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Department of Psychosomatic Medicine and Psychology

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International Journal of Body, Mind and Culture

One-year Follow-up of Body Image Changes and Sexual Satisfaction in Women Undergoing Cosmetic Breast Surgery

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Quantitative Study

Abstract

Background: Body image is an important psychiatric element in women, and breasts are the main body parts that determine women's body image. Therefore, this study was conducted with the aim to evaluate the sexual and body image satisfaction of women undergoing cosmetic breast surgery.

Methods: The present study was a descriptive study. The study population included 185 women who were undergoing cosmetic breast surgery and voluntarily participated in this survey in Behsima clinic and Dr. Keshavarz's clinic, Shiraz, Iran, between June 2016 and December 2017. Data were collected using the Sexual Satisfaction Questionnaire and Body Image Concern Inventory (BICI) (Littleton et al.) 6 months and 1 year after surgery. After data collection, data were compared among 3 different measurements using repeated-measures ANOVA in SPSS software. The significance level in this study was 0.05.

Results: The mean ± SD of age of the participants was 35 ± 1.89 years; the majority of the participants (56.25%) were 31-40 years old. More than half of the participants (50%) were college graduates. The mean score of sexual satisfaction was 118.34 ± 25.4, 121.12 ± 26.8, and 125.13 ± 15.42, before surgery, and 6 and 12 months after surgery, respectively, and that of body image scores were 32.28 ± 9.5, 29.06 ± 9.91, and 29.15 ± 10.64, respectively. There was a significant difference among the 3 intervals ($P < 0.001$).

Conclusion: An increase was observed in the sexual satisfaction and body image of a group of healthy women at the 6-month and 12-month follow-up after cosmetic breast surgery.

Keywords: Body Image, Mammoplasty, Sexual Satisfaction

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Introduction

Physical attractiveness is seen as a positive trait when pursuing opportunities socially and in other areas of life, as it offers advantages to others who are less desirable. Previous studies have shown that elective plastic surgery is becoming more common as a means of achieving a perceived perfect body image and meeting psychological and social needs (Bailey, Gammage, & van Ingen, 2017; Goodman et al., 2016; Esmalian & Nodargahfard, 2020; Zehra, Doyle, Barry, Walsh, & Kell, 2020; Medeiros de Morais et al., 2017; Erbil, 2018). Body image is an important psychological construct of self-concept, which refers to the individual's feelings, attitude, and understanding about his/her physical appearance and beauty (Bailey et al., 2017).). Distorted body image is associated with several psychopathologies like reduced self-esteem, depression, eating disorders, and substance abuse not only in adolescents and young adults (Goodman et al., 2016; Esmalian & Nodargahfard, 2020), but also in older adults in which it impairs their quality of life (QOL) (Zehra et al., 2020; Medeiros de Morais et al., 2017) and causes psychopathologies (Erbil, 2018).

The formation of a positive body image in an individual can be influenced by various factors, including social and cultural norms, indicating acceptance by others, parents' and peers' perspectives, and media (Walker, Krumhuber, Dayan, & Furnham, 2021). In line with the rising popularity of social media, a growing number of young people are undergoing cosmetic procedures, with the number officially rising from 17.2% in 2014 to 18.2% in 2017 (Aldosari, Alkarzae, Almuhaya, Aldhahri, & Alrashid, 2019). Along with the alarming data on body image dissatisfaction, there is also the question of high national divorce rates and the end of intimate relationships. Divorce and a lack of maternal affection may have psychological consequences on all children of divorce and divorcees, such as elevated depressive symptoms and lower marital satisfaction (Chun, Jang, Choi, Shin, & Park, 2016). Breasts are one of the main body parts determining body image and sexual attractiveness (Sadikaj, Moskowitz, & Zuroff, 2017).

In addition to the relationship between general body image and sexual self-concept, sex appeal, subjective well-being (Horvath, Smith, Sal, Hevesi, & Rowland, 2020), and sexual satisfaction in women (Kvalem, Graham, Hald, Carvalheira, Janssen, & Stulhofer, 2020), breasts play a major role in their sexual and marital satisfaction (Brandao, Pedro, Nunes, Martins, Costa, & Matos, 2017). After controlling for confounding variables, linear regression research showed that appearance dissatisfaction was substantially linked to sexual pleasure in Scandinavian women and men, as well as Belgian men. As a result of research, attractiveness assessment tended to play an equal role in sexual pleasure in both older adults and younger adults (Kvalem et al., 2020).

The British Association of Aesthetic Plastic Surgeons (BAAPS), the only organization solely dedicated to advancing safety, innovation, and excellence in cosmetic surgery, has released its annual audit. According to the new figures, over 28,000 procedures took place in 2018, a small increase of 0.1% in 2017. Women underwent 92% of all cosmetic procedures recorded, and as of 2017, the 3 most popular procedures for women were breast augmentation, breast reduction, and blepharoplasty (eyelid surgery). The biggest increases for women were in liposuction which rose 12%, and facelifts which rose 9% (Nerini, Matera, Di Gesto Policardo, & Stefanile, 2019). These statistics show the importance of breasts for women. Iran, along with other countries, has faced a growing tendency toward cosmetic

procedures among women, which has changed this issue to a fashion trend in the community, involving a great proportion of adolescents and young adults (Chun et al., 2016; Sadikaj et al., 2017; Horvath et al., 2020; Kvalem et al., 2020).

The reason for this growth has to be further elucidated by studies; some Iranian researchers have suggested that most women undergoing cosmetic procedures have narcissistic personality traits (Kasmaei, Farhadi, Karimy, Kazemi, Morsali, & Nasollahzadeh, 2020), while others have suggested that dissatisfaction with body image and weight is the leading cause of the tendency towards cosmetic procedures (Barati, Kazemi Kilehgolan, Parsafar, Jalilian, & Afshari, 2019). Iranian studies have not investigated women's body image and sexual satisfaction after cosmetic breast surgery; however, studies in other countries have indicated that cosmetic breast surgery significantly improves women's QOL, body satisfaction, and self-esteem and decreases body image-related psychopathologies like eating disorders (Saariniemi, Helle, Salmi, Peltoniemi, Charpentier, & Kuokkanen, 2012). Body image and sexual satisfaction are dominated by cultural and social factors, and to the best of our knowledge, no Iranian study has addressed this issue; thus, the present study was conducted with the aim to evaluate sexual and body image satisfaction of women 1 year after undergoing cosmetic breast surgery.

Methods

The present study was a descriptive study. The study population included women undergoing cosmetic breast surgery in Behsima Clinic and Dr. Keshavarz's clinic, Shiraz, Iran, between June 2016 and December 2017. The protocol of the study was approved by the Ethics Committee of Shiraz University of Medical Sciences, Iran. A total of 100 women were considered as the sample of this study. According to Kline (2011), SEM analysis requires a large sample size. Kline (2011) suggests that a sample size of less than 100 is considered small, 100-200 is considered as a medium sample size, and more than 200 is considered a large sample size. According to Cochran's formula, 196 people were selected as a sample based on the placement of an undetermined size community., of which 6 people did not have the inclusion criteria and were excluded from the study process. Of the remaining 190 women, only 185 women were completely willing to participate in the study. The researcher referred to the selected clinics and selected participants according to the inclusion and exclusion criteria. The participants entered the study voluntarily. The inclusion criteria consisted of married women who were undergoing breast surgery, had a minimum literacy of reading and writing, and were willing to participate in the study. Then, the researcher explained the study objectives and steps to eligible participants and asked them to participate in the study. Patients, who signed a written informed consent form, received explanations about completing the Sexual Satisfaction Questionnaire for women and Body Image Concern Inventory (BICI) designed by Littleton, Radecki, and Berenson (2005). The patients completed this questionnaire before surgery, 6 and 12 months after the operation.

All procedures were performed by 1 surgeon after correct positioning of the patient on the operating room table and implementing general anesthesia based on the same protocol. The surgical procedure of breast augmentation was as follows. First, preoperative markings were made on the patient's breasts in an upright position, used as the reference point during the procedure. The inframammary approach was used for the complete visualization of the implant pocket. The incision was made in the predicted new inframammary fold, along with the proposed

markings, and electrocautery was used to continue dissection with specific attention to preserving the lateral intercostal cutaneous nerves. Then, implants were carefully placed by a minimal-touch technique. The implant pocket was closed with a separate layer of a suture before closing the skin.

The Hulbert Index of Sexual Assertiveness (HISA) includes 25 items which are scored on a 5-point Likert scale ranging from 0 (Always) to 4 (Never) (Hurlbert, 1991). In questions 3, 4, 5, 7, 12, 15, 16, 17, 18, 21, 22, and 23, the scores are reversed (always = 4; never = 0). A high test score indicates a high degree of sexual assertiveness. The total score of the index ranges from 0 to 100. David Farley Hulbert obtained a Cronbach's alpha coefficient of 0.86 for the HISA (Hurlbert, 1991). The factor coefficients of the items ranged between 0.33 and 0.89, indicating a satisfactory score for the questionnaire, which was confirmed by Manavipour, Pirkhaefi, Rouhani, and Dibaji (2009) with a Cronbach's alpha of 0.89. A Cronbach's alpha coefficient of 0.76 confirmed the reliability of the questionnaire used in this study.

The second questionnaire completed in this study, was the Body Image Concern Inventory (BICI) designed in 2005 by Littleton et al. (2005). This questionnaire includes 19 questions, measuring the 2 dimensions of dissatisfaction and the individual's shame regarding his/her appearance, self-examination, concealment of perceived defects, and the degree of interference with the individual's appearance in social function. Each question is scored on a 5-point Likert scale ranging from never (score 1) to always (score 5). Higher scores indicate a greater fear of the body and distorted body image. Littleton et al. (2005) reported Cronbach's alpha coefficients of 0.93, 0.92, and 0.76 for the total inventory and the first and second factors, respectively. In Iran, the reliability of the Persian version of the BICI was confirmed by Basak Nejad (2008) with a Cronbach's alpha coefficient of 0.95. In the present study, the reliability coefficient of the questionnaire was confirmed with a Cronbach's alpha coefficient of 0.81.

The collected data was entered into the SPSS software (version 22.0; IBM Corp., Armonk, NY, USA). The quantitative variables are presented as mean ± standard deviation (SD) and categorical variables as frequency (percentage). Mauchly's test of sphericity was used to assess equality of variance between groups; thus, the questionnaires' scores were compared among 3 different measurements using repeated-measures ANOVA. The Bonferroni post hoc test was used for the pairwise comparison of the variables. P-values of 0.05 or less were considered statistically significant in all tests.

Results

The Mean ± SD of age of the participants was 35 ± 1.28 with the majority (56.25%) aged 31-40 years. Most patients (50%) had a bachelor's degree, 7 patients (21.87%) had an associate's degree, 6 patients (18.75%) had a high school diploma, 2 (6.25%) had a master's degree, and 1 individual had pre-high school education. Of the total 32 patients, most had a marriage duration of 10-20 years (68.75%), and only 5 patients (15.62%) had a marriage duration of 1-9 years, and 5 patients (15.62%) had a marriage duration of 21-30 years. Most patients (43.75%) had either 1 or 2 children, and only 2 patients (6.25%) had 3 or no children.

The results of the HISA showed that the mean ± SD of the scores before surgery was 118.34 ± 25.4 that increased to 121.12 ± 26.8 after 6 months and 125.13 ± 15.42 after 1 year. Mean ± SD of the body image scores were 32.28 ± 9.5, 29.06 ± 9.91, and 29.15 ± 10.64 before, 6 months after, and 1 year after surgery, respectively (Table 1).

Table 1. Results of descriptive analysis of the studied variables

Variables	Three intervals	Mean ± SD	P-value
Sexual Satisfaction	Before surgery	118.34 ± 25.4	0.001
	6 months after surgery	121.12 ± 26.8	
	6 months after surgery	125.13 ± 15.42	
Body Image Changes	Before surgery	32.28 ± 9.5	0.001
	6 months after surgery	29.06 ± 9.91	
	6 months after surgery	29.15 ± 10.64	

The results presented in table 2 show that Mauchly's test of sphericity is not significant, which indicates the assumption of sphericity, so the repeated measures test can be used.

As can be seen in table 3, the results of ANOVA showed a significant difference among the 3 intervals (P = 0.001); further analysis with the Bonferroni post hoc test showed a significant difference between before surgery and 6 months after surgery (P = 0.001) and before surgery and 1 year after surgery (P = 0.001), while there was no difference between 6 and 12 months after surgery (P = 0.1).

As can be seen in table 4, the results of ANOVA showed a significant difference among the 3 intervals (P = 0.001); further analysis with the Bonferroni post hoc test showed a significant difference between before surgery and 6 months after surgery (P = 0.001) and before surgery and 1 year after surgery (P = 0.02), but there was no difference between 6 and 12 months after surgery (P = 0.46).

Discussion

The purpose of this study was to evaluate the satisfaction of women with their body image and sexuality after reconstructive breast surgery. The results of the present study showed a significant increase in sexual satisfaction and body image 6 months and 1 year after surgery compared to before the operation, while there was no difference between 6 and 12 months after surgery. In accordance with numerous studies, for example, the studies by Chun et al. (2016), Brandao, Pedro, Nunes, Martins, Costa, and Matos (2017), Nerini et al. (2019), Sobanko, Dai, Gelfand, Sarwer, and Percec (2018), and Khazir, Dehdari, and Mahmoodi (2014), the results of the present study indicate that cosmetic breast surgery may increase patients' sexual satisfaction and improve their body image. As sexual attractiveness is associated with sexual satisfaction and functioning, breasts can play a major role in this regard, and dissatisfaction with breasts reduces women's self-esteem and reduces their sexual satisfaction (Chun et al., 2016). The increasing frequency of breast augmentation in the United States indicates the growing desire of women to undergo this surgery (Brandao et al., 2017) to increase their self-esteem (Sobanko et al., 2018).

Women's tendency toward and motivation for cosmetic breast surgery is considered a cultural orientation, and many cultural norms play a significant role in this regard. For example, in Iran, the growing tendency of women towards different cosmetic procedures on their face, breasts, etc. in previous decades has made this issue into a fashion trend that young women tend to follow (Nerini et al., 2019).

Table 2. Results of Mauchly's test of sphericity regarding the assumptions of using repeated measurements

Variables	Mauchly's W	Chi-square	df	P-value
Sexual Satisfaction	0.03	7.99	2	0.11
Body Image Changes	0.70	3.46	2	0.29

df: Degree of freedom

Table 3. The comparison of sexual satisfaction and body image by time periods using analysis of variance

Source of variance	Indexes	Value	F	P-value	Eta
Intra-subject comparison of sexual satisfaction	Pillai's Trace Test	0.84	79.68	0.001	0.84
	Wilks' Lambda	0.16	79.68	0.001	0.84
	Hotelling's Trace Test	5.31	79.68	0.001	0.84
	Roy's Largest Root Test	5.31	79.68	0.001	0.84
Comparison of body image within the subject	Pillai's Trace Test	0.58	21.34	0.001	0.58
	Wilks' Lambda	0.41	21.34	0.001	0.58
	Hotelling's Trace Test	1.42	21.34	0.001	0.58
	Roy's Largest Root Test	1.42	21.34	0.001	0.58

With the increased rate of women who have undergone several plastic surgeries, especially in Tehran, Iran, women who have natural faces, breasts, etc. are also drawn to this fashion trend and seek cosmetic surgery (Gladfelter & Murphy, 2008). Considering that the attitude towards cosmetic surgery is closely associated with Iranian's feelings about their body image, psychological aspects of the tendency and motivation of Iranian women based on cultural issues have to be further investigated (Baratloo & Khoudi, 2016).

The increased body image scores in the present study indicate the significant role of cosmetic breast surgery in women's sense of body image. Sarwer et al. (2005) and Sarwer and Crerand (2004) also reported an improvement in the body image of women undergoing cosmetic surgery. Cash, Duel, and Perkins (2002) have reported increased satisfaction with the surgical results and body image changes 2 years after breast augmentation with silicone gel-filled implants (Sarwer & Crerand, 2004), which is in line with the results of the present study. Alderman, Pusic, and Murphy (2016) have also reported that breast augmentation surgery with Natrelle silicone-filled breast implants or saline-filled breast implants improves body image in healthy women (Cash et al., 2002), which confirms the results of the present study.

Women who have a distorted body image may be drawn to cosmetic surgery due to undiagnosed psychopathologies, such as body dysmorphic disorder and eating disorders. Therefore, patients who complain of a distorted body image should receive a specialized consultation before surgery, as these patients might be dissatisfied with the results of the procedure and seek repeated surgeries due to their underlying psychological disease (Alderman et al., 2016). In the present study, all patients were examined by the physician in order to rule out any psychopathologies and the results, indicating satisfaction with the surgical results and the change in the appearance of their breasts, confirmed that all participants were healthy.

In the present study, both body image and sexual satisfaction increased after surgery, and 6 months and 1 year after surgery, which is in line with the study by Pujols et al., who reported a close association between body image and sexual satisfaction (Chun et al., 2016).

Table 4. Comparison of sexual satisfaction by time periods using the Bonferroni test

Variables	Three intervals	SS	MS	P-value*
Sexual Satisfaction	Before surgery up to 6 months after surgery	2.78	0.49	0.001
	Before surgery up to 1 year after surgery	6.78	2.33	0.020
	6 months to 1 year after surgery	4.00	2.73	0.460
Body Image Changes	Before surgery up to 6 months after surgery	3.21	0.48	0.001
	Before surgery up to 1 year after surgery	3.12	0.77	0.001
	6 months to 1 year after surgery	0.09	0.58	0.010

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

The indirect association between body image and sexual satisfaction is caused by the significant affect of body image on self-esteem, which plays a key role in sexual satisfaction. Furthermore, body image is directly associated with sexual satisfaction, as a woman who is ashamed of her body appearance has problems in her sexual and marital relationships, which affects her sexual satisfaction (Kvalem et al., 2020; Crerand, Franklin, & Sarwer, 2006).

Several studies have also reported significant improvements in sexual satisfaction and body image after elective reconstructive breast surgery, but these studies focused mainly on patients with breast cancer who had undergone therapeutic or risk-reducing mastectomy and suggested that different reconstruction techniques could increase sexual satisfaction and body image more prominently (Ackard, Kearney-Cooke, & Peterson, 2000; Gopie, ter Kuile, Timman, Mureau, & Tibben, 2014; Rojas, Onstad, Raker, Clark, Stuckey, & Gass, 2017). Although the results of these studies are consistent with the result of the present study, and confirm the significant role of breasts in women's sexual satisfaction and body image, the preoperational psychiatric status of patients who have lost their breasts for several months or years significantly predicts post-surgical satisfaction (Braude, Kirsten, Gilchrist, & Juraskova, 2017) and are not comparable to women who undergo breast surgery for cosmetic reasons.

One of the limitations of the present study was the number of patients who discontinued their participation in the study (18 out of 50), which could have affected the result. As all patients in the present research were satisfied with the surgical outcome, it could be possible that women who were dissatisfied with the results did not complete the study protocol. We tried to reduce the effect of this phenomenon on our results and tried to contact the patients who were lost to follow-up and ask the reason. Another limitation of the present study was an inability to record or control other factors that affect the study outcomes such as psychological, cultural, and familial factors; for example, marital satisfaction and interpersonal relations between spouses can have a great impact on their sexual satisfaction, but we could not control this issue in our subjects. A limitation in the study design was the lack of a control group to confirm that the results are completely associated with breast surgery. Future studies with a larger sample size, longer follow-up, and a control group can add to the results of the present study.

Conclusion

The present study examined 100 women who underwent elective cosmetic breast surgery, and showed that the procedure significantly improved their body image and sexual satisfaction; however, the small sample size and lack of a control group preclude the generalization of the findings of the study to the Iranian population. By presenting this study, physicians can gain insights into the impact of these 2 aspects (body image and sexual satisfaction) of the procedure, which will guide researchers' future research on this topic.

Conflict of Interests

Authors have no conflict of interests.

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The study population included women undergoing cosmetic breast surgery in Behsima clinic and Dr. Keshavarz's clinic, Shiraz, Iran. The protocol of the study was approved by the Ethics Committee of the Islamic Azad University of Shiraz (IR.IAU.SHIRAZ.REC, 067).

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A Comparative Study of the Effectiveness of Acceptance and Commitment Therapy and Transcranial Direct Current Stimulation on Anxiety, Depression, and Physical Symptoms of Individuals Suffering from Chronic Pain

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Quantitative Study

Abstract

Background: The present research was conducted to compare the effectiveness of acceptance and commitment therapy (ACT) and transcranial direct current stimulation (tDCS) on anxiety, depression, and physical symptoms.

Methods: This research falls among semi-probationary plans, with a pretest-posttest design, two groups, and follow-up. The research statistical population included all male and female out-patients who referred to any treatment centers in Tehran, Iran, in the years 2019-2020 with a chronic pain complaint and received a definitive diagnosis of chronic pain by neurologists and rheumatologists. In order to establish 3 groups using targeted sampling method (considering the inclusion and exclusion criteria), 30 patients were initially selected, and then, 15 patients were placed in the first experimental group and 15 patients in the second experimental group randomly. The research tools consisted of the Beck Depression Inventory (BDI) (1961), Beck Anxiety Inventory (BAI) (1990), and Mcgill Pain Questionnaire (MPQ) (2007). Research data were analyzed using repeated measures ANOVA.

Results: The result of data analysis indicated that ACT and tDCS lead to a decrease in depression, anxiety, and physical symptoms. In addition, compared to tDCS, ACT had a more significant effect on reducing anxiety in individuals suffering from chronic pain ($P < 0.05$).

Conclusion: Both ACT and tDCS had a significant effect on improving depression, anxiety, and physical symptoms in people with chronic pain. ACT was also more effective in reducing anxiety. However, there was no significant difference between ACT and tDCS in influencing depression and physical symptoms.

Keywords: TDCS; Acceptance and Commitment Therapy; Depression; Anxiety; Chronic Pain

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Introduction

The experience of living with chronic pain is a unique experience. Individuals' perception of pain is influenced by physical, mental, and social variables (Dowell, Haegerich, & Chou, 2016). The International Association for the Study of Pain (IASP) defines it as an unpleasant emotional experience that accompanies actual or potential damages to tissues. Pain is basically categorized into 2 types of chronic and acute in terms of duration. Acute pain is described as pain that starts quickly and lasts for a short time. This type of pain has a protective role, informs the person of the damages, and makes him/her stay away from its stimulants. Symptoms of chronic pain are a prevalent problem and it causes some great challenges for therapists due to its complicated nature, vague pathology, and poor response to treatment (O'Connell, Marston, Spencer, DeSouza, & Wand, 2018). The physical symptoms of pain range from mild to severe pain that is not mitigated as expected and pain may appear in the forms of sudden, shooting pain, irritation, or ordinary pain or it might be like an electric shock, fatigue, heaviness, or congestion (Thompson, Antcliff, & Woby, 2018).

Researchers unanimously agree on this fact that chronic pain is one of the most prevalent and damaging chronic health issues. Chronic pain is a common health problem around the world and it severely affects the social and occupational living quality of the affected individuals (Kuner & Flor, 2016). The results of studies in Iran also indicate that this problem is highly prevalent and leads to psychological confusion (Boroumand, Asghari Moghaddam, Shaeeri, & Mesgarian, 2012).

One of the reasons for chronic pain being the most challenging issues in contemporary diseases is that it is accompanied by physical diseases and mental disorders. There are numerous epidemiological studies that support the high prevalence of major psychological disorders among those suffering from chronic pain. The most prevalent psychological disorders are said to be accompanied by chronic pain, depression (10 to 100%), anxiety (with a prevalence higher than depression), sleeping disorders, addiction to drugs (with a prevalence higher than that in the general population) (Fisher, Heathcote, Eccleston, Simons, & Palermo, 2018). Anxiety is associated with an unsafe concept or a threat that the individual cannot clearly identify its source and it is assumed as a threatening situation, under the influence of stimulations, whether internal or external, and the individual is unable to control them (Lerman, Rudich, Brill, Shalev, & Shahar, 2015). Depression disorder is the second most prevalent psychological diagnosis in such patients. Most such patients experience a period of denial and disappointment that are followed by the signs of depression and anxiety (Reiner, Bakermans-Kranenburg, Van IJzendoorn, Fremmer-Bombik, & Beutel, 2016).

Of the psychological treatments for chronic pain, we can refer to behavior therapy, psychoanalysis, biofeedback, gradual relaxation, and cognitive behavioral therapy (CBT). Presently, we are being presented with the third generation of such therapies. Instead of changing the cognitions in such therapies, it is attempted to improve the individual's psychological communication to his mind thoughts and emotions. One of the therapies that have lately come into careful consideration by researchers is acceptance and commitment therapy (ACT) (Trompetter, Bohlmeijer, Veehof, & Schreurs, 2015). Communication system theory is the basis for this therapy. Based on this theory, many of the solutions that we use to solve our problems confine us to some traps that irritate us. This therapy highly recommends avoiding pain and stress as the main problems for the patients, thus leading them to inability

and low satisfaction with life. According to this theory, avoidance takes place when negative emotions and thoughts leave inappropriate and excessive effects on behavior. Therefore, the main therapy method is ACT and confronting the patients with situations they are used to avoiding (Hughes, Clark, Colclough, Dale, & McMillan, 2017).

Contrary to other therapies (such as CBT) that emphasize on lowering or controlling the symptoms, ACT gives priority to an increase in acceptance of negative thoughts (thoughts, excitements, physical senses) in favor of involvement in significant activities that are impossible to change directly, though this may invite in a huge amount of pain and stress. ACT is aimed at improving the patient's performance through improvement of mental flexibility (Livheim et al., 2015).

Vowles and Thompson (2011) focused on the main processes of therapy based on acceptance and commitment and indicated that, compared to the outset of therapy, the patients had better physical and emotional performance and, compared to the initial follow-up, they had kept the therapy achievements more.

In recent years, researches on the efficiency of non-aggressive techniques for brain stimulation have increased (Arkan & Yaryari, 2014). Transcranial direct current stimulation (tDCS) is a non-aggressive method during which a poor direct current (1 to 4 milliampere) is applied through the skin of the head through which some long-term changes are made in the cortex axis in the depolarization and hyperpolarization of neurons. It also has some effects on neurotic receptors. In other words, in this type of electric stimulation, some parts of the head are targeted using a poor electric current (Sadock, Sadock, & Kaplan, 2009). In this method, 2 electrodes, one positive and the other negative, are placed on the head through a sponge pad that is wet with conductive solvent.

The electric current reaches the cortex level through these electrodes upon passing through various parts (skin of the head, skull, etc.). The current that reaches that area gives the neurons electric load, thus causing positive and negative poles that lead to a change in activity in that area (Akbari, 2015). Reviewing the existing resources showed no research in our country on the comparison of the effectiveness of ACT and tDCS in lowering anxiety and depression and physical symptoms of those suffering from chronic pain. Therefore, this research was conducted to make such a comparison, provide some background information for implementing psychological therapies in order to improve psychological confusion (anxiety and depression) and the physical symptoms of those suffering from chronic pain, and determine whether the effectiveness of ACT and tDCS on psychological confusion (anxiety and depression) and physical symptoms of those suffering from chronic pain differ from each other or not.

Methods

This research falls among the quantitative studies in terms of collected data, the applied studies in terms of goal, and semi-probationary plans in terms of type of pretesting, two-group follow-up, and manner and procedure. The research statistical population included all male and female out-patients who referred to any of the treatment centers in Tehran, Iran, in the years 2019-2020 complaining of chronic pain and received a definitive diagnosis of chronic pain by neurologists and rheumatologists. The sample included 30 patients. The sampling procedure in this research had 2 steps. First, through convenience sampling, a number of individuals were selected from among those diagnosed with chronic pain.

Table 1. Content of training sessions for indexes based on acceptance and commitment therapy (Iforth & Forsite, 2005)

Sessions	Content
1st session	Recognizing the nature of emotion, thoughts and actions, creating creative confusion, controlling one's internal experiences like negative thoughts, emotions, and negative emotions
2nd session	Examining getting used to avoidance of emotions, replacing experiences tendency (acceptance) with avoidance, preparing clients for mind awareness
3rd session	Changing clients' focus to internal experiences, practicing mind awareness and detachment cognition
4th session	Developing mind awareness and detachment cognition skills, practicing being aware of emotions along with discussing them, explaining the difference between clean and dirty
5th session	Providing an introduction to set up some effective goals related to values, putting forward and identifying one's values, explaining the difference between value and goal
6th session	Performing mind awareness and detachment cognition practices, putting forward a conceptualized self and self as a background, identifying action steps (small behaviors to reach bigger goals)
7th session	Mind awareness practices while walking, identifying behavior goals to reach values, fear algorithm for identifying the obstacles to reaching values
8th session	Teaching clients to be a therapist for themselves, explaining the difference between lapse and return, surface normalization of negative emotions, gradual progress and emphasizing on behavioral goals

Then, those who had the study inclusion criteria underwent a pretest and clinical interviews by the researcher under the supervision of a psychiatrist, and based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (DSM-5) diagnosis criteria, 30 individuals (15 in each group) were selected from among the men and women who had gained the highest scores (at base line) on the questionnaires. The participants were randomly allocated to 2 intervention groups (15 in each group).

Transcranial direct current stimulation protocol: The tDCS protocol is a painless and safe method that is carried out by applying an electric current of 1 or 2 milliamperes within 20 to 30 minutes by electrodes fixed on the skull. This passing current adjusts the activation of a part of the cortex that is under the electrode and affects stimulation power and synapsis flexibility, and is specified by activating a part of the brain.

De-polarity current: At higher electric current, more effects are expected to be observed. However, the highest permitted current was 2 milliamperes because of the safety of those attending the test in this research.

Shape and size of electrodes: The density of the current passing through the skull is very important. In fact, current density represents the amount of current crossing each square centimeter of the electrode. In most previous studies, current density was regulated between 29%-08% of milliampere per square centimeter. Thus, the shape and size of the electrodes will be effective. In this research, 25 cm electrodes were used, and to achieve a good connection between the electrodes and the skull, a wet fabric pad immersed in salt water was placed over the electrodes.

Plan time and intervals between stimulation sessions: In this research, stimulation time was 20 minutes and the number of stimulation sessions was 12 during 6 weeks with intervals of 3 to 7 days.

Stimulation protocol: There were 2 active stimulation orbits and electrodes were placed in cz-f3-f4 as per standards 10-20. Cz situation is considered as reference (basic) situation. One of the activation channels between cz and f3 is activated. Sine wave is with a frequency of 10 Hertz and domain of 1 milliampere, along with negative cathode

current in size of 1 milliampere. One of the other activation channels between cz and f4 is activated. Shape of sine wave is with a frequency of 10 Hertz and domain of 1 milliampere, along with negative anode current, in size of 1 milliampere.

Beck depression questionnaire: The Beck Depression Inventory (BDI), 2nd edition (Stefan-Dabson, Mohammadkhani, & Massah-Choulabi, 2007), is compiled for measuring depression severity and is in conformity to the DSM-5 depression criteria. This questionnaire consists of 21 questions, each question is scored on a 4-point scale ranging between 0 and 3. The total score of the BDI ranges from 0 to 63 and high scores indicate more severe depression. The cut-off point of the BDI is 13. Its test-retest reliability is 0.93 and internal consistency through Cronbach's alpha is 0.91 (Nazari, Ahmadian, & Afshar, 2014). Likewise, examining the validity of structure is based on calculating convergent validity versus calculating correlation coefficient of scores resulting from second edition of the BDI version and depression scale of mild symptoms questionnaire that indicates a correlation equal to 0.873 (Stefan-Dabson et al., 2007).

Beck Anxiety Inventory: Aaron Beck et al. introduced the Beck Anxiety Inventory (BAI) that exclusively measures the severity of clinical anxiety symptoms. Each item is scored on a 4-point scale ranging from 0 to 3. Each item of the test describes one of the prevalent symptoms of anxiety (mental, physical, and fear symptoms). Therefore, the total score of this questionnaire falls within the range of 0-63. Its convergent coefficient (alpha coefficient) is 0.92 and its reliability with test-retest method with a 1 week interval is 0.75 and the correlation of its items ranges from 0.30 to 0.76 (Kaviani & Mousavi, 2008). In examining the psychometric qualities of this test in the Iranian population, the reliability coefficient, test-retest reliability, and Cronbach's alpha were reported to be about 0.72, 0.83, and 0.92, respectively.

McGill Pain Questionnaire: The McGill Pain Questionnaire (MPQ) was developed in 1997 by Melzak et al. and it has 20 sets that measure individuals' perception of pain in 4 different aspects (sensorial, emotional perceptions, pain assessment, and various pains). MPQ is among the most outstanding tools for measuring pain and was implemented for the first time by Melzak et al. on 297 patients suffering from a variety of pains. The MPQ includes two independent factors; one titled sensorial pain describes the individual experiencing pain and the other one is emotional pain that describes the emotional impression of experiencing pain. Dworkin et al. (2009) have approved the validity of this questionnaire. Moreover, its reliability was calculated using Cronbach's alpha; the alpha coefficient for all aspects was between 0.83 and 0.87.

Results

Descriptive indexes (standard average and deviation) for the scores of anxiety, depression, and physical symptoms, in the experimental groups and control group in the pretest and posttest steps are elaborated further in the following parts.

As can be seen, the average in the ACT group and tDCS group is lower in the posttest compared to the pretest. As is indicated in table 2, it can be inferred that ACT and tDCS lower anxiety, depression, and physical symptoms in those suffering from pain.

In order to examine the effects of ACT and tDCS on the scores of indexes for depression, anxiety, and physical symptoms in the pretest, posttest, and follow-up steps, mixed analysis of variance (ANOVA) was used (one factor inside testables and one factor between testables). The 3 steps of pretest, posttest, and follow-up were considered as testable internal factor and tested grouping in 3 groups as an inter-testable factor.

Table 2. The mean and standard deviation of indexes of anxiety, depression, and physical symptoms separated according to measurement step in groups

Group	Variable	Index	Pretest	Posttest	Follow-up
ACT	Depression	Standard deviation	32.67	23.27	22.7
		Average	4.45	5.12	5.23
tDCS	Depression	Standard deviation	34.80	27.33	26.80
		Average	5.70	3.83	4.71
ACT	Anxiety	Standard deviation	33.60	22.60	22.60
		Average	4.93	4.22	5.14
tDCS	Anxiety	Standard deviation	32.00	25.60	27.07
		Average	4.41	3.79	4.77
ACT	Physical symptoms	Standard deviation	41.53	33.73	31.80
		Average	3.27	3.10	3.36
tDCS	Physical symptoms	Standard deviation	40.13	35.47	35.07
		Average	3.07	3.96	2.69

In order to examine a significant difference among averages of indexes for depression, anxiety, and physical symptoms in the 3 groups in therapy three steps, initially variances homogeneity and sphericity assumptions were taken into consideration. The results are provided in table 3 and 4.

As can be seen, the variances equality assumption has been approved (P< 05.0).

Difference variance for all combinations related to groups (sphericity) should be equal. To examine this assumption, Mauchly's sphericity test was used the results of which are presented in table 4.

As can be seen, the sphericity assumption is not established (P< 05.0). Based on this, questions were selected in the test from the Greenhouse-Geisser standard to obtain a more accurate approximation. A summary of the results of mixed analysis of variance for intergroup factors and intragroup factors is provided in table 5.

The results presented in table 5 indicate that regarding the intergroup factor, the amount of F calculated for the effect of stages (pretest, posttest, and follow-up) at the level of 0.05 is significant for the 3 indexes (P < 0.05). As a result, there is a significant difference among average scores of pretest, posttest, and follow-up for scores of indexes for depression, anxiety, and physical symptoms.

The results of Bonferroni post-hoc test were used to examine the differences between averages in therapy steps. The results indicated a significant difference between scores for indexes of depression, anxiety, and physical symptoms in the pretest, posttest, and follow-up steps. Likewise, there were no significant differences between scores of indexes of depression, anxiety, and physical symptoms in the posttest compared to the follow-up; thus, there have been no significant changes in the scores of indexes of depression, anxiety, and physical symptoms in the posttest compared to the follow-up.

Considering the results presented in table 5, regarding interaction among steps and group factors, F quantity calculated for the effects of steps (pretest, posttest, and follow-up) between the two groups of ACT and tDCS in the level of 0.05 for anxiety indexes is significant (P < 0.05).

Table 3. Examination of the homogeneity of variances in the two groups using Levene's test

Variables index	Physical symptoms	Anxiety	Depression
F	0.07	0.45	0.86
Df 1	1.00	1.00	1.00
Df 2	28.00	28.00	28.00
P	0.78	0.50	0.36

Table 4. Examination of homogeneity of co-variances using Mauchly's sphericity test

Variables index	Physical symptoms	Anxiety	Depression
df	2	2	2
Mauchly's W	0.73	0.44	0.45
P-value	0.01	0.001	0.001

df: Degree of freedom

As a result, there is a significant difference between average scores of pretest, posttest, and follow-up of anxiety in the two groups. Likewise, considering the results presented in table 5 for intergroup factor, F quantity calculated in level of 0.05 for anxiety was significant ($P < 0.05$). Consequently, there is a significant difference between general average score of anxiety in the two groups of ACT and tDCS.

Discussion

The results of the data analysis indicate that ACT and tDCS led to lowering depression, anxiety, and physical symptoms. Moreover, ACT has had a more meaningful effect on lowering anxiety in those suffering from chronic pain compared to tDCS.

Regarding the effectiveness of tDCS on lowering depression, anxiety, and physical symptoms, it can be explained that in this method the right side of the forehead (especially the amygdala) is stimulated more in those suffering from chronic pain, while the left side of the forehead is less stimulated. Therefore, cathodal stimulation (preventive) of the right dorsolateral prefrontal cortex (DLPFC) led to a decrease in processing negative emotions and anodal stimulation (more activity) of the left DLPFC led to an increase in processing positive emotions, because the right hemisphere is mostly in charge of processing negative emotions and the left hemisphere is responsible for processing positive emotions.

Furthermore, the effectiveness of tDCS on depression is related to some other mechanisms. For instance, Wang, Zhu, Rehman, and You (2020) reported that stimulating the DLPEC led to a decrease in the relationship among the anterior cingulate cortex (ACC), the default mode network (DMN), insula, and DLPFC as well as reducing the relationship between the hyocamp and the substantia nigra (SN), and in this way, it improves functioning.

To explain more about the effectiveness of ACT, it should be noted that in ACT theory, it is emphasized that in mental health instead of focusing on eliminating pathogenic factors (Washburn, Yu, Rubin, & Zhou, 2021) the individual should be helped to accept his controlled emotions and perceptions and set him/herself free from verbal rules controlling that has caused problems, and thus, he/she is enabled to give up struggling with them.

Table 5. Mixed analysis of variance of scores for indexes of depression, anxiety, and physical symptoms using the Greenhouse-Geisser standard

Variable	Factors statistical index	SS	df	MS	F	P-value	ETA coefficient
Depression	Test (measurement repetition)	1583.62	1.29	1223.94	46.04	0.001	0.62
	Group test interaction	27.36	1.29	21.14	0.80	0.410	0.03
	Inter-group	86.04	100	86.04	2.035	0.140	0.08
Anxiety	Test (measurement repetition)	1396.96	1.29	1084.23	53.82	0.001	0.66
	Group test interaction	150.29	1.29	116.65	5.79	0.020	0.17
	Inter-group	298.84	100	298.84	8.09	0.010	0.22
Physical symptoms	Test (measurement repetition)	949.76	1.58	601.62	49.73	0.001	0.64
	Group test interaction	84.87	1.58	53.76	3.44	0.07	0.14
	Inter-group	32.40	100	32.40	2.52	0.120	0.08

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

During ACT, negative attitude toward the future and mental obsessions are changed to positive attitudes; in addition, ACT lowers anxiety level and improves individual independency. Furthermore, in ACT, the client learns through detachment cognition to see internal happenings as they actually are, not the way he interprets them. This eventually leads to better occurrence of acceptance procedure. This is due to the fact that detachment from emotions and thoughts weakens the performance of some internal processes such as some psychological obstacles. In situations where the individual experiences illogical and saddening thoughts regarding his/her problems, the only right move here is avoidance. With the help of detachment experiences, the client is helped to interact with his obsessive thoughts in a variety of ways. In this way, the level of belief in these thoughts is reduced, and therefore, the thoughts may exist to the same extent but occur in a different way. In fact, such thoughts are no longer threatening, because they are deemed only thoughts and not reality. Therefore, acceptance and commitment may lead to some positive changes in anxiety state through the combining of cheerfulness with seeing experiences clearly and accepting them.

Acceptance and commitment are an unbiased and balanced judgment of awareness that helps us to see clearly and accept emotions and physical phenomena just as they occur. Therefore, teaching such techniques to individuals helps them accept their emotional signs, and by accepting them, they pay less attention to such thoughts and they become less sensitive to them and it may improve their self-functioning. Likewise, teachings during the first and second sessions (including teaching mental flexibility, mental acceptance, mental awareness, and detachment cognition) are very helpful.

Teaching cognitive detachment provides patients with the opportunity to take a step back, look at their problems from a distance, and talk about them without difficulty and it helps them find and specify their real personal values and turn them into their special behavioral goals.

During the sessions that are focused on improving mental awareness, those under treatment re-evaluate their positive and negative thoughts and try to judge their problems accurately. Moreover, when an individual is not trying to reduce his thoughts and emotions, and gives up fighting with his emotions and thoughts and instead moves toward the goals he has set in life valuable directions, anxiety is significantly reduced.

Furthermore, as Darvish Baseri and DashtBozorgi (2017) stated, in this research, during ACT, the individuals were trained to improve their life status, reach personal values, eliminate less evitable problems, and thus, improve their health and mental well-being, by increasing their mental cognition of internal experiences instead of mental and practical avoidance of thoughts and social situations.

In fact, as Hayes, Strosahl, Wilson, and Lillis (2010) noted, active and effective confrontation with emotions, not avoiding, changing attitudes toward oneself and challenges, revising values and life goals, and commitment to a social goal are the main elements of this method.

Regarding the lasting effectiveness of ACT over time, it should be said that in line with previous researches, instead of teaching more or better strategies for changing or reducing unwanted emotions and thoughts, individuals are trained skills to find a way to see negative emotions and thoughts the way they are and this is what distinguishes ACT from other methods.

Brooks et al. (2021) stated that combining tDCS therapy with cognitive-behavioral methods leads to a significant reduction in stress and anxiety. Due to time and

execution limitations in the present study, it was not possible to simultaneously implement ACT and tDCS. In this research, only a questionnaire was used to collect information and due to execution limitations, interviewing for the collection of research data was avoided.

Researchers are recommended to use this research in patients suffering from other chronic pains and compare the results to the results of this research in order to be able to discuss the extent and effectiveness of the result with more confidence.

Moreover, tDCS and ADT can be implemented simultaneously in future researches and the extent of their effects should be compared to the results of the present research.

Conclusion

The results of this study showed that acceptance-based therapy and direct electrical stimulation have a significant effect on anxiety, depression, and pain. ACT) is more effective in reducing anxiety than tDCS. There was no significant difference between the effect of acceptance-based therapy and direct electrical stimulation on depression and physical symptoms.

Conflict of Interests

Authors have no conflict of interests.

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None.

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The Effectiveness of Cognitive-Behavioral Therapy on Psychological Distress and Self-Efficacy in Patients with Irritable Bowel Syndrome

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Quantitative Study

Abstract

Background: It is necessary to help people with irritable bowel syndrome (IBS) to solve the problems related to this disease through recognizing the factors affecting psychological distress and self-efficacy in these individuals. The goal of this study was to see how effective cognitive-behavioral therapy (CBT) is in reducing psychological distress and increasing self-efficacy in patients with IBS.

Methods: The current research was a semi-experimental study with a pretest-posttest design, follow-up, and a control group. Patients with IBS who were referred to medical centers in Babol, Iran, in 2019 made up the statistical population of this study; 30 individuals were chosen through convenience sampling based on the study inclusion and exclusion criteria and were assigned to the experimental or control group (15 individuals in each group). A demographic questionnaire, the Kessler Psychological Distress Scale (K10) (Kessler et al., 2002), and the General Self-Efficacy Scale (GSE) were used to collect data. At a significance level of 0.05, the data were analyzed using repeated measures analysis of variance (ANOVA) and the Bonferroni test in SPSS software.

Results: In individuals with IBS, CBT was found to be beneficial in reducing psychological distress ($P < 0.001$) and increasing self-efficacy ($P < 0.001$). The favorable effect of CBT on psychological distress ($P = 0.105$) and self-efficacy ($P = 0.925$) persisted at the follow-up stage.

Conclusion: Given the beneficial effects of CBT on psychological distress and self-efficacy in patients with IBS, it is suggested that this training method be used in the planning of mental health measures, particularly for patients with IBS.

Keywords: Cognitive-Behavioral Therapy; Psychological Distress; Self-Efficacy; Irritable Bowel Syndrome

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Introduction

Irritable bowel syndrome (IBS) is one of the most common functional digestive disorders characterized by uncertain causes, prolonged and unpredictable periods, and few drug effects (Rafiei, Hosseinabadi-farahani, Aghaei, Hosseinzadeh, Naseh, & Heidari, 2017). Symptoms include non-specific complaints such as nausea, vomiting, abdominal pain, diarrhea, and constipation that cannot be explained by biological or structural abnormalities (Yilmaz, Celebi, Kaya, & Baydur, 2017). The prevalence of this syndrome is 10-20% and it has high economic and human costs for the patients, their families, and society; IBS is the second cause of absenteeism after the common cold and is associated with hospitalization and frequent visits to the doctor and, like depression and chronic kidney disease (CKD), it affects the quality of life (QOL) of patients (Goldwag, Wilson, Ivatury, Tsapakos, & Wilson, 2020).

Psychological distress, which is linked to unpleasant mental states including depression, worry, and tension, is one of the psychological symptoms of IBS patients. Psychological distress is the most important and the second risk factor for a wide range of disorders, including heart failure, cancer, and IBS, and in people with stomas (Jin, Ma, Li, Zhang, & Jim+¬nez-Herrera, 2020). According to recent studies, those who are more distressed have more complaints regarding physical sickness symptoms and have more physical, psychological, and social issues (Repic, Ivanovi-ç, Stanojevic, & Trgovcevic, 2016). Individuals with IBS have also been found to have high levels of anxiety and sadness (Silva, Duarte, Cruz, de Araujo, & Pena, 2020).

The results of the research by Elfeki et al. (2018) have shown that self-efficacy as a personal coping source can facilitate IBS and cause greater acceptance of this disease. Self-efficacy is a psychological concept derived from Albert Bandura's theory of social learning and emphasizes people's understanding of their skills and abilities in successfully performing a task. In other words, self-efficacy affects perceptions of effective, adaptive, and choice of environment and conditions that people try to achieve (Boutry, Bertrand, Ripoche, Alonso, Bastide, & Prudhomme, 2021).

The psychological consequences of IBS and its treatment have been the subject of many research activities. In this regard, the cognitive-behavioral approach is one of the approaches in psychology that has attracted the attention of researchers and psychologists in recent decades. This approach can help patients minimize the negative psychological effects of their disease. Strong empirical evidence for the application of cognitive-behavioral therapy (CBT) for common psychological problems in physical diseases is completely in line with the provision of new health care and emphasis on experimental support treatments. Cognitive-behavioral models and treatment regimens have been created for a wide range of mental disorders and chronic medical conditions, including IBS, and many of them have been proven beneficial in clinical studies (Kent, Long, & Bauer, 2015).

We believe that this method can be good for enhancing mental health because of the effective function of psychological elements in patients' adaptation, the favorable effects of CBT on psychological distress and self-efficacy, and the aforementioned facts. It can also aid in the creation of a positive environment that boosts self-efficacy and psychological well-being.

Methods

The goal of this study was to see how effective CBT is in reducing psychological distress and increasing self-efficacy in patients with IBS.

The current research was a semi-experimental study with a pretest-posttest design, follow-up, and a control group. The statistical population included all IBS patients referred to medical centers in Babol, Iran, in 2019. Using convenience sampling method, 30 individuals were selected based on the study inclusion and exclusion criteria. They were randomly assigned to the CBT (n =15) and control groups (n =15) based on the inclusion and exclusion criteria. The required sample size was calculated to be 45 individuals in total based on effect size = 0.40, α = 0.95, 1-β (err prob) = 0.80 test power, and 10% loss of participants in each group. Patients with IBS (based on medical records) who were 30 to 60 years old, able to participate in treatment sessions, did not have acute psychosis (psychosis) (based on medical records), did not have neurological disorders such as brain injury, stroke, Alzheimer's, or Parkinson's (based on medical records), had reading and writing literacy, and gave an informed consent to participate in the study met the inclusion criteria. The exclusion criteria included absence from more than 2 treatment sessions. The ethical principles taken into consideration included the following: data privacy and confidentiality were observed so that the collected information was only used for this study, respect for dignity and rights, privacy, secrets, and freedom of subjects were also considered. Other ethical principles observed in this study included explaining the research objectives to them, obtaining an informed consent from them, being optional, giving them the right to withdraw from the study at any stage, without the disadvantage of reality therapy based on the theory of choice and treatment of acceptance and commitment, answering their questions, and providing the results to the subjects if they wished. Treatment sessions were also taught to the control group to adhere to ethical norms.

It took 2 and a half months to complete the research. The experimental group received 10 sessions of CBT, while the control group received no training. The experimental group participants and post-test certificates were then photographed, and a follow-up was conducted 1 and a half months after the training courses were completed. Based on Beck's training program, CBT was delivered in 8 weekly 90-minute sessions for 2 months. Table 1 shows the group CBT program.

Age, sex, marital status, level of consumption of alcohol, history of hypertension, diabetes, history of psychiatric disease, and disabling and chronic physical diseases are all included in the researcher-made questionnaire used in the present study.

The General Self-Efficacy Scale: The General Self-Efficacy Scale (GSE) (1979) was constructed by Schwarzer and Jerusalem (1995). This scale includes 17 items with 2 separate subscales of general self-efficacy and social self-efficacy, which was decreased to a 10-item scale (GSE-10) in 1981 and has been translated into 28 other languages so far. The items are scored on a 4-point scale ranging from 1 to 4. The minimum and maximum total scores of the scale are 10 and 40, respectively.

Table 1. Group Cognitive Behavioral Therapy Program

Sessions	Content
First	Explaining the goals and programs of cognitive-behavioral therapy with a focus on depression, coping strategies, and adaptation by the therapist
Second	Facing depression following abortion
Third	Confrontation with coping action and applying coping strategies in the wake of abortion
Fourth	Confrontation with adaptation in the aftermath of abortion
Fifth	Cognitive restructuring and a deep understanding of depression - creating efficient behavior
Sixth	Cognitive restructuring and deep understanding of coping strategies - creating efficient behavior

Schwartzer et al. (Thyo, Emmertsen, Pinkney, Christensen, & Laurberg, 2017) reported that the correlation between this scale and the scores of depression, anxiety, and optimistic attributional style were -0.60, 0.52, and -0.55, respectively, and in the Spanish sample, -0.42, 0.43, and 0.57, respectively.

Kessler Psychological Distress Scale: The Kessler Psychological Distress Scale (K10) was constructed by Kessler et al. (2002) to identify mental disorders in the general population. The K10 has 2 versions with 10 questions and 6 questions (Kessler et al., 2002). The items of this scale are scored on a 5-point Likert scale including always (4), sometimes (3), somewhat (2), rarely (1), and no time (0). The overall score of the scale ranges between 0 and 40; higher scores indicate greater psychological distress. Yaghoumi (Aktas & Gocman, 2015) assessed its validity and reliability and reported a Cronbach's alpha coefficient of 0.93 and a ballad and Spearman-Brown reliability coefficient of 0.91.

The Levene's test was used to study the homogeneity of variances, Kolmogorov Smirnov test to evaluate the normality of data distribution, and Box's M test and Mauchly's sphericity test were used to investigate the assumptions of the inferential test. SPSS software (version 22; IBM Corp., Armonk, NY, USA) was used for statistical analysis. The tests had a significance threshold of 0.05.

Results

The mean ± SD age of the participants in the experimental and control groups was 39.11 ± 7.80 and 40.80 ± 7.81 years, respectively. In terms of age, there was no significant difference between the two groups (P = 0.448). In terms of gender, the experimental group consisted of 20 (80%) women and 5 (20%) men, while the control group consisted of 18 (72%) women and 7 (28%) men. In terms of gender distribution, there was no significant difference between the two groups (P = 0.18).

In the CBT group, the mean QOL and self-efficacy scores increased in the posttest compared to the pretest, as shown in table 2. The results of Box's M, Mauchly's sphericity, and Levene's tests were assessed for adherence to the assumptions before repeating the measuring variance analysis. The homogeneity criterion of the variance-covariance matrixes was not rejected since Box's M test was not significant for any of the research variables. Furthermore, none of the variables were significant in Levene's test, indicating that the premise of equal intergroup variances was not rejected. Finally, Mauchly's sphericity test results showed that this test is also significant for the research variables, indicating that the assumption of equal variances within-subjects (spherical assumption) is not observed (P > 0.001); therefore, the Greenhouse-Geisser test was used to investigate the univariate test results for intra-group effects and interactions. Moreover, at a significant threshold of 0.05, the Greenhouse-Geisser test revealed a significant difference in terms of the effectiveness of CBT on QOL and self-efficacy in both experimental and control groups, with a value of 0.18 (P > 0.001).

Table 2. Mean (SD) of quality of life by groups during the study

Variables	Group	Pretest	Posttest	Follow-up
		Mean ± SD	Mean ± SD	Mean ± SD
Quality of life	CBT	26.43 ± 4.66	32.56 ± 3.44	32.11 ± 2.65
	Control	25.85 ± 3.26	24.75 ± 4.45	36.78 ± 2.66
Self-efficacy	CBT	27.83 ± 4.72	33.60 ± 3.40	34.10 ± 2.77
	Control	27.97 ± 3.44	28.88 ± 5.65	28.77 ± 3.33

Table 3. Investigation of the effect of time and group on quality of life and self-efficacy using repeated measures analysis of variance

Variables	Effect	F	P-value	Eta
Quality of life	Time	11.54	0.001	0.23
	Group*Time	42.49	0.001	0.63
	Group	38.01	0.001	0.61
Self-efficacy	Time	10.07	0.001	0.19
	Group*Time	95.12	0.001	0.82
	Group	7.44	0.001	0.18

By repeatedly measuring the QOL variable for the effect of time ($P < 0.001$) and group ($P < 0.001$), as well as ANOVA of the self-efficacy variable for the effect of time ($P < 0.001$) and group ($P < 0.001$), the results presented in table 3 show that ANOVA is significant. This indicates a significant difference between the experimental and control groups in terms of both the QOL and self-efficacy variables during the research stages , illustrating the intervention's effect. The Bonferroni test was performed to look into the differences between the groups, and the findings are shown in table 3.

The experimental group's QOL scores were greater at the posttest stage than at the pretest stage ($P < 0.001$). QOL in the follow-up stage differed significantly from that in the pretest stage ($P < 0.001$), but there was no significant difference between the posttest and follow-up stages ($P = 0.105$). The results revealed that self-efficacy levels in the training group were higher in the posttest stage than pretest stage ($P < 0.001$), and self-efficacy in the follow-up stage differed significantly from that in the pretest stage ($P < 0.001$). However, there was no significant difference in the QOL or self-efficacy between the posttest and follow-up stages ($P = 0.925$), indicating that the benefits of CBT persisted until the follow-up stage.

Discussion

The goal of this study was to see how effective CBT was at reducing psychological distress and increasing self-efficacy in patients with IBS. The findings showed that CBT improved psychological distress and self-efficacy in patients with IBS. This finding is consistent with that of Smith(Wang, Wang, Zhu, Song, & Jiang, 2016).

To explain this finding, cognitive-behavioral group therapy first allows patients to freely communicate their dysfunctional thoughts and beliefs, and cognitive distortions without fear, before investigating and correcting those thoughts, beliefs, and distortions. Cognitive restructuring, also known as logical empiricism, assists people in identifying the flow of their anxious thoughts and even behaviorally testing their dominant anxiety ideas by applying logical reasoning to evaluate the substance of their anxious thoughts in the face of reality (Tewari, et al., 2015). Therefore, CBT plays an important role in creating or changing cognition and attitude in people.

Table 4. The results of the Bonferroni post hoc test for paired comparison of meantime measurement of research variables

Variables	Stages		MD	SE	P-value
Quality of life	Pretest	Posttest	5.17	1.04	0.001
		Follow-up	3.82	1.16	0.001
	Posttest	Follow-up	1.24	0.59	0.105
Self-efficacy	Pretest	Posttest	2.34	0.47	0.001
		Follow-up	3.46	0.78	0.001
	Posttest	Follow-up	0.55	0.66	0.925

MD: Mean Difference; SE: Standard eror

In explaining this finding, it can be said that CBT improves patients' self-efficacy. According to the cognitive-behavioral model, what people believe affects their feelings and behaviors. Patients' cognitions and attitudes also have a significant effect on perceived stress. Negative cognitions and attitudes about control of myriads improve perceived stress in the individual. One of the fundamental principles of the cognitive-behavioral model is the mutual impact and interaction between the person's knowledge or beliefs about the disease (thoughts), his/her feelings, his/her behaviors, and his/her relationships with others. Moreover, taking part in CBT sessions and doing the assignments outside the sessions corrects patients' wrong beliefs and improves their self-efficacy (Chen, Teo, Phui, & Saman, 2015). Cognitive-behavioral training emphasizes the importance of acquiring skills and using these skills. During the training, people learn effective behavioral methods in addition to working on negative thinking. The skills they acquire will be valuable resources for them throughout their life. These individuals will gain the ability to make automated thinking and emotions relate to them, as well as evidence for approval and non-approval. Provide their approval and achieve some kind of self-awareness (Wang et al., 2015). Considering that followers of the cognitive-behavioral approach believe that the existence of some common mental errors can impair our interpretation and perception of reality, and subsequently, cause inappropriate moods and behaviors; therefore, cognitive-behavioral training can be effective in improving patients' self-efficacy, depending on their ability to clearly, correctly, and effectively convey their thoughts, feelings, needs, and desires.

One of the study's limitations was that the IBS patients were all from Babol; thus, extrapolating the findings to IBS patients from other parts of the province and country should be done with caution. A questionnaire was employed in this study, which is one of the study's flaws since individuals may have answered the questions under the effect of social desirability. The research was semi-experimental and lacked the advantages of true experimental designs. It is proposed that more studies be performed in a broader geographical area in order to more reliably generalize the findings. Considering that the present study was conducted on the community of IBS patients, in future researches, the class and social basis of the subjects should be considered as an influential variable in the effectiveness of CBT skills training. Considering that the present study was a quantitative research, it is suggested that a qualitative method (grounded theory based on semi-structured interview) be used in future researches. According to the findings of this study, mental health professionals and persons working in the field of health should encourage patients with IBS to improve their mental health by devising and implementing appropriate ways based on CBT training.

Conclusion

It can be concluded from the data of this study that cognitive-behavioral treatment improves psychological distress and self-efficacy in patients with IBS.

Conflict of Interests

Authors have no conflict of interests.

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A Comparative Study on the Effects of Cognitive-Behavioral Therapy and Emotion-Focused Therapy on Distress Tolerance in Patients with Irritable Bowel Syndrome

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Quantitative Study

Abstract

Background: The present study was conducted with the aim of comparing the effects of cognitive-behavioral therapy (CBT) and emotion-focused therapy (EFT) on distress tolerance in patients with irritable bowel syndrome (IBS).

Methods: The present study was conducted using a quasi-experimental method with a pretest-posttest design, follow-up, and a control group. The statistical population of the present study included IBS patients referred to Masoud Gastroenterology and Liver Clinic in Tehran, Iran. From among these patients, 35 patients were randomly selected and were assigned to 3 groups (2 experimental groups and 1 control group). The experimental groups took part in 8 weekly sessions of CBT or EFT and the control group did not receive any psychological intervention. The Distress Tolerance Scale (DTS) (Simons & Gaher, 2005) was used as the measurement instrument in this study. Two-factor repeated measures analysis of variance (mixed ANOVA) and one-way analysis of covariance (ANCOVA) were used to analyze the data.

Results: The results revealed that CBT and EFT were effective on the distress tolerance of IBS patients and both therapies had a lasting effect over time. There was no significant difference between the effects of the two methods on distress tolerance.

Conclusion: CBT and EFT are effective interventions in enhancing the distress tolerance of IBS patients and these interventions can be used in programs designed to manage the symptoms of this disease.

Keywords: Cognitive-behavioral therapy, Emotion-focused therapy, Distress tolerance, Irritable bowel syndrome

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Introduction

Irritable bowel syndrome (IBS) is a common gastrointestinal disorder that manifests as abdominal pain or discomfort along with bowel habits (for example, diarrhea, constipation, or both) in the absence of a specific organ disease (Zamani, Alizadeh-Tabari, & Zamani, 2019). IBS is considered to be the most common, costly, and disabling disorder of the gastrointestinal tract (Zamani et al., 2019). Although it can occur in both men and women, at all ages, and in all socioeconomic groups (Eriksson, Andren, Kurlberg, & Eriksson, 2015), it is more commonly diagnosed among younger patients and women (Pashing & Khosh Lahjeh Sedgh, 2019). The prevalence of IBS reported across the world varies between 5 and 20% (Eriksson et al., 2015). The pathology of this disease has remained unknown. Several studies have emphasized the role of psychological factors in the onset and course of IBS, especially in people with severe symptoms (Bagherian Sararoudi, Afshar, Adibi, Daghaghzadeh, Fallah, & Abotalebian, 2011). There is no single treatment for IBS. Psychotherapy methods can improve the symptoms of IBS (Bagherian Sararoudi et al., 2011). Distress tolerance is one of the factors that can determine the incidence of psychological problems in people (Azizi, Mirzaei, & Shams, 2010). Distress tolerance is often referred to as the ability of individuals to resist negative or unpleasant emotional states (Azizi et al., 2010). Distress tolerance can be the result of cognitive or physical processes, but is experienced as an emotional state that is often characterized by a desire to act to alleviate the emotional experience (Kolivand, Nazari Mahin, Jafari, 2015). Distress tolerance is multidimensional in nature and includes the ability to tolerate and evaluate and the capacity to accept emotional states, and the way a person regulates emotion, the amount of attention absorbed by negative emotions, and the amount of its contribution to the development of dysfunction (Leyro, Zvolensky, & Bernstein, 2010). The structure of distress tolerance is such that it supports progress and survival under conditions such as drug use, anxiety, personality disorders, and mood (Leyro et al., 2010). People who are less tolerant of distress than others are more likely to respond to stress (Leahy, 2003). Thus, identifying effective interventions to enhance distress tolerance in IBS patients can provide them with coping strategies in the face of effective stressors as one of the risk factors of this disease and can be helpful in the treatment of this disease and coping with it (Schmidt, Richey, Cromer, & Buckner, 2007). Cognitive behavioral therapy (CBT) and emotion-focused therapy (EFT) as effective and widely used therapies have been used to increase distress tolerance in IBS patients. During cognitive-behavioral interventions, one learns to consider his or her thoughts and beliefs as hypotheses the validity of which needs to be tested. Moreover, in this method, the individual is encouraged to identify the relationship between dysfunctional thoughts and negative emotions and stress, and to overcome stressful factors and thoughts through cognitive reconstruction and coping-based tasks (Ebrahimi et al., 2015). CBT is based on the hypothesis that lifestyle, behavioral patterns, and attitudes toward the self and the world affect the level of anxiety experienced, and the assessment sessions will reveal which cognitive and behavioral patterns exacerbate or perpetuate IBS symptoms (Ebrahimi et al., 2015). Emphasizing the importance of awareness, acceptance, and recognition of emotions and their visceral experience, EFT helps clinicians become aware of their emotions and experience, accept, manage, and explore their different dimensions. EFT is based on the principle that we can only change when we accept ourselves as we are (Carpenter, Angus, Paivio, & Bryntwick,

2016). The underlying hypothesis of EFT is that emotion is a fundamental and determining factor in setting behavioral patterns and information processing, facilitating one's adaptation to others and conditions (Carpenter et al., 2016). Hence, emotions should be processed and accepted so that their meaning can be determined which will pave the way for an increase in the level of distress tolerance in IBS patients by increasing positive emotions (Vujanovic, Dutcher, & Berenz, 2017). To determine the most effective intervention on increasing the level of distress tolerance, the present study was conducted to compare the effects of CBT and EFT on distress tolerance in IBS patients.

Methods

The present research was conducted using a quasi-experimental method with a pretest-posttest design, follow-up, and a control group. The statistical population of this study included all IBS patients referred to Masoud Gastroenterology and Liver Clinic in District 6 of Tehran, Iran, in 2019 to receive psychological counseling according to the diagnosis of gastroenterologists. After obtaining the permission of the Ethics Committee of Hormozgan University of Medical Sciences, Iran, (IR.HUMS.REC.1398.331), the patients were enrolled into the study based on the inclusion and exclusion criteria. The study inclusion criteria included lack of psychological drugs use, lack of any psychological therapies during the last 3 months, willingness to participate in the study, a minimum education level of diploma, lack of addiction to any drug, commitment to attending treatment sessions, and answering the Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire (The high quality of life in patients did not require strengthening their distress tolerance). (Patients who had a high score in the Quality of Life Questionnaire in patients with irritable bowel syndrome did not need to increase their distress tolerance).The study exclusion criteria included a history of colon cancer, a colon disease, and unwillingness to participate in the study. Eligible patients were selected and assigned to 3 groups (15 patients in each group) using a convenience sampling method. The intervention groups were treated for 90 minutes in 8 weekly sessions and the control group did not receive any psychological intervention. During treatment, 7 patients were excluded from the research due to lack of regular attendance at the treatment sessions, lack of timely performance of tasks, and for personal reasons, and finally, 38 people remained in the research, 11 in the CBT group, 12 in the EFT group, and 15 in the control group. After 3 months, 1 subject in the EFT group and 2 subjects in the control group were excluded from the analysis due to lack of access to and completion of the questionnaires, and finally, data of about 35 people (11 patients in Experimental Group 1, 11 patients in Experimental Group 2, and 13 subjects in the control group) were analyzed.

Patients, Instruments, and Interventions: The measurement instruments of this study included demographic information questionnaire (including questions on age, gender, and marital status), the IBS-QOL questionnaire (Gholamrezaei et al., 2011), and the Distress Tolerance Scale (DTS). The DTS is designed by Simons and Gaher (2005). The main DTS form includes 16 items and its Persian version includes 15 items in the 4 subscales of tolerating emotional distress, absorption by negative emotions, mental assessment of distress, and adjusting efforts to relieve anxiety. The items are scored on a 5-point scale, including strongly agree, slightly agree, equally agree and disagree, slightly disagree, and strongly disagree. A high score on this scale indicates high distress tolerance. The alpha coefficient obtained for the subscales of tolerance,

absorption, evaluation, and adjustment, and the whole scale were 0.72, 0.82, 0.78, 0.70, and 0.82, respectively. The CBT protocol used in this study was based on the model proposed by Fouladi, Mohammadkhani, Shahidi, and Ebrahimi Daryani (2018). Its therapeutic sessions included 8 individual therapy sessions once a week for 90 minutes to increase distress tolerance and improve symptoms by improving bowel habits, developing appropriate nutritional models, identifying and correcting dysfunctional thoughts and cognitive errors, reducing stress, reducing focused attention to symptoms of disease, and preventing the recurrence of the disease (Table 1).

The model used in EFT is based on the Greenberg Therapeutic Guideline (developer of this therapy) (Elliott & Greenberg, 2007). Therapeutic sessions included 8 sessions of treatment once a week for 90 minutes in the 3 stages of emotion recognition, emotion regulation, and behavioral measures to increase resilience and improve the symptoms of the disease by improving bowel habits, developing appropriate nutritional models, identifying primary and secondary emotions, self-reinforcement, focusing attention on neglected emotions and experiences, and preventing disease recurrence (Table 2).

The subjects of the present study included IBS patients who referred to gastroenterologists. The DTS was completed by all referred individuals. The patients were randomly divided into 3 groups: the first group received CBT treatment, the second group received EFT treatment, and the third group did not receive any psychological treatment. The DTS was completed by all patients before, after, and 3 months after the intervention. Control group patients were also tested at baseline, after 2 months, and after 3 months to analyze the research hypotheses, two-way repeated measures analysis of variance (mixed ANOVA), one-way analysis of covariance (ANCOVA), and Bonferroni's method of pairwise multiple comparisons were used. To compare the differences between the groups, mixed ANOVA with the measurement of group differences was used. Before using this test, its assumptions including normality of the data and the homogeneity of the variance matrices, were tested using the Kolmogorov-Smirnov test and Levene's test, respectively. In general, there was no barrier to using repeated measures ANOVA.

Results

In the present study, out of 87 referred patients, 32 were excluded due to unwillingness to participate in the research project.

Table 1. Description of cognitive-behavioral therapy sessions

Session	Content
1	Introducing of individuals to each other and treatment contract, The purpose is to clearly follow the rules of treatment) providing educational information about irritable bowel syndrome and preparing a list of individual problems and relaxation education
2	Explaining automatic thoughts and irritable bowel symptoms, practicing cognitive review
3	Introducing cognitive distortions of automatic thoughts related to disease symptoms and related emotions
4	Introducing pain theory, practicing mind distraction methods, determining pain baseline, muscle relaxation training, and explaining mental imagery for pain control
5	Extracting automatic thoughts about triggering situations, training and practicing anxiety management techniques, coping with it, identifying socio-cultural sources of shameful reactions to irritable bowel syndrome symptoms, and explaining patient competency standards
6	Explaining anger and its symptoms in the cognitive model, explaining training and cognitive-behavioral exercises for anger management, teaching bold behavior, problem solving skills training, explaining self-efficacy and its relationship with problem solving skills, and explaining its relationship with irritable bowel syndrome symptoms
7	Identifying and challenging dysfunctional attitudes of high standards (negative perfectionism)
8	Explaining the ways of terminating treatment, coping with the anxiety related to termination of treatment, posttest, saying farewell, and making an appointment for follow-up

Table 2. Description of emotion-focused therapy sessions

Session	Content
1	Introducing of individuals to each other and treatment contract, providing educational information about irritable bowel syndrome and preparing a list of patient's problems and conceptualizing the emotion-focused treatment
2	Identifying basic emotions, identifying conflicting, dual, and critical feelings about self and important and influential people in life
3	Stating and understanding the effect of irrational thinking on emotional turmoil and teaching recognition of primary and secondary emotions
4	Identifying the underlying emotional processes and identifying problem situations
5	Identifying emotional schemas, emphasizing the acceptance of experiences, visual encounter (Visual exposure), and implementing a one-seat or two-seat design
6	Converting negative emotions into positive emotions, strengthening emotional processing, rebuilding emotions, evoking bad emotions, providing support for emotions, and resolving (Re-evoke bad feelings to become positive emotions.)
7	Teaching the process of transmitting the feelings of hopelessness, guilt, anger of subjects to create and increase their ability to deal with emotions
8	Explaining the ways of terminating treatment, coping with the anxiety related to termination of treatment, posttest, saying farewell, and making an appointment for follow-up

Out of the 55 patients remaining in the study, 10 were excluded according to the inclusion and exclusion criteria. Then, the 45 remaining individuals were randomly divided into 3 groups. During the study, 7 of all patients were excluded due to not attending treatment sessions regularly and not performing the tasks, and 3 patients were excluded from the study due to not answering the test questions at the follow-up stage. In total, 38 IBS patients (21 women) were included in the study. The mean age of the female and male subjects was 39.8 years and 45.6 years, respectively, 11 in the CBT group, 12 in the EFT group, and 15 in the control group (Finally, 35 patients remained in the research design, of which 11 in the first experimental group, 11 in the second experimental group and 13 in the control group). After 3 months, 1 subject in EFT group and 2 subjects in the control group were excluded from analysis due to lack of access to and answering the questionnaires, and finally, data related to 35 people (11 patients in Experimental Group 1, 11 patients in Experimental Group 2, and 13 subjects in the control group) were analyzed. To examine the homogeneity of the 3 research groups in terms of demographic variables (age, gender, and marital status), one-way ANOVA and chi-square test were used (Table 3). The 3 research groups were homogeneous in terms of demographic variables.

Table 4 presents descriptive statistics including the mean and standard deviation of the scores of the subjects of the 3 groups in the studied variables.

CBT and EFT caused an increase in distress tolerance scores, but such a change was not observed in the control group ($p < 0.01$). To evaluate its (evaluate the effectiveness of CBT and EFT therapies on the tolerance of patients with irritable bowel syndrome and their effectiveness over time)effectiveness and compare it among the study groups, one-way ANCOVA and Bonferroni's method of pairwise multiple comparisons were used. To evaluate the persistence of effectiveness, the scores of posttest and follow-up in the 2 experimental groups (CBT and EFT) were compared using the mean test of the 2 dependent groups. Accordingly, distress tolerance is explained and influenced by the type of treatment.

Table 3. Comparison of the study groups in terms of frequency distribution of gender and marital status

Variable		Research group			X^2	P-value
		Cognitive-behavioral therapy	Emotion-focused therapy	Control		
Gender	Male	5	5	4	0.734	0.693
	Female	6	6	9		
Marital status	Single	4	2	6	2.100	0.350
	Married	7	9	7		

Table 4. Mean and standard deviation of research data

Variable	Stage	Cognitive-behavioral therapy (n = 11)	Emotion-focused therapy (n = 11)	Control (n = 13)
		Mean ± SD	Mean ± SD	Mean ± SD
Distress tolerance	Pretest	31.27 ± 7.64	8.08 ± 30.73	32.85 ± 8.25
	Posttest	42.82 ± 6.88	8.99 ± 40.64	32.00 ± 8.25
	Follow-up	43.82 ± 6.76	8.89 ± 41.55	32.15 ± 8.47

Discussion

The present study was conducted to compare the effects of CBT and EFT on the distress tolerance of IBS patients. Based on the results, CBT increased the distress tolerance of these patients, which is consistent with the results of studies conducted by Kolivand et al. (2015) and Lackner Jaccard, Krasner, Katz, Gudleski, and Holroyd (2008). IBS is associated with various social, economic, physical, emotional, and interpersonal consequences, which might lead to increased stress, mental instability, and disability. In CBT, it is inevitable to cope with the crisis (In the context of CBT, illness and crisis are inevitable, but it is possible to increase their tolerance for these situations by changing people's thinking, attitudes and behaviors in relation to unpleasant situations.), but it is possible to increase people's distress tolerance in unpleasant situations by changing their thinking, attitudes, and behaviors in relation to unpleasant situations. Based on the results, EFT also increased the distress tolerance level of these patients, which is consistent with the results of studies conducted by Havaiy, Kazemi, Habibollahi, and Izadikhah (2017), Faghih and Kazemi (2018), and Schmidt et al. (2007). In explaining this result, it can be stated that distress tolerance is an internal psychological source for the facilitation of the overcoming of problems and eliminating of their psychological effects in order to establish and maintain biopsychological balance in stressful and disease conditions (Leyro et al., 2010). Moreover, it can manage stress and facilitate the achievement of relaxation and well-being in individuals (Schmidt et al., 2007). Given what was stated above, CBT and EFT interventions were effective in increasing the distress tolerance of IBS patients, and these interventions can be used to prevent the exacerbation of the disease and accelerate the improvement of clinical symptoms in IBS in the field of health. The present study had some limitations.

In IBS patients, the severity of disease is an important component that was impossible to investigate due to time limitations in this study and the effectiveness of interventions was evaluated without considering the severity of the disease variable. Furthermore, lack of control of intervening variables such as economic and social status, job, level of education, income of research participants was another limitation of the present study. Accordingly, further studies on the effectiveness of CBT and EFT interventions are recommended through controlling the effect of intervening variables and considering the effect of these interventions on the severity of IBS symptoms. Based on the results, it is recommended that psychologists use cognitive-behavioral interventions and EFT in addition to routine medical treatments to increase distress tolerance of IBS patients.

Conclusion

CBT and EFT interventions were effective in increasing the distress tolerance of irritable bowel syndrome patients, and these interventions can be used to prevent

exacerbation of the disease and accelerate the improvement of clinical symptoms of IBS in the field of health. The present study suffers some limitations.

Conflict of Interests

Authors have no conflict of interests.

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Association between Sleep Quality and Mental Health among Medical Students in a University Center in Tehran, Iran

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Quantitative Study

Abstract

Background: Poor sleep quality and mental health problems are relatively common among medical students, and have many consequences in their lives and education. Moreover, some studies have reported that the above two issues affect each other. In Iran, limited studies have been conducted in this field. Therefore, this study was conducted with the aim to determine the frequency of poor sleep quality and mental health problems among medical students and the association between these two variables.

Methods: In this cross-sectional study, which was conducted from January to April 2021, 320 medical students of Shahid Beheshti University of Medical Sciences (Tehran, Iran) participated. Sampling was performed through the stratified method based on gender and educational phase. Data was collected using an online questionnaire including the following components: a researcher-made sociodemographic characteristics questionnaire, the Pittsburgh Sleep Quality Index (PSQI), and the Depression, Anxiety, and Stress Scale-21 items (DASS-21).

Results: The mean age of 320 participants was 22.95 ± 2.59 years and 145 (45.3%) were men. The percentage of medical intern participants (34.7%) was higher than that of basic science (34.4%) and medical extern (30.9%). The mean PSQI score was 8.11 ± 2.99, which shows overall poor sleep quality. The comparison between poor sleepers and good sleepers in terms of sociodemographic variables showed that only grade point average was significantly lower in poor sleepers ($P = 0.049$). The prevalence of some levels of depression, anxiety, and stress among participants was 100%, 100%, and 95.3%, respectively. There were also significant associations between poor sleep quality and all three components of mental health of depression ($P < 0.001$), anxiety ($P < 0.001$), and stress ($P < 0.001$).

Conclusion: Poor sleep quality and mental health problems are interrelated among medical students, and reduce their academic performance. The high prevalence of these problems indicates the importance of the issue, which requires immediate action by the authorities to decrease its consequences.

Keywords: Sleep quality; Mental health; Depression; Anxiety; Medical students

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Introduction

Sleep is a human physiological need and is necessary for the maintenance of physical and mental health (El Hangouche et al., 2018). Poor sleep quality has consequences such as daytime fatigue and drowsiness, poor academic performance, and physical and mental disorders. Therefore, it is essential to identify poor sleep quality and its related factors, and take adequate measures to control them (Abdulah & Piro, 2018).

Numerous studies have reported the prevalence of sleep disturbances among medical students at about 58%, which is a significant amount (Khaksarian et al., 2020). Compared with the general population, medical students are more vulnerable to poor sleep quality, perhaps due to struggling with many challenges during their studies such as heavy workload, time restriction, and night shifts, all of which lead to circadian rhythm disturbances (Damiano, de Oliveira, Ezequiel, Lucchetti, & Lucchetti, 2020, Khero, Fatima, Shah, & Tahir, 2019). Additionally, medical students' cognitive domains (concentration, short-term and long-term memory, decision-making, and logical reasoning) must operate adequately and quickly. Otherwise, they cannot correctly diagnose and treat patients, which will have consequences for patients and themselves (Alotaibi, Alosaimi, Alajlan, & Bin Abdulrahman, 2020).

Moreover, mental health issues, including depression, anxiety, and stress, are also more common among medical students than other students (Zeng, Chen, Wang, Zhang, & Deng, 2019). There are many factors involved in medical students' mental health problems, including age, gender, residence status, level of education, religiosity, and family history of mental illness (Moutinho et al., 2017). Moreover, the high rate of substance use, alcohol abuse, and suicide among medical students as a method of overcoming their mental issues is worrying (Fischbein & Bonfine, 2019). Studies have shown that some mental health issues have a serious impact on sleep quality, and the interaction between sleep quality and poor mental health leads to a vicious cycle (Shi et al., 2020). In Iran, there have been few studies to determine the association between the sleep quality of medical students and their mental health. Hence, to better manage these problems, it is important to determine the prevalence poor sleep quality and its potential risk factors (Janatmakan, Morovatdar, Soltanifar, & Rezaee, 2020).

This study was conducted with the aim to determine the frequency of poor sleep quality and mental health problems among medical students and the association between these two variables.

Methods

This cross-sectional study was conducted from January to April 2021. The study population included first to seventh-year medical students of Shahid Beheshti University of Medical Sciences, Tehran, Iran. Using Cochran's formula, according to a study by Janatmakan et al. (2020), who reported a 51.3% prevalence for poor sleep quality in Mashhad, Iran, and considering $\alpha = 5\%$ and $d = 6\%$, the sample size was calculated as 267 people. The sample size was increased to 320 with an assumption of a 20% incomplete response. Samples were selected through stratified sampling based on educational phase and gender.

Instruments

Data were collected using an online questionnaire. This questionnaire included three sections: a researcher-made questionnaire to extract sociodemographic information, the Pittsburgh Sleep Quality Index (PSQI), and the Depression, Anxiety, and Stress Scale-21 items (DASS-21). Participants were asked about their age, gender,

residence status, educational phase, and grade point average in the sociodemographic section.

Pittsburgh Sleep Quality Index: The PSQI is a self-report questionnaire with 19 items that assess sleep quality during the previous month. The PSQI has 7 sub-categories, including sleep duration, sleep disturbance, sleep latency, daily dysfunction due to drowsiness, sleep efficiency, subjective sleep quality, and need for medication to sleep. Minimum and maximum scores for each sub-category are 0 (no problem) and 3 (have a serious problem), respectively. Finally, all scores are added together and a number between 0 and 21 is obtained; a score > 5 indicates poor sleep quality. The validity and reliability of the Persian version of the PSQI questionnaire have been reported. The internal consistency of this questionnaire was acceptable with the Cronbach's alpha coefficient of 0.77 (Farrahi, Nakhaee, Sheibani, Garrusi, & Amirkafi, 2012).

The Depression, Anxiety, and Stress Scale-21 items: The validity and reliability of this questionnaire have been reported by Sahebi, Asghari, and Salari (2005). The DASS-21 contains 21 statements that assess the mental health of individuals over the previous week. Each statement is scored on a Likert scale ranging from 0 (never) to 3 (almost always). There are 7 questions about each of the areas of depression, anxiety, and stress. The scores are added up to determine the total score of the scale. A depression score < 5, anxiety score < 4, and stress score < 8 are considered normal.

Statistical analysis: SPSS software (version 23.0.; IBM Corp, Armonk, NY, USA) was used to analyze the data. Categorical variables were described by frequency and percentage. Numerical variables were reported as mean and standard deviation. Chi-square test, independent-sample t-test, and one-way ANOVA were used to analyze the data. P-value < 0.05 was considered statistically significant.

Ethical considerations: This study was approved by the Institutional Research Ethics Committee and Vice-Chancellor in Research Affairs of Shahid Beheshti University of Medical Sciences (ID: IR.SBMU.RETECH.1399.791). The study was a project based on the Helsinki Declaration 2000. Questionnaires were unnamed, online informed consent was obtained from participants, and the participants information were kept confidential.

Results

The sociodemographic characteristics of the participants are presented in table 1.

Table 1. Sociodemographic characteristics of the participants (n = 320)

Variables	Values*
Mean age	22.95 ± 2.59
Gender	
Male	145 (45.3)
Female	175 (54.7)
Educational phase	
Basic sciences	110 (34.4)
Medical externship	99 (30.9)
Medical internship	111 (34.7)
Residence status	
Home with family	174 (54.4)
Home alone	44 (13.8)
Home with other students	10 (3.1)
Dormitory	29 (28.7
Grade point average	17.14 ± 1.12
Mean age	22.95 ± 2.59

*Values are expressed as No. (%) or mean ± SD.

The mean age of the 320 participants was 22.95 ± 2.59 years, and 145 (45.3%) participants were men. The percentage of medical intern participants (34.7%) was higher than that of basic science (34.4%) and medical extern (30.9%). The most common residence status was home with family (54.4%), followed by home alone (13.8%).

The mean PSQI score was 8.11 ± 2.99, which shows overall poor sleep quality. There were no significant differences between poor sleepers and good sleepers in terms of age (P = 0.111), gender (P = 0.662), educational phase (P = 0.223), and residence status (P = 0.461); however, poor sleepers had a lower grade point average than good sleepers (P = 0.049). We also compared different sleep quality sub-categories based on educational phase in table 2. As shown in the table above, subjective sleep quality (χ^2 = 15.145; P = 0.019) and sleep disturbances (χ^2 = 10.215; P = 0.037) differed significantly between various educational phases; but the other sub-categories did not differ significantly.

Table 2. Comparison of the Pittsburgh Sleep Quality Index sub-categories between educational phases

Sleep quality components	Basic sciences (n = 110)	Medical externship (n = 99)	Medical internship (n = 111)	All students (n = 320)	χ^2	P-value
PSQI global score						
Poor sleep quality	85(26.6)	77(24.0)	95(29.7)	257(80.3)	2.997	0.223
Good sleep quality	25(7.8)	22(6.9)	16(5.0)	63(19.7)		
Subjective sleep quality						
Very good	26(8.2)	11(3.4)	11(3.4)	48(15.0)	15.145	0.019
Fairly good	52(16.2)	66(20.6)	67(21.0)	185(57.8)		
Fairly bad	30(9.4)	18(5.6)	30(9.4)	78(24.4)		
Very bad	2(0.6)	4(1.3)	3(0.9)	9(2.8)		
Sleep disturbances						
Low	39(12.1)	23(7.2)	21(6.6)	83(25.9)	10.215	0.037
Moderate	70(21.9)	73(22.8)	85(26.6)	228(71.3)		
Severe	1(0.3)	3(0.9)	5(1.6)	9(2.8)		
Need for medication to sleep						
Not during the previous month	99(30.9)	83(25.9)	91(28.5)	273(85.3)	8.078	0.232
Less than once a week	9(2.8)	7(2.2)	9(2.8)	25(7.8)		
Once or twice a week	1(0.3)	6(1.9)	5(1.6)	12(3.8)		
Three or more times a week	1(0.3)	3 (0.9)	6(1.9)	10(3.1)		
Daily dysfunction						
Low	17(5.3)	23(7.2)	21(6.6)	61(19.1)	2.178	0.703
Moderate	52(16.2)	42(13.1)	48(15.0)	142(44.3)		
Severe	41(12.9)	34(10.6)	42(31.1)	117(36.6)		
Sleep latency						
< 15 minutes	45(14.0)	36(11.2)	41(12.8)	122(38.1)	5.380	0.496
15-30 minutes	43(13.5)	32(10.0)	36(11.2)	111(34.7)		
30-60 minutes	17(5.3)	21(6.5)	26(8.2)	64(20.0)		
≥ 60 minutes	5(1.6)	10(3.2)	8(2.4)	23(7.2)		
Sleep duration						
≥ 7 hours	81(25.4)	65(20.3)	74(23.1)	220(68.8)	8.344	0.214
6-7 hours	23(7.2)	19(5.9)	18(5.6)	60(18.8)		
5-6 hours	4(1.3)	12(3.8)	15(4.6)	31(9.7)		
< 5 hours	2(0.6)	3(0.9)	4(1.3)	9(2.8)		
Sleep efficiency						
≥ 85%	82(25.6)	74(23.1)	71(22.2)	227(70.9)	5.317	0.504
75-85%	20(6.2)	14(4.4)	26(8.2)	60(18.8)		
65-75%	5(1.6)	6(1.9)	8(2.4)	19(5.9)		
< 65%	3(0.9)	5(1.6)	6(1.9)	14(4.4)		

PSQI: Pittsburg Sleep Quality Index
Values are expressed as No (%).

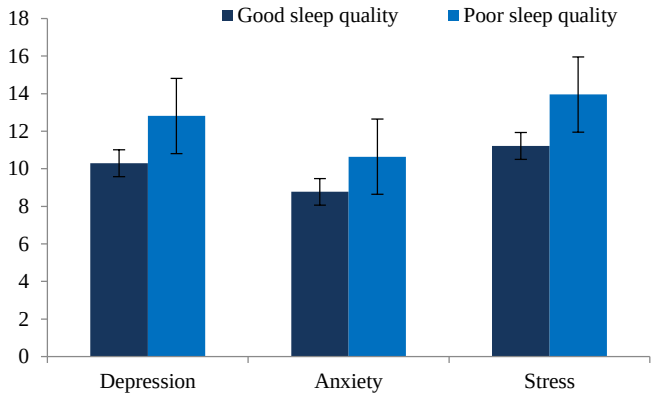

Figure 1. Comparison of DASS-21 scores based on sleep quality

In terms of depression score, 134 (41.9%) individuals were moderate, 80 (25.0%) were severe, and 106 (33.1%) were extremely severe.

In terms of anxiety score, 36 (11.3%) participants were moderate, 108 (33.8%) were severe, and 176 (55.0%) were extremely severe. In terms of stress scores, 15 (4.7%) individuals were normal, 60 (18.8%) were mild, and the remaining 245 (76.5%) were moderate or worse. Figure 1 shows the comparison of mental health status (DASS-21) between educational phases (Figure 2). Moreover, at different educational phases, depression score ($P = 0.036$) and stress score ($P = 0.002$) were significantly different; however, anxiety score was not related to educational phase ($P = 0.905$).

As shown in figure 1, the depression score was higher in bad sleepers (12.81 ± 4.39) compared with good sleepers (10.30 ± 3.14) ($P < 0.001$). Furthermore, anxiety score was higher in bad sleepers (10.64 ± 2.70) compared with good sleepers (8.77 ± 1.59) ($P < 0.001$). Additionally, stress score was higher in bad sleepers (13.95 ± 4.43) compared with good sleepers (11.22 ± 3.37) ($P < 0.001$).

Discussion

The current study presented important findings about sleep quality and mental health among medical students.

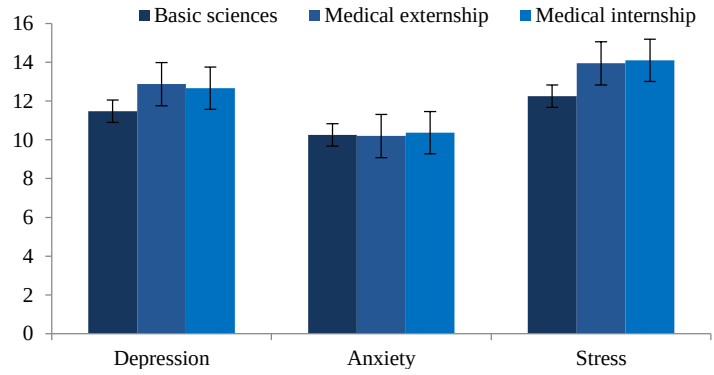

Figure 2. Comparison of DASS-21 scores between educational phases

Generally, sleep quality was poor among medical students. Students' academic

performance is associated with their sleep quality. In addition, a considerable number of participants had some levels of mental health problems. Moreover, the 3 components of mental health (depression, anxiety, and stress) and sleep quality were significantly associated. The above results are consistent with most previous studies and inconsistent with some researches.

Previous foreign studies have reported poor sleep quality among medical students in different countries such as Brazil (39.5%) (Correa, Oliveira, Pizzamiglio, Ortolan, & Weber, 2017), Pakistan (61.2%) (Khero et al., 2019), India (76.4%) (Gupta, Bhardwaj, Nadda, Gill, Mittal, & Gupta, 2020), Morocco (58.2%) (El Hangouche et al., 2018), Ghana (56.2%) (Lawson, Wellens-Mensah, & Attah, 2019), and Saudi Arabia (63.2%) (Al-Khani Sarhandi, Zaghloul, Ewid, & Saquib, 2019). Khaksarian et al. (2020), in a meta-analysis in Iran, also reported that about 58% of medical students were poor sleepers.

The study by Correa et al. (2017) showed that there was poor sleep quality at all levels of education; however, there was no significant relationship between educational levels and sleep quality. First-year and second-year students had worse subjective sleep quality and sleep disturbances than older students (Correaet al., 2017). According to a study by Khero et al. (2019), sleep latency, sleep duration, sleep efficiency, use of sleep medication, and daily dysfunction were worse in clinical students compared to pre-clinical students. The findings of these studies are in line with our findings.

Similar to the result of our study, most previous studies have shown that poor sleep quality is significantly associated with lower grade point average (academic performance) (Lawson et al., 2019; El Hangouche et al., 2018; Maheshwari & Shaukat, 2019; Haile, Alemu, & Habtewold, 2017). In contrast, a study by Al-Khani et al. (2019) has shown that academic performance in poor sleepers was significantly higher than that in good sleepers; the reason for this contradiction is not clear.

The study by Al, Zaher, Turk, Abbas, and Alkhatib (2017) showed that the prevalence of depression, anxiety, and stress among medical students was 52.6%, 35.1%, and 60.6%, respectively. Gender and low income were associated with depression and anxiety. Anxiety was also related to the education phase and was higher in senior students (Al et al., 2017). Shadzi, Salehi, and Vardanjani (2020) reported moderate to severe levels of depression, anxiety, and stress in 48.8%, 50.5%, and 48% of medical students in Shiraz, Iran, respectively. Furthermore, all three mental health problems were significantly associated with poor sleep quality (Shadzi et al., 2020). In addition, in some other studies, depression and anxiety were significantly associated with poor sleep quality (Rezaei, Khormali, Akbarpour, Sadeghniiat-Hagighi, & Shamsipour, 2018; Becker Jarrett, Luebbe, Garner, Burns, & Kofler, 2018). The results of all of the above studies are consistent with our results.

As mentioned, sleep quality and mental health components in our study were worse than in previous studies. This difference can be attributed to two factors. First, unlike previous studies, our study was conducted during the COVID-19 pandemic, which could have affected all parameters, including sleep quality and mental health. Second, workload and academic stress, hours and numbers of shifts, and other factors affecting mental health and sleep quality may be worse in our statistical population.

Our study has some limitations. First, other demographic factors, such as smoking and alcohol abuse could be considered. Second, a similar study had not been performed in our study population to compare the possible effect of COVID-19 on the variables. Third, the design of our study was cross-sectional, in which the causal relationship of the main variables could not be assessed. Therefore, it is

suggested that analytical studies be used for this purpose in the future.

Conclusion

Poor sleep quality and mental health problems are prevalent among medical students, especially senior students. These factors are interrelated and can affect students' academic performance and quality of life (QOL). Therefore, the authorities must take effective steps to screen and improve the sleep quality and mental health of this vulnerable group by adopting appropriate interventions.

Conflict of Interests

Authors have no conflict of interests.

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Comparing the Effectiveness of Schema Therapy and Integrated Cognitive-Speech Approach on Negative Emotions and Distress Tolerance in People Suffering from Stuttering

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Quantitative Study

Abstract

Background: Stuttering is a communication disorder that includes primary and secondary behaviors. One of the problems in generalizing and consolidating the treatment of people with stuttering disorder is the inappropriate attitudes that have been created toward these people. This study was conducted with the aim to compare the effectiveness of schema therapy and integrated cognitive-speech approach on distress tolerance and negative emotions in people with stuttering disorder.

Methods: This quasi-experimental study was performed with a pretest-posttest design, follow-up, and a control group. The statistical population included all people with stuttering disorder of 18 to 30 years of age who referred to speech therapy clinics in Sabzevar, Iran, in 2019. The hidden part of stuttering, which includes emotions, feelings, fears, and worries arises in the minds of stutterers with age. Accordingly, in this study, adult stutterers of 18-30 years of age were considered. The statistical sample included 30 people with stuttering disorder who were selected using convenience sampling and were randomly assigned to two experimental groups and one control group (10 people in each group). The first experimental group received schema therapy in 12 sessions of 60 minutes and the second experimental group received integrated cognitive-speech therapy in 12 sessions of 60 minutes, while the control group did not receive any treatment. The research instruments were the Positive and Negative Affect Schedule (PANAS) designed by Watson and Tellegen (1985) and the Distress Tolerance Scale (DTS) developed by Simmons and Gaher (2005). Data collection was conducted in the pretest, posttest, and follow-up stages. The collected data were analyzed using repeated measures analysis of variance (ANOVA) and Tukey's post hoc test in SPSS software.

Results: The results showed that there was a significant difference between the mean pretest, posttest, and follow-up scores of distress tolerance and negative emotions in the

two experimental groups and control group ($P < 0.05$). Moreover, the significance of the interaction between the stages and the experimental groups in the mentioned variables indicates that, in the posttest and follow-up stages, the mean of the experimental groups differed significantly from that of the control group ($F = 4.67$, $P = 0.016$; $F = 7.658$, $P = 0.002$; $F = 8.87$, $P = 0.001$; $F = 11.56$, $P = 0.001$; $P < 0.05$).

Conclusion: The results showed that the two interventions of schema therapy and integrated cognitive-speech approach could greatly reduce negative emotions and increase distress tolerance and be used in the treatment of patients with stuttering disorder, but only the integrated cognitive-speech approach was effective on the distress tolerance index.

Keywords: Schema therapy; Integrated cognitive-speech approach; Negative emotions; Distress tolerance; Stuttering

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Introduction

Stuttering is a disorder that usually begins during the first year of life. Stuttering is characterized by interruption in the natural flow of speech due to motor and involuntary speech events. Stuttering involves one or more of the following: repeating sounds, lengthening of sounds, inserting extra sounds, pausing between words, visibly substituting words to avoid a pause or audible interruption (Sadock, Sadock, & Ruiz, 2014). Stuttering usually occurs before 12 years of age, although, in most cases, it can be detected from the age of 18 months to 9 years. Moreover, its peak period is between 2 to 3.5 years and 5 to 7 years (Taghizadeh, Yarolahi, & Bahrami, 2018). In general, stuttering negatively affects many areas of quality of life (QOL), including vitality, cognition, daily activities, and social and emotional functioning (Scheurich, Beidel, Vanryckeghem, 2019). Abyar, Ahmadi Nasrabad Sofla, Mousavi Kia, and Zamani (2019) showed that there was a relationship between distress tolerance and stuttering. Therefore, one of the variables related to stuttering was distress tolerance.

Simons and Gaher (2005) conceptualized the concept of distress tolerance as an individual's ability to tolerate negative emotional states. They suggested that emotional distress tolerance is multidimensional in nature; it involves individual anticipation and the experience of negative emotions, including the ability to tolerate, assessing the emotional state as acceptable, how the person regulates their emotions, and how much attention is drawn to the negative emotions and how much of it interferes with performance. Lower levels of tolerance for negative emotional states, both concurrently and predictively, are more likely to be associated with substance use disorders, drug use, overeating symptoms, and post-traumatic stress symptoms.

Watson and Tellegen (1985) have classified emotions into two basic emotional dimensions; one is negative emotion. Negative emotions include fear, anxiety, sadness, depression, anger, and hostility. These emotions are part of a deterrent behavioral system whose primary purpose is to prevent behaviors that lead to unpleasant consequences. Findings showed that two emotional factors are related to different classes of variables. Negative emotions are associated with stress and poor coping, health-related complaints, and the frequency of unpleasant events (Naragon-Gainey, McMahon, & Chacko, 2017).

Several approaches have been suggested to reduce emotions and negative emotions in people with stuttering, including schema therapy and integrated cognitive-speech approach. Historically, the basic approaches to stuttering therapy are divided into the two categories of fluency shaping or fluency modification and stuttering modification. Cognitive reconstruction is another approach that sometimes takes a different view on the visible and invisible features of stuttering. The fluency shaping approach, based on active conditioning, is used to eliminate or reduce the visible features of stuttering, regardless of its internal features (Farazi, Gholami, Khodabakhshi, Shemshadi, & Rahgozar, 2014). Furthermore, the stuttering modification approach tries to reduce the visible features of stuttering by making stuttering smoother and easier. This approach changes the attitude and cognitive reactions of the person to stuttering in order to minimize the impact that the internal characteristics of stuttering have on the person. Finally, the cognitive reconstruction approach focuses solely on changing one's attitudinal, emotional, and cognitive responses to stuttering to reduce the impact of stuttering on the individual (Farazi, 2017). Safari Hafshejani and Khoramshahi (2020) studied the integrated cognitive-speech approach and found that this treatment approach was effective in improving stuttering.

Considering the importance of the components of negative emotions and distress tolerance in people with stuttering, and given the psychological damage caused by this disorder, which occurs chronically, the need for psychological interventions is felt. One of the common interventions in the field of psychological disorders as well as family injuries is the schema therapy approach (Mozaffari, 2019). Young, Klosko, and Weishaar (2014) developed a treatment plan for the treatment of patients with chronic cognitive problems and personality disorders. According to the schema therapy perspective, individuals with a set of conditions, including early maladaptive experiences and specific emotional moods, form a group of maladaptive schemas that influence their subsequent behaviors and reactions to the environment. In a study conducted by Mozaffari (2019), schema therapy was shown to be effective in reducing stuttering. Schemas determine a person's attitude towards himself or herself, the world, and the future. If these schemas are natural and positive, the person's tendency towards everything will be positive, hopeful, and successful, otherwise the individual will consider him/herself incapable, inadequate, and worthless, and will therefore feel that in dealing with problems, impenetrable obstacles stand in his/her way and whatever he/she does, he/she will fail (Renner, DeRubeis, Arntz, Peeters, Lobbestael, and Huibers, 2018). Dale (2015) showed that the integrated cognitive-speech approach is an integrated research strategy for exploring synergies in natural language performance.

Compared to schema therapy in the field of speech therapy, the fluency shaping approach or speech stuttering modification approach is still considered as one of the traditional and widely used approaches. This approach is used to eliminate visible stuttering behaviors and tries to change the physical mechanism of a person's speech. These changes include speech speed, speech rhythm, production pattern, sound pattern, or breathing pattern (Wingate, 1969). Blomgren, Roy, Callister, and Merrill (2005) described the basic approaches to stuttering treatment under the heading of fluency shaping or fluency modification and stuttering modification. Cognitive reconstruction is another approach that is used independently and sometimes in combination with the previous two approaches. The approach of speech psychological shaping is based on active conditioning to eliminate or reduce the visible features (symptoms) of stuttering, regardless of its internal features. The stuttering correction approach tries to reduce the visible features of stuttering by creating a smoother and easier stuttering (without avoidance) (Manning, 2010) and the cognitive reconstruction approach focuses on changing the attitudinal, emotional, and cognitive reactions to stuttering and its complications and consequences (Menzies, Onslow, Packman, and O'Brian, 2009). Kulgildinova et al. (2017), in a study on integrated cognitive-speech approach in language education practice among students, showed that integrated cognitive-speech approach was effective on language teaching practice of students.

The effectiveness of both schema therapy and integrated cognitive-speech approach on other variables in people with stuttering has been evaluated separately. However, the study of the literature on the above therapies in Iran did not show a study comparing the effectiveness of schema therapy and the integrated cognitive-speech approach on distress tolerance and negative emotions of people with stuttering. Therefore, the present study was conducted with the aim to compare the effectiveness of schema therapy and integrated cognitive-speech approach on distress tolerance and negative emotions in people with stuttering.

Methods

The present study was an experimental study with a pretest-posttest design, a control

group, and follow-up. In this study, after coordinating with and obtaining permission from the respected officials of speech therapy clinics in Sabzevar, Iran, 30 people out of 73 stuttering individuals, , were selected through available sampling, and then, were randomly (lottery) assigned to the three groups of schema therapy (10 people), integrated cognitive-speech group (10 people), and the control group (10 people). The participants included young men and women aged 18-30 years, who had referred to the speech therapy clinics in the third quarter of 2019 and had received no treatment. The hidden part of stuttering, which includes emotions, feelings, fears, and worries, arises in the minds of stutterers with age. Accordingly, in this study, adult stutterers of 18-30 years of age were considered. After selecting the subjects, the objectives of the research were explained to them, and they were asked to have the utmost cooperation. Then, pretest was performed in all three groups. Scheme therapy intervention and the integrated approach [which includes 12 sessions of specific therapy (initial assessment), interventions, individual therapy, group therapy, and final assessment (for individuals)] were implemented. Adult stuttering was done in an organized, purposeful, and coherent way in four sections. Fluency reconstruction of speech and reading, fluency reconstruction of stuttering, cognitive reconstruction, and group therapy sessions were presented to the experimental groups and the control group received speech therapy treatments. At the end of the intervention, posttest was performed for all three groups, and on the final sessions of the two-month follow-up, the tests were performed. Usually, with the help of computational methods, tables were made to determine the sample size according to the type of test, test power, and probability of the first type error, which was used to compare the mean of the two experimental groups and the control group. In this research, the test power was equal to 0.5, the probability of the first type error was equal to 0.05, the relative error of Cohen was equal to 0.8, and the sample volume of each group was 13 individuals according to Cohen's calculation table, of which 3 people were considered for fall. Finally, 10 people are selected for each group. The study inclusion criteria included willingness to participate in the study, stuttering at least at a mild level (by performing the stuttering severity test), no clinical and personality disorders approved by a psychiatrist (hospitalization), having a minimum education of high school diploma, age range of 18-30 years, and not undergoing other psychological therapies or using psychotropic drugs at the time of the intervention. The exclusion criteria included having substance abuse history, being absent from more than two sessions, not doing the assigned tasks and expressing unwillingness to cooperate, and occurrence of unforeseen events (e.g., migration or death).

The collected data were statistically analyzed using descriptive and inferential statistics in SPSS software (version 24; IBM Corp., Armonk, NY, USA). At the level of descriptive statistics, frequency, percentage, mean, and standard deviation, and at the level of inferential statistics, repeated measures analysis of variance (ANOVA) and Tukey's post hoc test were used to analyze the data. This study has been approved and registered on the Iranian clinical trial site with the number IRCT20191028045261N1; in addition, it was approved by the ethics committee of Islamic Azad University of Neyshabur, Iran, with the code of ethics of IR.IAU.NEYSHABUR.REC.1399.006.

Research instrument

Stuttering Severity Instrument-3: The Stuttering Severity Instrument-3 (SSI-3 is (a standard and validated test developed by Riley and Bakker (2009) and is used to measure the visible properties of stuttering.

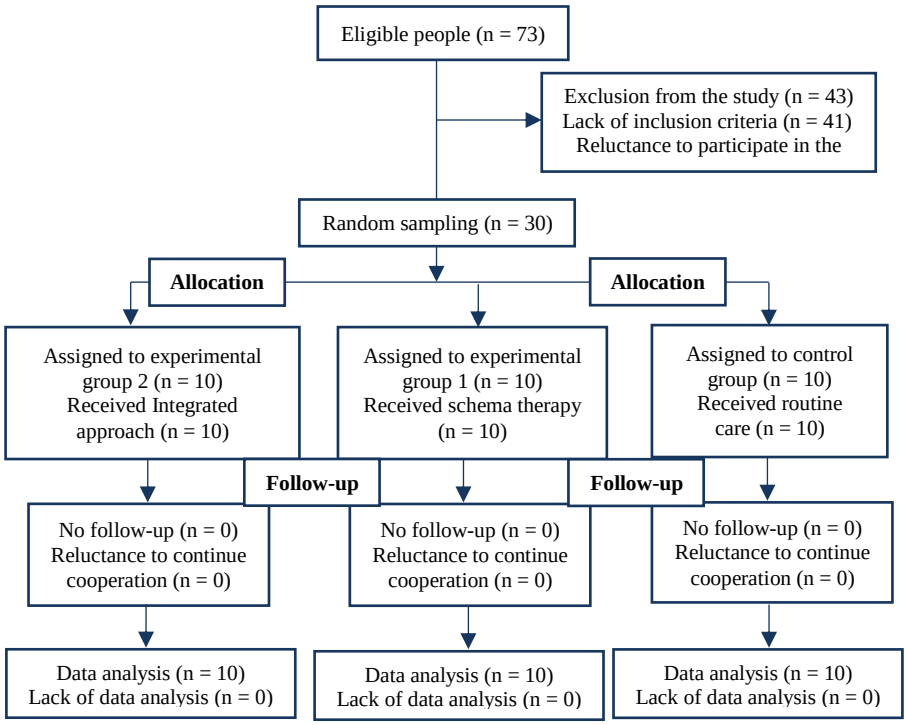

Figure 1. Study concert chart

The SSI-3 determines the frequency of stuttering, the length of stuttering, and the physical behaviors associated with stuttering, and ultimately, determines the intensity of stuttering (Riley & Bakker, 2009). The scores of the three components are added together and the stuttering severity score of the individual is categorized as very mild (10-17), mild (18-24), moderate (31-25), and severe (36-32). To determine the reliability of the SSI-3, the 200-word stuttering severity test was read twice by 24 available adults (20 men and 4 women) (age range: 18-30) within a period of 10 days. The reliability of the stuttering severity test was reported as 0.98 and the validity of the test was reported as 0.90 according to the Lavache index (Sharifi & Sharif, 2009).

Positive and Negative Affect Scale: The Positive and Negative Affect Schedule (PANAS) was developed by Watson and Tellegen (1985) and consists of 20 items that measure the two dimensions of negative emotion (10 items) and positive emotion (10 items). The items are scored on a 5-point scale ranging from very low (score 1) to very high (score 5), and the total score for each subscale ranges between 10 and 50. The internal consistency coefficient (alpha) was 0.88 for the positive emotion subscale and 0.87 for the negative emotion subscale. The negative emotion subscale has been reported 0.71. In the Iranian culture, Bakhshipour and Dezhkam (2006) have reported good validity and validity for this scale.

Distress Tolerance Scale: The Distress Tolerance Scale (DTS) is a self-assessment index developed by Simons and Gaher (2005). The DTS has 15 items in the four subscales of emotional distress tolerance, absorption (absorption of negativity by negative emotions), evaluation (estimation of mental distress), and regulation (regulation of efforts to alleviate anxiety). The items are scored on a five-point scale

ranging from 1 to 5 (1: strongly agree, 2: slightly agree, 3: neither agree nor disagree, 4: slightly disagree, and 5: strongly disagree). The alpha coefficients for this scale have been reported to be 0.72, 0.82, and 0.70, respectively, and for the whole scale to be 0.82. They reported that the questionnaire had good standard validity and initial convergence. In Iran, Andami Khoshk (2013) investigated the Cronbach's alpha of the total scale and reported it to be 86%. Jashnpour (2017) also reported a Cronbach's alpha of 85% for this scale.

The schema therapy protocol was developed by Young, Klosko, and Weishaar (2003) and includes a set of cognitive, emotional, and behavioral techniques performed over a 12-session course of therapy (Table 1).

Farazi et al. (2014) formulated the integrated cognitive-speech approach protocol in a structured way, which includes 12 sessions of specific therapy (initial assessment), interventions, individual therapy, group therapy, and final assessment (for individuals).

Table 1. Group schema therapy sessions in accordance with the model presented by Young et al. (2003) for stuttering individuals

Session	Description
First	Welcoming group members and introducing them to each other, motivating them for treatment, reviewing the structure of the meetings and the rules and regulations related to group therapy, identifying initial incompatible schemas, reviewing the goals and general logic of treatment, providing a definition for schema therapy, primary maladaptive schemas, characteristics of primary maladaptive schemas, and evolutionary roots of schemas, and performing pretest
Second	Providing an introduction of schematic domains and early maladaptive schemas, brief description of the biology of early maladaptive schemas, explanation of schema functions, brief description of schema continuity and improvement, introduction of maladaptive coping styles and responses that cause persistence of schemas, and examples from everyday life, definition of the concept of schematic mindsets
Third	Teaching conditional and unconditional schemas, creating readiness among stuttering people to measure and change schemas, defining the concept of schematic mindsets, teaching conditional and unconditional schemas, creating readiness among stuttering people to measure and change schemas
Fourth	Providing emotional imagery of emotional mood and providing feedback to further identify the schema and prepare for change
Fifth	Challenging the schema (desecration), explaining the continuum technique, writing a self-introduction letter, examining the evidence confirming and rejecting the schema
Sixth	Challenging the evidence confirming the schema, evaluating the advantages and disadvantages of coping styles, establishing a dialogue between the healthy aspect and the schema aspect
Seventh	Compiling and constructing educational cards, explaining the completion of the schema registration form, providing logic for the use of such techniques in treatment
Eighth	Performing imaginary conversations, explaining open parenting while working with mental images, writing letters to parents, and performing imaginary conversations with parents
Ninth	Reintroducing coping styles as important targets of change, creating readiness to model behavior, determining specific behaviors as possible targets of change
Tenth	Prioritizing behaviors for role modeling, listing to examples of clients' counter-responses, acknowledging inconsistency of clients' demands with their behaviors (contradictory behaviors), providing training appropriate to clients' demands, achieving his desires correctly
Eleventh	Increasing motivation for change, learning to practice healthy behaviors teaching through mental imagery and role play, learning to overcome barriers to behavior change and important life changes, identifying people who need individual intervention, and scheduling an individual counseling session with them
Twelfth	Teaching and practicing behavioral modeling techniques, encouraging stuttering individuals to abandon maladaptive coping styles, and practicing effective coping behaviors such as behavior change, motivation, reviewing the pros and cons of continuing behavior, and practicing healthy behaviors, overcoming barriers to behavior change, performing the posttest

Adult stuttering (18-30 years old) was done in an organized, purposeful, and coherent way in four sections of fluency reconstruction of speech and reading, fluency reconstruction of stuttering, cognitive reconstruction, and group therapy sessions (Table 2).

Results

The findings presented in table 4 show that 63% of the subjects were women, 60% of them were single, and 40% of them had a bachelor's degree (the highest number of people). The average age of the participants in this study was about 24 years which was randomly studied between the three groups.

The findings presented in table 4 show that the amount of negative emotions in all three groups in the pretest stage was about 29.5 points.

Table 2. Integrated cognitive-speech therapy sessions - speech using the pattern presented by Farazi et al. (2014)

Session	Description
First	Performing interviews and SSI-3 in verbal oral reading conversation and recording it, and performing pretest
Second	Performing prolonged speech (PS), easy onset (EO) speech psychotherapy methods with self-awareness of speech system function and breathing mechanism in oral speech, and reading simple words and phrases
Third	Implementation of PS, EO, and time-out (TO) treatment methods while reading Persian texts and during oral speech (short sentences) and conversational speech with emphasis on the use of exaggerated stretched speech based on the early stages of the Camperdown program
Fourth	Implementing therapeutic methods, PS, EO, light contact consonant (LCC), and TO while reading texts and during conversational speech, and question and answer with emphasis on the final stages of the Camperdown program
Fifth	Repeating the treatment program of the fourth session and applying the basic elements of MIDVAS (Van Riper's method) (Motivation, Identification, Desensitization) in conversational speech and reading different texts
Sixth	Performing the fifth session treatment program with the three final elements of MIDVAS (Van Riper's method) (Variation, Approximation, Stabilization) in critical questions and answers with emphasis on making eye contact during the conversation, and performing voluntary stuttering with self-control training
Seventh	Performing a speech rehabilitation treatment program with Rational Emotive Behavior Therapy (REBT), Personal Construct Therapy (PCT), Constructive Approach Narrative (CAN), and POWER (Permission, Ownership, Well-being, Self-esteem, Resilience, Responsibility) cognitive reconstruction methods based on strategies to empower the person to identify his/her irrational thoughts and beliefs
Eighth	Implementing the integrated cognitive-speech method in different speech/social situations, performing regular desensitization and mental imagery simultaneously, practicing telephone conversation with familiar people, and performing exercises based on social anxiety reduction and avoidance
Ninth	Implementing an integrated cognitive-speech method in spontaneous speech with critical questions and answers, and teaching attention, empathy, coping and social skills, courage, self-help and telephone conversations with familiar and unfamiliar people
Tenth	Implementing an integrated cognitive-speech method outside the clinic (stores and public places) with the therapist through regular desensitization and simultaneous mental imaging, and describing predictable limitations during conversation and oral reading
Eleventh	Performing an integrated method based on teaching self-control programs on correcting stuttering in conversational speech, spontaneous speech, and self-help in interpersonal relationships in therapeutic groups of 4 to 7 people
Twelfth	Conducting the eleventh session based on strategies to enhance controlled natural speech with cognitive monitoring, providing comfortable stuttering without avoidance, evaluating the end of the intervention period by conducting tests in conversational speech and oral reading in individual sessions, describing the progress and changes made to the subject, providing other treatment recommendations, and performing posttest

Table 3. Demographic characteristics of the subjects

Variable		Experimental group (1)	Experimental group (2)	Control group
Age (Mean ± SD)		24.70 ± 3.020	24.70 ± 3.164	23.70 ± 3.917
Gender [n (%)]	Female	5(16.66)	8(25.86)	6(20)
	Male	5(16.66)	2(6.46)	4(13.33)
Marital status [n (%)]	Married	4(13.33)	5(16.66)	3(9.69)
	Single	6(20)	5(16.66)	7(22.61)
Education [n (%)]	Diploma	2(6.66)	2(6.66)	1(3.33)
	Associate degree	1(3.33)	2(6.66)	2(6.66)
	Bachelor's degree	5(16.66)	3(10)	4(13.33)
	Master's degree	2(6.66)	3(10)	3(10)

In the posttest stages, the changes in the control group were very small and the decrease in the mean score of negative emotions was about 0.2. However, schema therapy in experimental group 1 caused the average of negative emotions to decrease from 29.8 to 23.4, and this indicates the effectiveness of the treatment. Similarly, in experimental group 2, treatment based on the integrated cognitive-speech approach reduced the average score from 30.8 in the pretest stage to 23 in the posttest stage, which confirms the effectiveness of this treatment. The tolerance of emotional turmoil in both experimental groups in the pretest stage was about 45.5, but in the posttest stages, the changes in the control group were very small. The mean stuttering intensity for all three groups participating in the study was higher than the cut-off score of SSI-3 and all subjects had at least mild stuttering in order to enter the study.

The result of Kolmogorov-Smirnov test indicated that the significance level for the experimental and control groups in all three stages of the test was more than 0.05, so the distribution of the dependent variable in the groups was normal ($P < 0.05$).

Table 4. Mean and standard deviation of pretest, posttest, and follow-up scores of negative emotions, distress tolerance, and stuttering severity

Variable	Group	Pretest	Posttest	Follow-up
		Mean ± SD	Mean ± SD	Mean ± SD
Negative emotions	Control	29.4 ± 4.22	29.2 ± 3.79	28.6 ± 4.42
	Experiment 1	29.8 ± 6.28	23.4 ± 1.89	23.6 ± 1.57
	Experiment 2	30.8 ± 6.26	23.0 ± 2.49	22.0 ± 3.01
Tolerating emotional distress	Control	11.20 ± 2.25	10.70 ± 2.05	10.70 ± 1.88
	Experiment 1	10.50 ± 2.59	11.90 ± 2.18	11.90 ± 2.18
	Experiment 2	10.70 ± 2.1+	11.70 ± 2.16	11.70 ± 2.16
Absorption by negative emotions	Control	6.30 ± 1.25	6.40 ± 1.50	6.50 ± 1.58
	Experiment 1	6.40 ± 0.84	10.0 ± 0.81	10.10 ± 0.73
	Experiment 2	6.40 ± 1.50	7.9 ± 1.52	8.1 ± 1.52
Mental assessment of distress	Control	19.0 ± 5.94	18.90 ± 3.72	19.0 ± 3.80
	Experiment 1	19.8 ± 3.70	20.7 ± 4.21	20.7 ± 4.21
	Experiment 2	1820 ± 4.80	21.4 ± 4.06	21.8 ± 3.99
Adjusting efforts to alleviate distress	Control	8.3 ± 2.49	7.9 ± 2.25	8.0 ± 2.26
	Experiment 1	9.9 ± 2.07	11.5 ± 2.50	11.5 ± 2.50
	Experiment 2	9.7 ± 3.02	12.0 ± 2.66	12.1 ± 2.51
distress tolerance	Control	44.8 ± 7.84	43.9 ± 4.50	44.2 ± 4.46
	Experiment 1	46.6 ± 4.78	54.1 ± 6.50	54.2 ± 6.37
	Experiment 2	45.0 ± 6.66	53.0 ± 6.46	54.7 ± 6.03
Absorption by negative emotions	Control	25.9 ± 3.78	24.9 ± 3.71	25.0 ± 3.63
	Experiment 1	26.1 ± 4.55	20.2 ± 3.88	20.9 ± 2.28
	Experiment 2	26.6 ± 4.67	18.8 ± 4.62	14.15 ± 4.39
Stuttering severity	Control	25.9 ± 3.78	24.9 ± 3.71	25.0 ± 3.63
	Experiment 1	26.1 ± 4.55	20.2 ± 3.88	20.9 ± 2.28
	Experiment 2	26.6 ± 4.67	18.8 ± 4.62	14.15 ± 4.39

The significance level of Box's M test in both treatments was more than 0.05 (F1 = 1.309 and F2 = 1.441; P > 0.05), so the assumption of covariance between the groups is the same. The results of Levene's test showed that the significance level in all three stages of the test in the control and experimental groups was more than 0.025 and the condition of equality of variances was confirmed.

The findings presented in table 5 show a significant difference between the mean of pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups 1 and 2 and the control group (P < 0.05). Moreover, the significance of the interaction between the stages and the experimental groups in the mentioned variables indicated that in the posttest and follow-up stages, the mean of the experimental groups was significantly different from the control group.

The findings presented in table 6 show that in experimental groups 1 and 2, which underwent schema therapy and integrated approach, respectively, the difference between pretest and posttest scores of each of the variables was significant. However, in the control group, the difference between pretest and posttest scores was not significant in any of the research variables. There was no significant difference between posttest and follow-up scores in experimental groups 1 and 2; this confirms the effectiveness of the schema therapy and the integrated approach, and its retention rate compared to the pretest is also confirmed.

The findings presented in table 7 show no significant difference between the mean pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups 1 and 2 (P < 0.05). However, the insignificance of the interaction between the stages and the group in the variables of distress tolerance and negative emotions indicates that, in these three variables, the effectiveness of the two types of treatment was not much different from each other. Therefore, it can be said that there was no difference between the effectiveness of schema therapy and integrated cognitive-speech on distress tolerance and negative emotions of people with stuttering.

Table 5. Comparison of pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups and control group using repeated measures analysis of variance

Group	Scale	Source	SS	df	MS	F	P	Eta squared
schema therapy and control	Negative emotions	Level	154.53	2	77.26	6.34	0.004	0.261
		Group * Level	113.73	2	56.86	4.67	0.016	0.206
		Error	438.40	36	12.17			
		group	180.26	1	180.26	7.401	0.014	0.291
		Error	438.40	18	80.62			
	Distress tolerance	Level	112.53	2	56.26	4.849	0.014	0.212
		Group * Level	177.73	2	88.86	7.658	0.002	0.298
		Error	417.73	36	11.604			
		group	881.66	1	881.66	10.935	0.004	0.378
		Error	1451.26	18	80.62			
Integrated approach and control	Negative emotions	Level	264.53	2	132.26	11.55	0.001	0.391
		Group * Level	203.20	2	101.60	8.87	0.001	0.330
		Error	412.26	36	11.45			
		group	216.60	1	216.60	7.144	0.016	0.284
		Error	545.73	18	30.31			
	Distress tolerance	Level	178.03	2	89.01	8.19	0.001	0313
		Group * Level	251.43	2	125.71	11.56	0.001	0.391
		Error	391.20	36	10.86			
		group	721.06	1	721.06	7.968	0.011	0.307
		Error	1629	18				

*P < 0.05, **P < 0.01

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

Table 6. Couple comparison test results of the mean of variables in the experimental groups and control group

Group	Variable	Group	Stages	Posttest	Follow-up
schema therapy	Negative emotions	Experimental(1)	Pretest	6.40**-	-6.2**
			Posttest	---	0.2
		Control	Pretest	-0.20	-0.80
			Posttest	----	-0.60
	distress tolerance	Experimental(1)	Pretest	7.50**	7.60**
			Posttest	---	0.10
		Control	Pretest	-0.90	-0.60
			Posttest	---	0.30
Integrated approach	negative emotions	Experimental(2)	Pretest	7.80**-	-6.2**
			Posttest	---	0.2
		Control	Pretest	-0.20	-0.80
			Posttest	----	-0.60
	distress tolerance	Experimental(2)	Pretest	7**-	7.60**
			Posttest	---	0.10
		Control	Pretest	-0.90	-0.60
			Posttest	----	0.30

*P < 0.05, **P < 0.01

Discussion

The present study was performed to compare the effectiveness of schema therapy and integrated cognitive-speech approach on negative emotions and distress tolerance in patients with stuttering. Research findings showed that schema therapy and integrated cognitive-speech approach were effective on negative emotions and distress tolerance in people with stuttering.

According to the findings, it can be concluded that there was no difference between the effectiveness of schema therapy and integrated cognitive-speech on negative emotions and distress tolerance in people with stuttering. The above findings are consistent with that of the studies by Dadomo, Grecucci, Giardini, Ugolini, Carmelita, and Panzeri (2016), Bidari and Hajializadeh (2019), Dale (2015) and Watkins, Smith, Davis, and Howell (2008). The psychological damage caused by language disorders necessitates psychological interventions; thus, schema therapy uses dialectical strategies, accreditation, problem solving, cognitive style, and client management. Moreover, it reduces disruptive behaviors in life and therapies, and helps the individual to generalize the behavioral skills to their life through treatment and behavioral skills teaching so that he or she can reduce mental disorders (Kim, Crouch, Olatunji, 2017).

Table 7. Comparison of pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups 1 and 2 using repeated measures analysis of variance

Scale	Source	SS	df	MS	F	P	Eta squared
Negative emotions	Level	712.13	2	356.06	30.89	0.001	0.632
	Group * Level	16.93	2	8.46	0.735	0.487	0.039
	Error	414.93	36	11.526			
	group	1.667	1	1.667	0.062	0.807	0.003
	Error	487.06	18	27.059			
Distress tolerance	Level	699.30	2	349.95	188.81	0.001	0.913
	Group * Level	12.033	2	6.017	3.249	0.051	0.153
	Error	66.667	36	1.852			
	group	8.067	1	8.067	0.073	0.790	0.004
	Error	1990.33	18	110.574			

*P < 0.05, **P < 0.01
SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

The results of the study by Farazi et al. (2014) showed that the integrated cognitive-speech method was more effective in the treatment of adult stuttering than the psychological speech formation approach, which is consistent with the findings of the present study and the use of this treatment method is recommended to all speech therapists. Compared to schema therapy in the field of speech therapy, stuttering management therapies are based on the combining of processes directed towards stuttering desensitization, increasing stuttering acceptance, and movement techniques directed toward reducing the stress associated with stuttering moments. One of the hallmarks of cognitive regenerative therapy or stuttering management is that these therapies primarily reduce anxiety and negative emotions, but also include techniques that aim to change the nature of stuttering events (Blomgren et al., 2005). Because the integrated cognitive-speech approach has been more useful in transferring systematic psychological speech skills during therapeutic sessions, it has created mental retention and continuity. Furthermore, the psychological maintenance and the created attitudinal and cognitive changes for stutterers depend more on the use of integrated cognitive-speech method than schema therapy (Farazi, 2017). Erfan, Noorbala, Karbasi, Mohammadi, and Adibi (2018) studied the effectiveness of emotional schema therapy on emotional schemas and emotional regulation in irritable bowel syndrome (IBS) and found that emotional schema therapy was effective in improving emotional schemas and difficulty in regulating emotions in these patients. The finding of this study is in line with the findings of the present study.

According to the findings, it can be inferred that schema therapy was effective on negative emotions and distress tolerance in people with stuttering. The above findings were in line with the results of the studies by Seyf Hosseini, Asadi, Sanagoo, and Khajvandkhoshly (2019), Shokhmgar (2016), Mirkhan, Khalatbari, and Tajeri (2019), Khasho, van Alphen, Heijnen-Kohl, Ouwens, Arntz, and Videler (2019). Explaining the above findings, it can be said that intolerance of distress plays an important role in the development and persistence of anxiety. People with high distress tolerance are able to tolerate negative psychological states, while people with low distress tolerance tend to engage in compensatory behaviors to alleviate internally disturbing experiences (Simons & Gaher, 2005). Because people with stuttering disorder have problems in their relationships and cannot establish a good relationship with others. Due to their stuttering, they are not accepted by others, and generally, have no satisfaction with life and no positive feelings, and they have negative feelings. These individuals evaluate the events and situation of their life as unfavorable and experience most negative emotions such as anxiety, depression, and anger. Therefore, schema therapy can create special characteristics and conditions and, as a result, increase their positive feelings so that they can have a more positive assessment of the events and happenings around them and reduce their confusion. These people typically experience more stress, sometimes react prematurely, and cannot cope successfully with unorganized success, or a situation whose outcome is uncertain. They do not perform well in ambiguous tasks and experience a level of uncertainty, and so, they will be more confused and have difficulty in decision-making situations because they have no basis for judging the potential outcome of their decisions. Thus, schema therapy is described as an evolved motivational system for regulating negative emotions. This treatment can be effective in increasing the distress tolerance of people with stuttering disorder (Ghaderi, Kalantari, & Mehrabi, 2016).

According to the findings, it can be concluded that the integrated cognitive-speech approach was effective on negative emotions and distress tolerance in people

with stuttering. The above findings were in line with the results of the studies by Dale (2015), Cernak, Asaei, and Hyafil (2018), Farazi et al. (2014). Explaining the above results according to the theory of Simons and Gaher (2005), it can be said that distress tolerance is a modifiable risk factor and the results support the results of emotional regulation strategies interventions and treatment of problems in adults. Distress tolerance is one of the common structures in the field of emotional disorder (Simons & Gaher, 2005). People with stuttering do not have the ability to experience and tolerate negative emotional states, and in fact, the capacity to experience and resist emotional distress in distress tolerance is not seen as a structure. Therefore, since the effect of stress on psychological structures depends on the level of anxiety, the more a person uses the principles, beliefs, and values he believes in, instead of using inefficient methods, the more he/she can increase his/her distress level. Hence, in cognitive therapy, the first step is to make the patient aware of his negative and irrational thoughts. This treatment can be effective on tolerance of stuttering disorder in people with this disorder (Zvolensky, Bernstein, & Vujanovic, 2011). In explaining the above results, according to the theory of Watson, Clark, and Tellegen (1988), it can be said that, due to their problems, people with stuttering have negative moods such as fear, sadness, and anger. They experience more stress and dissatisfaction in interaction with the environment and tend to describe their failures more, see the world negatively, and have a weak self-concept, so their mood is negative and these people are distressed because of these problems, and so, become confused and have negative moods. The integrated cognitive-speech approach causes them to accept their thoughts and feelings as they are manifested, and this reduces their negative moods. With this approach, the mind moves from a negative emotion to a positive emotion and organizes one's emotions. Therefore, this therapeutic approach is effective in reducing negative emotions in people with stuttering disorder (Makvand Hoseini, Najafi, & Khaleghi, 2018).

Conclusion

In general, the results of the present study showed that the studied therapies could greatly reduce negative emotions and increase distress tolerance, and thus, be used in the treatment of patients with stuttering disorder. As individuals with stuttering disorder have problems in their relationships and cannot establish a good relationship with others, they are not accepted by others, generally, have no satisfaction with life and no positive feelings, and have negative feelings, these people evaluate the events and situation of their lives as unfavorable and experience most negative emotions such as anxiety, depression, and anger. Therefore, schema therapy and integrated approach can create special features and conditions, and increase positive emotions so that these individuals can have a more positive assessment of the events and happenings around them and reduce the amount of their confusion. Therefore, it is recommended that both treatments be used to treat people with stuttering. Other similar studies should be performed in other clinical samples with stuttering to allow better comparisons of results and increase generalizability of the results. In future research, in addition to the waiting list group, other treatments should be used to evaluate the effect of different treatments.

Conflict of Interests

Authors have no conflict of interests.

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