence rates in the general population were 1.4%, 1.3%, 1.1%, and 0.5%, respectively (5). Its prevalence in Taiwan was reported at 11.9% (7). In Iran, the overall prevalence has been reported as 3.2% in Khuzestan Province (8), 1.1% in Tehran (9), and 4.38% in Kerman (10). Women are more susceptible to IBS than men (1, 5, 7). For instance, women are 1.5 to 3 times more likely than men to develop this disorder, and women seek healthcare services 2 to 2.5 times more frequently (1). Nonetheless, prevalence rates vary significantly among different countries and cultures due to racial, ethnic, and methodological differences (2, 5, 7).

Although IBS does not increase mortality risk, it disrupts quality of life and imposes a substantial economic burden on patients and healthcare systems (2, 5, 7). The direct annual cost of caring for individuals with IBS in the United Kingdom has been estimated at 1.3 to 2 billion pounds, 3 to 4 billion euros in Germany, and 2 billion dollars in China. Annual costs are notably higher among those with severe gastrointestinal symptoms and comorbid depression. In fact, symptom severity correlates with an increasing number of comorbid psychological conditions. These individuals make more frequent doctor visits and experience greater impairment in work and daily activities. IBS can reduce quality of life, increase stigma experienced from friends, family, and healthcare professionals, and initiate or worsen anxiety and depressive symptoms (2). Other research has demonstrated that IBS results in various outcomes, including a considerable reduction in health-related quality of life, higher rates of somatization, increased likelihood of developing psychological disorders such as depression and suicidal ideation, impaired occupational functioning, higher medical expenses and prescription medication use, as well as greater primary and secondary healthcare costs (5). Common comorbidities among individuals with IBS include hypertension, dyslipidemia, chronic liver disease, peptic ulcer, gastroesophageal reflux disease, anxiety, and sleep disorders (7). A qualitative study on the lived experiences of individuals with IBS in Iran indicated that cultural factors (cultural discrepancies, inability to work due to illness, and job-related impacts), economic factors (failure to visit a psychologist because of financial constraints, economic issues, and lack of spousal support), and individual-social factors (social withdrawal, disrupted interpersonal relationships, dissatisfaction with life circumstances, and other life problems) are significant consequences of this disorder (11).

The pathophysiology of IBS is complex and is best explained by the biopsychosocial model, which encompasses biological, psychological, and social factors (12). Numerous biological, psychological, and social factors are associated with IBS onset (13-15). For instance, Low et al. (2020) reviewed previous research and found that parental IBS, psychological disorders in parents such as anxiety, depression, and substance use, excessive parental intervention and support, as well as punishment and rejection by parents were risk factors linked to parental influences. Low birth weight, a shorter breastfeeding period, cesarean delivery, and gastric suction at birth were identified as prenatal risk factors, while crowded living conditions in low-income families, childhood anxiety, depression, or child

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abuse were risk factors during childhood. Protective factors included parental emotional warmth and older maternal age at childbirth (15). Additionally, IBS may be triggered by visceral hypersensitivity, gut microbiota dysbiosis, immune system activation, alterations in brain function, stress, mood disorders, gastrointestinal infection, and adverse early-life experiences. In another study, prior psychiatric disorders, female gender, use of proton pump inhibitors, multiple physical symptoms, sleep disturbances, low body mass index, and negative perceptions of health were found to be predictors of IBS. Moreover, gallstones, asthma, fibromyalgia, reported allergies, pain disorders, and frequent healthcare visits were also identified as predictors (13). Hetterich and Stengel (2020) reported that various psychosocial factors—such as the gut-brain axis, microbiome, early-life experiences, infections, trauma, stress, cultural factors, levels of received support, and disorders involving anxiety, depression, or eating—are associated with IBS (12). Hajishafiee et al. (2020) found that individuals with a healthy lifestyle have a 65% lower chance of developing IBS compared to others. In other words, people with healthy eating habits—including a regular meal schedule, a slow or moderate eating pace, moderate fluid intake during meals, moderate or long intervals between meals and sleep, and low-to-moderate consumption of high-fat foods—have a reduced risk of developing this disorder (14).

Various pharmacological and dietary interventions have been employed to treat IBS (2, 3, 16). A review article indicates that current evidence-based interventions for IBS, with or without comorbid psychological disorders, generally include medical interventions such as pharmacotherapy for abdominal pain, diarrhea, and constipation (osmotic and stimulant laxatives such as polyethylene glycol and senna; antidiarrheals such as loperamide, alosetron, ramosetron, rifaximin, and eluxadoline; antispasmodics such as hyoscine and peppermint oil; secretagogues for constipation such as linaclotide or plecanatide; neuromodulators such as amitriptyline) and dietary interventions (standard, symptom-focused diet—such as adjusting fiber intake and limiting caffeine and alcohol; a low-FODMAP diet; and the Mediterranean diet, which is rich in vegetables, fruits, legumes, whole grains, nuts, seeds, and olive oil, and contains limited red meat)(2). Huang et al. (2023) suggest that the treatment process for patients with mild IBS begins with education, dietary modifications, and lifestyle interventions, along with first-line medications. If first-line therapies are ineffective, clinical judgment coupled with auxiliary testing is needed to select second-line medications and non-pharmacological interventions. Lifestyle interventions typically involve stress reduction, appropriate exercise, and a specific diet. Dietary counseling, a diet low in fermentable oligosaccharides, disaccharides, monosaccharides, polyols, and fats, gluten-free foods, and dietary fibers such as psyllium fiber can help alleviate IBS symptoms (16). Conversely, lactose, sorbitol, fructose, xylitol, mannitol, fats, alcohol, insoluble fibers, and carbonated beverages may worsen pain and bloating and should be avoided. Cognitive Behavioral Therapy (CBT), gut-focused hypnotherapy, psychodynamic psychotherapy, and relaxation can improve abdominal pain, daily functioning, and psychological symptoms while reducing healthcare costs (2, 3, 12).

Hetterich and Stengel (2020) argue that most patients with IBS start their treatment with lifestyle modifications, dietary advice, and then medical treatment. However, psychotherapy is also an important treatment option for patients with IBS and should not be limited to those presenting with comorbid psychological disorders. Through a literature review, they found that a variety of evidence-based psychotherapies—including psychoeducation, self-help, CBT, psychodynamic psychotherapy, gut-focused hypnotherapy, mindfulness-based therapies, and relaxation therapy—have been used in patients with IBS (12). Other studies have also highlighted the role of psychotherapy. For instance, Staudacher et al. (2023) concluded that CBT, gut-focused hypnotherapy, mindfulness-based stress reduction, psychodynamic interpersonal psychotherapy, relaxation, and self-management (including education and psychoeducation) can be employed to treat IBS (2). Camilleri and Boeckxstaens (2023) reported evidence supporting hypnotherapy and psychotherapy in the treatment of IBS (3). Huang et al. (2023), in a review article, found that CBT, gut-focused hypnotherapy, psychodynamic psychotherapy, and relaxation can improve abdominal pain, quality of daily life, and psychological symptoms, as well as reduce healthcare costs (16).

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Slouha et al. (2023), through a review of the literature, found that CBT, mindfulness-based therapy, and hypnotherapy significantly improve symptom severity, quality of life, pain catastrophizing, and behavioral responses to IBS. Other reviews also emphasize CBT (individual, group, telephone-based), gut-focused hypnotherapy, contingency management, stress management, and psychodynamic psychotherapy (17). Black et al. (2020) reported that group CBT and gut-focused hypnotherapy are more effective than education and/or support or usual care, telephone-based CBT, contingency management, internet-based CBT, and psychodynamic psychotherapy for treatment-resistant patients (18). A growing body of evidence supports the effectiveness of CBT-based interventions and gut-focused hypnotherapy for IBS, which remain effective over the long term. Notably, apart from mindfulness-based therapy, less attention has been given in these studies to other third-wave approaches, including Acceptance and Commitment Therapy (ACT).

Acceptance and Commitment Therapy is a third-wave, contextual intervention grounded in the experimental analysis of language and cognition—specifically Relational Frame Theory—which explains why cognitive fusion and experiential avoidance are detrimental and how to address them in treatment. Theoretically, this approach is strongly behavioral yet integrates a comprehensive empirical analysis of human cognition. Rooted in clinical behavior analysis, it seriously addresses topics such as spirituality, values, and the self, among others. Its primary techniques include cognitive defusion, acceptance, transcendent sense of self, flexible present-moment awareness, values, and commitment (19). By employing acceptance and creative hopelessness, ACT assists individuals in actively and nonjudgmentally accepting their private experiences (thoughts, feelings, and sensations) rather than attempting to control, alter, or avoid them. Cognitive defusion helps reduce rigid adherence to one's own thoughts and mental rules, thereby diminishing fusion with one's conceptualized self. Mindfulness exercises further encourage acceptance of internal experiences, allowing individuals to relate to them without judgment and in the here-and-now. ACT aids patients in clarifying their personal values and cultivating actions and behaviors consistent with those values. Therapists guide clients to identify and overcome psychological barriers stemming from cognitive fusion and experiential avoidance, as well as situational barriers, ultimately enabling them to act in ways that align with their chosen values (19-21).

Ito and Muto (2019) propose three important reasons to consider ACT for individuals with IBS. First, previous research has shown that ACT is effective in reducing symptom severity and improving quality of life in people with IBS. Second, there is evidence supporting the effectiveness of ACT for subclinical cases. Third, the therapeutic mechanisms of ACT align well with non-disease-specific characteristics of IBS. Given these points, the present study aimed to review the effectiveness of ACT on IBS symptoms and related outcomes in individuals with this disorder.

2. Methods and Materials

The present review was conducted by examining available resources on Acceptance and Commitment Therapy from 2000 to 2024 in both Persian and English. The keywords "treatment," "acceptance and commitment," "acceptance and commitment therapy," and "irritable bowel syndrome" were searched in reputable databases such as Science Direct, Wiley, PubMed, SID, and Magiran. The literature review yielded 25 articles addressing the effectiveness of Acceptance and Commitment Therapy on the symptoms and outcomes of IBS.

3. Findings and Results

Among the 25 reviewed studies on the effectiveness of Acceptance and Commitment Therapy, 22 were conducted by Iranian researchers and 3 by researchers from Japan and the United Kingdom. The findings indicated that group-based or individual ACT interventions affect IBS symptoms or symptom severity (22-28), pain severity (29), disease severity (30), illness perception (29, 31, 32), immune function (26), behavioral responses and visceral sensitivity (33), body image (34, 35), blood cortisol level (23)), treatment adherence (29), stress (36), anxiety (27, 37, 38), depression (27, 36-40), rumination (38), flexibility and cognitive flexibility (34), irrational beliefs (34, 35), emotion regulation (29, 41, 42)), hope (28), social capital (40), life satisfaction (25, 38), psychological well-being (30), and

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quality of life (23, 24, 26, 27, 30, 32, 37) in individuals with IBS.

In foreign research, Ito and Muto (2019) found that ACT was effective for reducing depression in subclinical IBS participants (screened via tests) but had no effect on symptom severity in Japanese undergraduate students with IBS. The intervention involved a single one-day group session (39). Ferreira et al. (2018) reported that a one-day session and ACT self-help booklet improved symptom severity, experiential avoidance, quality of life, behavioral responses, and visceral sensitivity in individuals with IBS in the United Kingdom (33). However, Gillanders et al. (2017) discovered that ACT-based bibliotherapy was not effective in reducing experiential avoidance or increasing quality of life in UK IBS patients (43).

Of the 22 studies conducted in Iran, 10 were carried out in Tehran. Ezzati and colleagues (2021) found that ACT, as an effective intervention, can help improve sleep quality and modify D personality traits in patients with generalized anxiety disorder who have IBS. In another study, they showed that ACT has a significant impact on quality of life and emotional schemas in IBS patients with generalized anxiety disorder. Finally, they reported that ACT reduces IBS severity, gastrointestinal symptoms, and blood cortisol levels in IBS patients with generalized anxiety disorder (23). Pashang and Khosh Lahjeh Sedgh (2019) found that ACT increases psychological capital, life satisfaction, and quality of life while reducing symptoms in women with IBS (25). Research by Ghafari and colleagues (34, 35) indicated that ACT leads to changes in irrational beliefs, body image, and cognitive flexibility in men with IBS. Tajeri et al. (2018) observed that ACT reduces symptoms and enhances hope and flexibility in women with IBS (7). Mirsharifa et al. (2019) found that ACT was beneficial for improving depression and social capital in IBS patients (40). Shahkaram et al. (2024) reported that ACT reduces depression, anxiety, rumination, and increases life satisfaction among individuals with IBS (38).

Eight of these studies were conducted in Isfahan Province, mostly in the city of Isfahan. Moqtadaei et al. (2023) found that ACT increases treatment adherence and decreases pain severity in women with IBS. In another study, they also reported that ACT affects emotion regulation and illness perception among women with IBS (29). Karimian et al. (2023) concluded that ACT increases quality of life in individuals with IBS. In another study, Karimian et al. (2021) noted that ACT increases the use of adaptive emotion regulation strategies, although it had no effect on illness perception or maladaptive strategies in IBS patients (32). Kamran et al. (2022) showed that ACT is effective in reducing experiential avoidance and improving emotional processing in IBS patients, thus having important implications for this population (42). Rezaei et al. (2022) found that ACT reduces depression and anxiety and increases quality of life in women with IBS. In a study conducted in Semirom (37), Aghalar et al. (2020) reported that ACT influences all dimensions of cognitive emotion regulation except for acceptance, rumination, perspective taking, and catastrophizing among patients with IBS (41). Finally, Farokhzadian et al. (2022) concluded that ACT reduces symptom severity and improves quality of life in soldiers with IBS (24).

Four additional studies were carried out in the cities of Yasuj, Rasht, Babol, and Tabriz. Taghvaeinia et al. (2024) found that ACT reduces symptoms, anxiety, depression, and improves quality of life in IBS patients. Moreover, ACT was more effective than dialectical behavior therapy and mindfulness-based stress reduction in reducing IBS symptoms, anxiety, depression, and improving quality of life in these individuals (27). In Rasht, Eskafi-Sabet et al. (2022) showed that group ACT decreases disease severity and increases psychological well-being and quality of life in IBS patients. They believe this therapeutic approach can be used to promote physical and mental health among individuals with IBS (30). In Babol, Hassannezhad et al. (2021) reported that ACT reduces perceived stress and depression in IBS patients (36). Finally, in Tabriz, Shakernegad et al. (2021) found that ACT plays an effective role in diminishing somatic symptoms, improving immune function, and enhancing quality of life in individuals with IBS (26). In the only foreign study on subclinical IBS (screened using the Japanese version of the IBS Severity Index), Ito and Muto (2019) concluded that ACT effectively reduces depressed mood but does not influence symptom severity in non-clinical individuals (39).

4. Discussion and Conclusion

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The present findings suggest that both group-based and individual ACT interventions positively affect the symptoms and associated factors of IBS. Through techniques of acceptance and creative hopelessness, ACT helps individuals with IBS actively and nonjudgmentally accept their private experiences (thoughts, feelings, sensations) rather than attempting to control, reshape, or avoid them. Cognitive defusion assists them in avoiding rigid submission to their own thoughts and mental rules, thereby reducing fusion with their conceptualized self. Mindfulness exercises help IBS patients accept their internal experiences and relate to them without judgment, in the here-and-now. Moreover, ACT aids patients in identifying their values and practicing behaviors aligned with those values. By doing so, individuals learn to recognize and address psychological barriers arising from fusion and experiential avoidance, as well as situational obstacles, enabling them to act in ways consistent with their chosen values (19-21).

A review of the literature indicates that withdrawing from meaningful life activities increases suffering in individuals with IBS, as they become entrenched in rigid behavioral patterns that reduce the variety of experiences. Under such conditions, the opportunity to encounter potentially symptom-reducing or quality-of-life-enhancing experiences is limited. By introducing acceptance, ACT disrupts the cycle of unpleasant experiences, behavioral control, and immediate relief. Accordingly, some distressing aspects of symptoms may diminish in salience and thus be reported less frequently. Within this therapy, psychoeducation about IBS (brain-gut interactions, the interplay of symptoms and emotional responses), examining the short- and long-term effects of control/elimination or avoidance strategies through creative hopelessness exercises, introducing acceptance as an alternative strategy, clarifying personally meaningful directions (using metaphors such as the compass metaphor and “100th birthday” exercise), and addressing how the mind works via metaphors (e.g., two cavemen, numbers exercise, “Mary Had a Little Lamb,” “milk, milk, milk”) are key elements (33). Techniques such as the “city bus” exercise help patients adopt an observer perspective, view thoughts as thoughts, and become aware of present-moment experiences (observer self defusion). Short mindfulness exercises can be integrated into daily life (e.g., mindful eating). Revisiting acceptance and values serves to clarify what the patient is not willing to experience and what they strive for in life. Completing commitment forms and having participants stand and verbalize their committed action (committed action) can reduce IBS symptoms and their associated outcomes (33).

Eskafi-Sabet et al. (2022), in explaining ACT’s effect on symptom severity in IBS patients, highlighted the relationship between psychological factors and the autonomic nervous system, as well as the brain-gut axis. They noted that areas such as the amygdala, hippocampus, and prefrontal cortex modulate intestinal function, play roles in emotion and pain regulation, and are involved in cognitive behaviors (problem-solving, planning, and information seeking). These areas also contribute to social behaviors, coping skills, and psychological well-being. By emphasizing greater acceptance of internal experiences, present-moment awareness, engagement in value-consistent activities, increased psychological flexibility, and the alleviation of avoidance and cognitive fusion, ACT promotes positive changes in the psychological processes of individuals with IBS. These psychological changes, in turn, lead to reduced physiological symptoms of the disorder (30).

Overall, the present findings indicate that psychological interventions—particularly ACT, whether in group or individual format—are effective in managing the symptoms and associated factors of IBS. Therefore, gastroenterology and mental health specialists may employ this approach alongside pharmacotherapy and dietary modifications to alleviate IBS symptoms and other related variables. Staudacher et al. (2023) also propose that a fully integrated model of care, encompassing medical management, dietary adjustments, and psychological interventions, represents the most effective strategy for IBS management. They found that current evidence demonstrates how both dietary modifications and psychological treatments can improve overall symptoms. In their view, an integrated care model delivered by a multidisciplinary team not only enables long-term self-management of IBS but also allows for early detection of comorbid psychological conditions, informing medication choices and facilitating timely referral for psychological and behavioral therapies. Although guidelines often recommend psychological and behavioral treatments only after multiple pharmacological options have failed, these interventions carry minimal risk and can impart

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lifelong coping skills. Accordingly, they suggest that such treatments could be introduced earlier if patients are willing. Complete symptom resolution, however, is frequently unattainable; patients should be made aware of this to manage expectations. Generally, even new medications for IBS yield only limited efficacy. For these reasons, pharmacotherapy alone cannot be viewed as a cure-all but rather as one component of a multifaceted approach to managing this condition. Furthermore, despite the high prevalence of comorbid psychological disorders in IBS, pharmacotherapy typically focuses on gastrointestinal symptoms alone, and the impact of psychological factors on medication efficacy is largely overlooked in drug trials (2).

Authors' Contributions

L. S. A. Z. contributed to the conceptualization and design of the study, conducted the literature review, and drafted the manuscript. S. F. M. was responsible for data collection, analysis, and interpretation of the findings, as well as reviewing and revising the manuscript for critical intellectual content. Both authors contributed to the final version of the manuscript, approved it for submission, and agreed to be accountable for all aspects of the work.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

Not applicable.

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