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The Effectiveness of Cognitive Behavioral Therapy on Symptoms Intensity, Quality of Life, and Mental Health in Patients with Irritable Bowel Syndrome

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Quantitative Study

Abstract

Background: Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder with chronic abdominal pain, bowel habit variations, and lack of structural causes. Symptom intensity has a statistical relation with patients' quality of life (QOL) and mental health. The first objective of the present study was to develop and provide a therapeutic plan based on cognitive behavioral therapy (CBT) for IBS that was operated for the very first time in Iran. The second objective was to determine the effectiveness of these treatments on IBS symptoms intensity, health-related QOL, and psychological health among patients with IBS.

Methods: The participants were 15 women with IBS. The participants were diagnosed on the basis of Rome-III diagnosis criteria. The data collection tools consisted of IBS Symptom Severity Scale (IBS-SSS), the Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire, and the Symptom Checklist-90-Revised (SCL-90-R) used to evaluate mental health. Data were collected during the weeks of 0, 4, 12, and 24, during the treatment process. The extracted data was examined statistically via repeated measures MANOVA in SPSS software.

Results: CBT has a significant effect on IBS symptoms reduction, QOL improvement, and mental health promotion of the patients. The effect of the therapeutic plan persisted until the follow-up stage.

Conclusion: According to the results, applied CBT can be specifically implemented as an effective treatment for IBS. Therefore, the use of this treatment is advised.

Keywords: Irritable bowel syndrome (IBS), Quality of life (QOL), Mental health, Cognitive behavioral therapy (CBT)

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Introduction

Functional gastrointestinal disorders (FGIDs) comprise a remarkable percentage of digestive diseases. Psychological factors have impact on all features of these disorders including, onset, intensity, and continuation (Sadock, & Sadock, 2007). Irritable bowel syndrome (IBS) is the most common, costly, and disabling among the gastrointestinal disorders (Lackner and Gurtman, 2005). It is estimated that IBS affects 10-20% of the population around the world with a female predominance (Longo et al. 2011; Owyang, 2008). According to Choung and Locke (2011), gastroenterologists spend 25% of their work hours on treating patients with IBS (Choung, & Locke, 2011). The second most common cause of outpatient referral (25%) to the Tehran Specialized Gastrointestinal Clinic, Iran, is IBS (Ganji et al., 2006).

IBS pathogenesis is not well known; however, the roles of abnormal bowel movement and visceral perception, mucositis, central nerves dysfunction, stress and mental disorders, bowel canal internal factors, changes in bowel bacterial floor (Longo et al., 2011), brain-gut interaction, food allergies, and carbohydrates intolerance have been reported (Occhipinti, & Smith, 2012). Genetic factors are the cause of inflammation or local immune responses that render individuals susceptible to IBS.

Symptoms intensity differs from person to person and it can decrease quality of life (QOL). In many researches, patients had low QOL, compared with the public population and healthy individuals (Longo et al., 2011; Tamannaifar, & Akhavan Hejazi, 2013; Masaeli et al. 2013; Brun-Strang, Dapoigny, Lafuma, Wainsten, & Fagnani, 2007). Factors such as gender, symptoms intensity, and age of symptoms onset have been reported to be effective on QOL (Amouretti et al., 2006).

Digestive diseases have the first rank among medical diseases in terms of demanding psychiatric consultation that is a reflection of the high prevalence of these diseases and the relevance between psychiatric disorders and physical symptoms of the digestive system (Sadock, & Sadock, 2007). Researches show that patients with IBS have poor mental health compared with healthy individuals (Alpers, 2008; Minakari, Zali, Heydari, & Arabalidousti, 2006; Mahvi-Shirazi, Fathi-Ashtiani, Tabatabaei, Amini, 2009). In some studies, the mental health of patients with IBS was compared to that of healthy individuals and patients with digestive system organic disorders. These studies demonstrated that patient with IBS had a lower mental health score in all psychological health scales than patients with organic digestive system disorders and healthy individuals (Taheri, Hasani, & Molavi, 2012; Solati Dehkordi, Rahimian, Abedi, & Bagheri, 2006; Nicholl et al. 2008).

IBS treatment requires a multidimensional approach. IBS is a chronic disease that has no certain cure; thus, its treatment must aim at removing the symptoms and identifying patients' concerns. Cognitive behavioral therapy (CBT) has a strong theoretical base among psychological treatments. Moreover, several studies have approved the effectiveness of CBT on treating IBS and easing its symptoms (Lackner et al., 2008; Blanchard et al., 2006).

Remarkable explanations of IBS have been proposed through cognitive theories. It is assumed that patients engage in cognitive distortions and dysfunctional patterns of thinking toward the self, future, environment, and their disease. On the other hand, a kind of irregularity and imbalance in the central nervous system (CNS), nervous hormone systems, and enteric nervous system (ENS) are indications of the disease (Lackner, & Gurtman, 2005).

CBT impacts IBS by reducing mental and physical symptoms, and evidence of CBT effectiveness has increased during recent years (Tang, Lin, & Zhang, 2013; Reme et al., 2011; Andersson et al., 2011). In addition, several

studies have demonstrated a reduction in IBS symptoms intensity and frequency through CBT (Jang, Hwang, & Kim, 2014; Moss-Morris, McAlpine, Didsbury, & Spence, 2010; Chilcot, & Moss-Morris, 2013). However, Boyce, Gilchrist, Talley, and Rose (2000) have not reported any significant increase in intestinal symptoms frequency. CBT influences patients' QOL and psychological symptoms associated with IBS (Hunt, Moshier, & Milonova, 2009; Haghayegh, Kalantari, Molavi, & Talebi, 2010) such as anxiety and depression (Wang, Pan, & Qian, 2002; Palsson, & Whitehead, 2013; Khan & Chang, 2010).

However, there is not enough evidence of the efficacy of CBT (Andersson et al., 2011) and some studies have not reported a significant effectiveness for CBT on IBS improvement (Blanchard et al., 2007). On the other hand, some studies reported the short-term effectiveness of CBT that means that its effect did not persist until the follow-up stage (Haghayegh et al., 2010; McCrone et al., 2008).

Due to the contradictory and different results in this field, it is necessary to provide and use a CBT specialized plan for IBS.

Thus, the first research objective was to provide a CBT protocol for IBS that was performed for the first time in Iran. The second aim was to determine its effectiveness on bowel symptoms intensity, QOL relevant to IBS, and psychological health

Methods

In the first stage of the study, a CBT protocol was written using quantitative methods. Its structure and content were developed and provided based on available resources (Blanchard, 2001; Toner, Segal, Emmott, & Myran, 2000). In the second stage, a randomized clinical trial was designed with pre-test, post-test, and fallow-up assessment. Patients were selected from the Psychosomatic Research Center (Gastroenterology Clinic) and private offices in Isfahan, Iran. Patients were visited by gastroenterologists and diagnosed with IBS based on the Rome–III Diagnostic Criteria for IBS. The inclusion criteria consisted of diagnosis of IBS based on Rome-III (including all C, D, and M types), female, 20-50 years of age, and a diploma and higher academic degrees. Patients were excluded if they presented nightly symptoms, currently used antibiotics, had a family member with colon cancer, were reluctant to attend the treatment, appearance of white blood cells (WBC), blood or parasite in stool, had a history of thyroid disorders and abnormal thyroid test, abnormal levels of calcium, history of respiratory and heart diseases, abnormal rectosigmoidoscopy or colonoscopy, anemia, eosinophils, psychiatric acute disorders, and neurological diseases. Therefore, 15 patients who met the inclusion criteria were allocated to the CBT intervention group. Intervention and fallow-up was held in the Isfahan Psychosomatic Researches Renter located in Shariati Street. Due to personal and occupational problems, 3 participants dropped out of treatment. Thus, 12 patients continued the treatment sessions. Participants completed the IBS Symptom Severity Scale (IBS-SSS) to measure IBS intensity, Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire to examine QOL, and the Symptom Checklist-90-Revised (SCL-90-R) to measure mental health in several stages. CBT had a 12-session plan, once a week on Thursdays, each session lasting 90 minutes. Papers were distributed among the participants at the end of each session to explain their criticisms and attitudes, and provide their feedback to the therapist. at the questionnaires were completed by the participants at the beginning of the study, end of the 4th week, and at the end of the 12th week. In order to follow-up, an assessment was done 12 weeks after the end of treatment.

Data was analyzed using repeated measures ANOVA in SPSS software (version 20, SPSS Inc., Chicago, IL, USA).

Research tools:

Demographic Characteristics Questionnaires: This questionnaire contained items on age, gender, occupation, education, type of the disease diagnosed by gastroenterologist, type and history of treatment, beginning of treatment, and symptoms intensity.

ROME–III Diagnostic Criteria for IBS: This questionnaire has been accepted around the world as a standard criterion for IBS diagnosis, with a high validity (Longo et al., 2011).

IBS Symptom Severity Scale (IBS-SSS): This scale has been designed based on the Rome Diagnostic Criteria in five segments that assess IBS symptoms including pain, bowel habit changes, bloating, and disease impact on daily activities. The total score of the questionnaire is 500. Slight, moderate, and severe disease symptoms are indicated by scores of 75-175, 175-300, and higher than 300, respectively. The interclass correlation coefficient of the scale is 0.86 and Cronbach's alpha is 0.69 (Francis, Morris, & Whorwell, 1997).

Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire: This questionnaire was designed by Patrick and Drassman (1998) and is valid in this field with a high sensitivity and specificity regarding all types of IBS. This questionnaire consists of 34 items scored based on a 4-point Likert scale (never = 1, rarely = 2, usually = 3, often = 4, and always = 5). Factor analysis revealed 8 factors including dysphoria, activity interference, body image, health concerns, interpersonal relations, food abstinence, social reaction, and sexual concerns. The Persian version of the questionnaire showed an acceptable diagnostic validity and internal reliability of subscales. The lowest and highest amount of Cronbach's alpha belonged to food abstinence (52%) and dysphoria subscales (88%), respectively. Its total reliability was 92% (Haghayegh, Kalantari, Solati, Molavi, & Adibi, 2008).

Symptom Checklist-90-Revised (SCL-90-R): The SCL-90-R includes 90 questions to assess mental symptoms. This checklist was developed by Drewgatis et al. in 1973 and was reviewed based on clinical experiences and psychometric analysis to improve its final form. The score of each item ranges from 0 reflecting "non-" to 4 indicating "severely". It has 90 questions on 9 dimensions of the disorder and 3 general indexes. Its validity and reliability have been reported as acceptable.

Cognitive Behavioral Therapy Protocol: This protocol is dedicated to patients suffering from IBS. This specialized treatment protocol has been written using 2 books; Cognitive-behavioral Treatment of Irritable Bowel Syndrome: The Brain-Gut Connection written by Toner et al. (2000) and Irritable Bowel Syndrome: Psychosocial Assessment and Treatment written by Blanchard (2001). This intervention plan includes 12 sessions, each lasting 90 minutes.

The first session familiarized the participants with the treatment and related concepts. In the second session, the relation between thoughts, feelings, behavior, and bowel symptoms was explained. In the third session, cognitive distortion was explained. In the fourth session, the participants were trained on pain management. In the fifth session, anxiety-related bowel performance was discussed. In the sixth session, the feeling of shame due to IBS was discussed. In the seventh session, the participants were trained on assertiveness-anger management. In the eighth session, problem-solving and self-efficacy were discussed. In the ninth session, social approval and perfectionism were discussed. In the tenth session, the participants were trained on control strategies. In the eleventh session, group needs were discussed. In the twelfth session, the treatment was ended and the participants were trained on prevention techniques.

All sessions are run in a standard format. They begin with practicing relaxation (5 to 10 minutes). Then, the researcher enquires about the participants' last session (5 minutes). Subsequently, the participants' homework is checked (15 to 20 minutes). Then, the session's

topic and its related skills are introduced (15 to 20 minutes). Next, the sessions' homework is proposed (10 minutes). Subsequently, a summary of the session is given (5 minutes). Finally, the participants' attitudes toward the present session are asked (5 minutes)

Results

In the present study, 12 patients with IBS diagnosed based on ROME–III completed the treatment. Among the patients, 25% were single, 75% married, 41.7% had a diploma, 58.3% had higher academic education, 50% were employed and 50% housewives, and 58.3% had previously undergone treatment and 41.7% had not. The mean age of the participants was 29.4 ± 5.35.Post hoc test results show significant differences between the IBS scores in pre-test (289.17 ± 79.25), middle-test (139.17 ± 71.15), post-test (100.00 ± 41.34) and follow-up (75.00 ± 46.42) stages of assessment (F = 4098; P = 0.001).

Figure 1 shows mean scores of IBS-SSS in the four stages of assessment

The SCL-90-R mean scores in pre-test, post-test, and follow-up stages are illustrated in table 1.

According to table 1, there was a significant reduction in all subscales of SCL-90-R from the first stage (pre-test) until the fourth stage (follow-up). In some of these subscales, there was

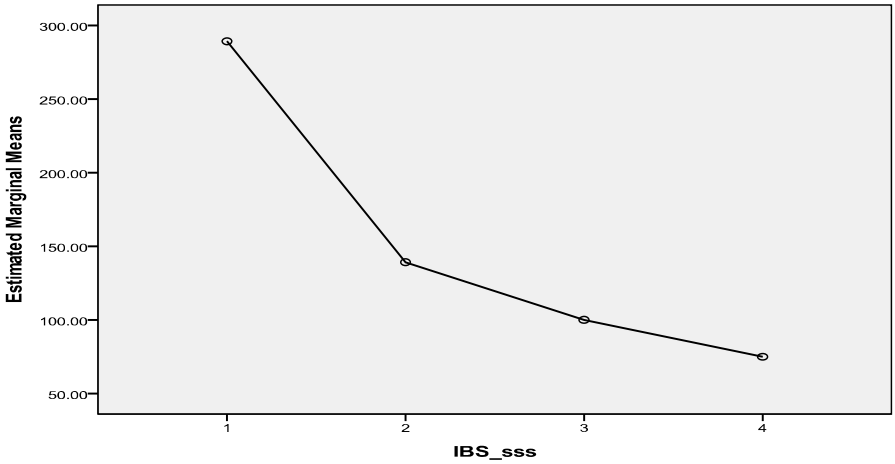

Figure 1. Mean scores of Irritable Bowel Syndrome Symptom Severity Scale (IBS-SSS) in the four stages of assessment

Table 1. Comparison of mean scores of Symptom Checklist-90-Revised (SCL-90-R) and its subscales in the 4 stages of cognitive behavioral therapy (CBT) treatment by repeated measures ANOVA

Mental health indexes	Assessment stages (mean ± SD)				F	P
	Pre-test	Middle-test	Post-test	Follow-up		
Physical complaints	1.69 ± 0.86	1.30 ± 0.84	0.93 ± 0.48	0.67 ± 0.56	10.34	0.001
Obsessive compulsive disorder	1.99 ± 0.83	1.20 ± 0.68	0.97 ± 0.65	0.85 ± 0.55	13.57	0.001
Interpersonal sensitivity	1.84 ± 0.63	1.22 ± 0.79	0.90 ± 0.54	0.73 ± 0.61	15.11	0.001
Depression	2.24 ± 0.73	1.44 ± 0.92	0.92 ± 0.51	0.72 ± 0.53	17.66	0.001
Anxiety	1.93 ± 0.80	1.31 ± 0.79	1.02 ± 0.49	0.63 ± 0.37	14.80	0.001
Aggression	1.43 ± 0.78	1.17 ± 0.81	0.75 ± 0.40	0.46 ± 0.28	9.88	0.001
Phobia	1.62 ± 1.25	0.82 ± 0.66	0.68 ± 0.45	0.38 ± 0.32	9.06	0.003
Paranoid thoughts	2.22 ± 0.87	1.50 ± 0.98	1.35 ± 0.84	0.96 ± 0.77	20.27	0.001
Psychosis	1.39 ± 0.69	0.74 ± 0.49	0.58 ± 0.43	0.51 ± 0.46	15.18	0.001
GSI	70.58 ± 13.87	55.58 ± 0 26.03	53.17 ± 017.61	41.25 ± 020.31	9.56	0.001

SD: Standard deviation; GSI: Global severity index

Table 2. Mean scores of Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire subscales during the four stages of cognitive behavioral therapy (CBT) treatment assessment

QOL indexes	Assessment stages (mean ± SD)				F	P
	Pre-test	Middle-test	Post-test	Follow-up		
Dysphoria	29.33 ± 4.96	16.42 ± 5.40	13.58 ± 5.05	12.25 ± 3.31	33.87	< 0.001
Activity interference	11.67 ± 2.74	8.25 ± 2.99	6.67 ± 2.96	6.00 ± 1.65	15.71	< 0.001
Body image	21.42 ± 4.23	15.33 ± 4.83	12.00 ± 3.36	11.33 ± 2.57	27.18	< 0.001
Health concerns	11.50 ± 1.83	6.92 ± 2.87	6.08 ± 1.98	4.75 ± 1.48	28.11	< 0.001
Interpersonal relations	11.25 ± 4.27	8.58 ± 3.09	8.08 ± 2.91	7.42 ± 2.31	5.05	0.010
Food abstinence	13.75±4.03	9.42 ± 2.87	6.67 ± 2.71	6.42 ± 1.24	17.24	< 0.001
Social reaction	8.17 ± 1.95	6.25 ± 2.70	4.50 ± 1.31	4.17 ± 1.40	17.00	< 0.001
Sexual concerns	5.50 ± 3.32	2.58 ± 1.68	2.17 ± 1.34	1.92 ± 1.08	15.60	< 0.001

QOL: Quality of life; SD: Standard deviation

a rapid and great reduction from the first stage to second stage, and then, it continued with a mild inclination until the follow-up stage. Repeated measures ANOVA revealed that these differences were significant ($P < 0.001$). Then, post hoc test showed that mean scores of physical complaints, aggression, and phobia indices in the pre-test differed significantly from those in post-test and follow-up. In obsessive-compulsive disorder (OCD) and psychosis indices, only mean scores of the pre-test stage were significant different from the other stages. There were significant differences in mean scores of interpersonal sensitivity, depression, paranoid thoughts, and global intensity indices between pre-test and other stages, and middle-test and follow-up. Significant differences were observed in mean score of the anxiety index among all stages except between middle-test and post-test.

The effectiveness of CBT on QOL of patients with IBS was assessed. Table 2 presents the results of repeated measures ANOVA on patients' QOL in the four stages of the study.

Table 2 results show that all subscales of the IBS-QOL questionnaire through the first stage (pretest) until the forth stage (follow-up) had a significant reduction. There was a rapid reduction in all items from the first stage to the second stage, then, it continued with a mild inclination until the follow-up stage. Analysis of variance (ANOVA) revealed a significant difference in all four stages of assessment in the subscales of the IBS-QOL questionnaire. This indicates that CBT improved QOL indexes.

Discussion

The findings of this research confirm that CBT for IBS has been influential in decreasing the severity of IBS symptoms during a therapeutic period. This finding is concordant with previous researches (Jang et al., 2014; Moss-Morris et al., 2010; Wang et al., 2002; Hunt et al., 2009). It seems that patients' attitudes toward symptoms and the outcomes of symptoms changed and that led to underestimation of their symptoms.

The findings of this study also showed that CBT for IBS was influential in the reduction of psychological symptoms severity ($P < 0.01$). This finding supports the results of previous studies (Wang et al., 2002; Hunt et al., 2009). CBT companied with dysfunctional attitudes and cognitive distortion modification is likely to decrease depression and anxiety symptoms. Therefore, a decrease in the psychological distress process brought about a decrease in perceived IBS symptoms.

On the other hand, CBT for IBS caused an increase in patients' QOL. This finding was in agreement with that of previous studies (Hunt et al., 2009; Haghayegh et al. 2010; Blanchard et al., 2007) and supports the efficiency of CBT to improve patients' QOL. Decreased depression and anxiety symptoms may be the result of changes in

patients' attitudes toward somatic symptoms, self, world, future, and others through the CBT process. Consequently, dysfunctional attitudes modification, psychological distress reduction, and IBS symptoms improvement result in an increase in patients' QOL.

Limitations

The most important limitation of this study was that the study population was limited to female patients. Another limitation was that low educated patients were excluded.

Conclusion

The findings of the present research support the efficiency of CBT for IBS in decreasing somatic and psychological symptoms and increasing patients' QOL. Based on these results, it is recommended that CBT be placed in comprehensive IBS treatment plans.

Conflict of Interests

Authors have no conflict of interests.

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