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Cognitive-Behavioral Therapy and Hypnosis Intervention on Anxiety, Depression, and Quality of Life in Patients with Breast Cancer Undergoing Chemotherapy: A Clinical Trial

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Abstract

Background: Women with breast cancer undergo painful and distressing treatment procedures. Hypnotherapy and cognitive-behavioral therapy (CBT) could be considered as an effective therapy.

Method: In this clinical trial, 50 women aged 25 to 65 were assigned to three groups (CBT, hypnosis, and control groups). Eight one-hour treatment sessions were run for each of the hypnosis and CBT groups. We utilized The European Organization for Research and Treatment of Breast Cancer-specific Quality of Life (QoL), The European Organization for Research and Treatment of Cancer QoL questionnaires, and The Hospital Anxiety and Depression Scale for the evaluation of the QoL, anxiety, and depression at the beginning and end of the treatment, as well as six months post-treatment.

Results: The improvements in the stress, depression, and qoL amongst the three groups were significant, although these improvements in CBT group were more than those in hypnosis group, and in hypnosis and CBT groups were not significant. Physical functioning, body image, sexual functioning, arm symptoms, breast symptoms, future perspective, pain, digestive problems, and functional scale significantly changed in CBT and hypnosis groups (P<0.05). Memory and social functioning; however, did not change in the groups and across the three groups. In addition, sleeping disorders and emotional malfunctioning were recovered only in the hypnosis group, which was statistically significant.

Conclusion: We found hypnosis exclusively effective on reducing certain problems of breast cancer patients, such as sleeping disorders and emotional malfunctioning; therefore, it is suggested as an efficient solution for these patients' problems.

Keywords: Breast cancer, Cognitive-behavioral therapy, Hypnosis, Chemotherapy, Quality of life

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Introduction

Breast cancer is the most prevalent cancer and the first reason for cancer mortality among women in the world.[1,2] The average annual reported incidence of primary breast cancer in women is 22.6 per 100,000.[3] Regularly, women receiving medical treatment for breast cancer report pain, fatigue, nausea, sleeping disorders, vomiting, and hot flashes.[1,4,5] Moreover, chemotherapy has negative effects on the quality of life (QoL) of women with breast cancer.[5,6] QoL in these cases is influenced by the nature of the disease or the side-effects of the medical treatment.[7] Accordingly, it could be described as a subjective and multidimensional state of physical, emotional, occupational, social, cognitive functioning, vitality levels, pain, body image, sexuality, and spirituality.[8] Numerous scientific studies have focused on various therapeutic techniques and strategies aiming to improve the QoL in these patients including cognitive behavioral therapy (CBT) and hypnosis intervention, due to the negative side-effects of cancer treatment.[6]

Mixed findings on the outcomes of CBT in breast cancer settings were obtained through long-term studies.[9] Anticipatory QoL, nausea, and vomiting in adult and pediatric cancer patients undergoing chemotherapy could be effectively controlled via CBT,[9,10] focusing on the relationship between the thoughts, patient's behaviors and feelings, and their role in creating specific symptoms.[11] Furthermore, we found hypnosis effective on managing different physical and psychological symptoms, including stress, hot flashes, anxiety, quality of sleep, fatigue, and pain in patients with breast cancer.[12-15] Hypnotic methods, involving relaxation, suggestion,[16] and distracting imagery, are effective on pain management.[17] Distractions are prevented in this state of altered consciousness. This allows the patient to focus on a particular symptom, illness, or problem[18] and nearly 90% of them would prefer to use this technique for managing the side-effects associated with cancer treatment.[19] Hypnosis was also indicated to be effective on managing the different physical and psychological symptoms in patients with breast cancer, such as distress,[20] anxiety, fatigue, quality of sleep, and pain. Thus, we could consider it as a useful adjuvant therapy for controlling the pain and anxiety in cancer.[12,13,21] We conducted the present study to determine the impacts of CBT and hypnotherapy on the QoL, depression, and stress in women suffering from breast cancer during chemotherapy, in comparison with a control group receiving standard medical care.

Patients and Methods

The present study is a pretest-posttest trial with a control group, which was conducted in 2018 in Imam Khomeini Hospital of Sari affiliated with Mazandaran University of Medical Sciences. Herein, we aimed to compare the effectiveness of cognitive-behavioral therapy and hypnosis therapy on improving the QoL and decreasing the depression and anxiety in patients with breast cancer undergoing chemotherapy. The trial protocol was recorded at the Iranian Clinical Trials Registry (IRCT201703161457N13; www.irct.ir) and consistent with the Declaration of Helsinki and its subsequent revisions. The patients were provided with enough information regarding the research protocol and their right to leave the trial at any time, and they were asked to give the written informed consent. The study was performed in 2018. The statistical population involved all the breast cancer patients referring to Imam Khomeini Hospital of Sari.

A total of 50 patients were assigned to three groups of CBT, hypnosis, and control, with respectively 15, 20, and 15 patients assigned to each group. We employed Schnur et al.'s[22] findings to determine the required sample size. Based on their findings, the effect of combining CBT and hypnosis on increasing positive emotions was 85% in the intervention group and 43% in the control group with a confidence interval of 95% and a test power of 80%, with 15 people in the control group and 15 people in each of the intervention groups. G-power was used to determine the sample size.

The inclusion criteria for this study included breast cancer diagnosis, writing literacy, physical ability to attend treatment sessions, being under

chemotherapy, having hypnotic susceptibility degree of more than 5 scores in Spiegel test, participation in at least six sessions, and having being over 18 years old.

The exclusion criteria included attending concurrent psychotherapy sessions, using psychoactive drugs, acute psychiatric disorder according to the psychiatrist report of this study, illiteracy, having metastatic breast cancer, and having filled the questionnaire incompletely.

Procedure

Eight 1-hour treatment sessions were run for each of the hypnosis and CBT groups, with the control group not receiving any treatments. A trained therapist assisted the patients in understanding the treatment protocol. Written consent was obtained from all of the patients. They were matched according to their age, marital status, and degree of hypnosis ability.

Demographic, QoL, depression, and anxiety forms and questionnaires were completed by the patients at the beginning and end of the treatment, as well as six months post-treatment.

Protocol of treatments

A. CBT

The adopted CBT treatment protocol was as follows:[12,23]

1- Cancer story and emotional expression, attitude expression about the cause of the present disease, and self-attribution of the disease and

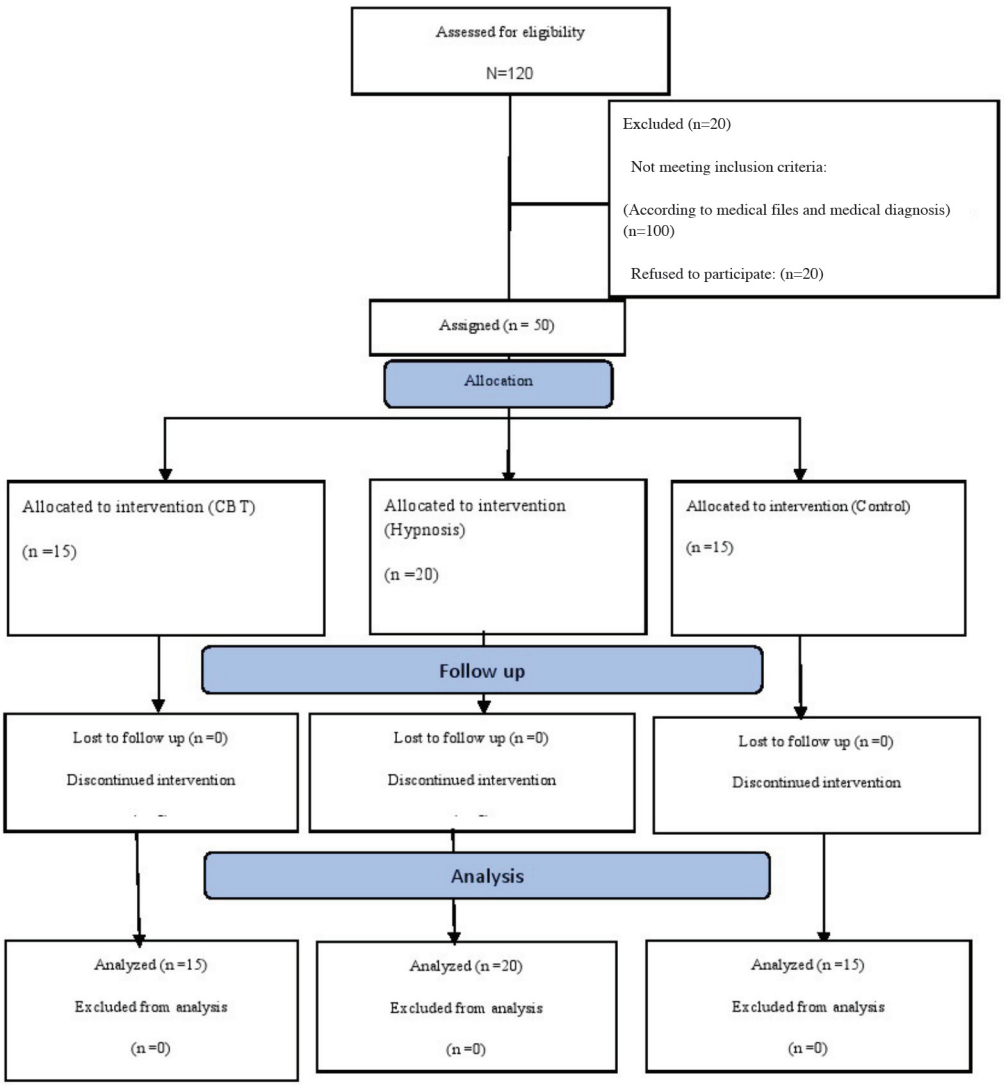

Figure 1. This figure shows the CONSORT diagram of patients' randomization, intervention, and analysis.

Table1. Basic demographic and clinical characteristics of the patients in the three groups

Variable	Group			*P*-value
	CBT*(N=15)	HYP**(N=20)	CONT***(N=15)	
Age (mean ± SD)	42(±7)	48(±11)	47(±8)	0.1
Marriage F (%)				
Married	13(86.7%)	18(90%)	15(100%)	0.6
Single /Divorced/Widowed	2(13.4%)	2(10%)	0(0)	
Job F (%)				
housewife	14(93.3)	18(90)	15(100)	0.5
Employed	1(6.7)	2(10)	0(0)	
Cancer duration months (mean ± SD)	11(±4)	10(±6)	16(±13)	0.6
Mastectomy F (%)	2(13.3%)	6(40%)	1(5%)	0.4
Hypnos ability	7.3(±1.5)	6.8(±1.7)	7.5(±0.8)	0.7
Stress	17 (±3)	16(±3)	16 (±2.5)	0.6
Depression	15(±3.4)	16(±3.5)	15(±3.6)	0.5

*Cognitive- behavioral therapy; **Hypnotism; ***Control

relaxation.

2- Negative thoughts, their recognition, and determining home assignments.

3- Reviewing homework and discussing the impact of thoughts on feelings.

4- Confrontation with the negative thoughts and homework assignments reviewing.

5- Improving interpersonal relationships and coping with the stigma of the disease.

6- Negative thought control, social, and problem-solving skills.

7- Summarizing the previous sessions.

8- Coping with uncertainty, and relaxation.

B. Hypnotherapy

The hypnotherapy protocol was as follows:[24,25]

1-Explaining the concept and process of hypnosis, safe space imagery with ego-strengthening, and reducing negative thoughts associated with feeling guilty for having caused the disease.

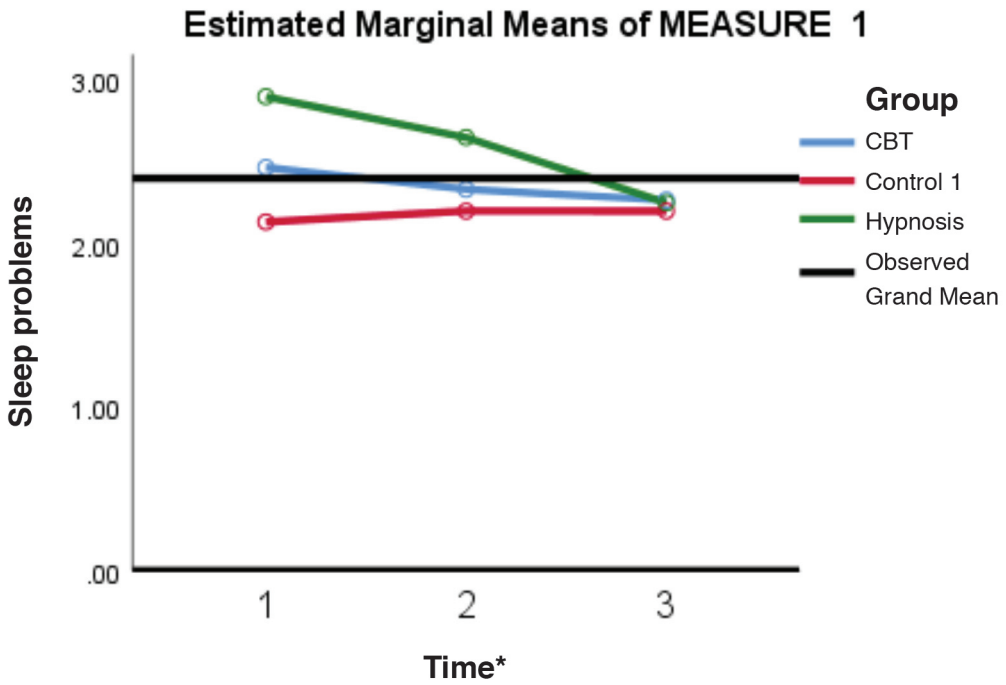

Figure 2. This figure shows sleep problem trends over time in the various groups (*The first visit was after 8 weeks and the second was after 6 months).

CBT: Cognitive behavioral therapy

Table2. Stress and depression among the participants (scores at baseline and time intervals of 6, 12 and 29 weeks after treatment) in the three groups

Variables		Time			Between effect	Group effect	Interaction effect
		First visit Mean(SD)	Follow up after 8weeks Mean(SD)	Follow up after 6 months Mean(SD)			
Stress	CBT	17 (±3.1)	13.7 (±2.5)	13.4(±2.3)	0.001	0.4	0.001
	HYP	16(±3.3)	15.9(±3)	15.7(±3)	0.005		
	CONT	16.1(±2.5)	16.1(±2.5)	16(±2.3)	0.4		
Depression	CBT	14.6(±3.4)	12.3(±2)	11(±2)	0.001	0.02	0.001
	HYP	16(±3.5)	16(±3.4)	15.4(±3)	0.002		
	CONT	15.1(±3.6)	15.1(±3.6)	15(±3.6)	0.4		

*Interaction between time and group; Data are expressed as the mean (SD)X; CBT: Cognitive behavioral therapy; Hyp; Hypnosis; Cont: Control

2- Mental imagery of chemotherapy and feelings of pain and nausea and cramps, and hypnotic visualization of the increase in body immunity level.

3- Mental imaging of chemotherapy, coping with its side-effects, and ego-strengthening.

4- Strengthening ego, improving body image, and increasing sexual desire.

5- Imagery of increasing the control of treatment complications and increasing the immunity level.

6- Reducing anxiety caused by thoughts of recurrence of the disease and how to cope with it.

7- Self-loving and loving others, self-forgiving and forgiving others, and increasing the level of body immunity.

8- Promoting self-strength, increasing immunity level, and embarking on the future road of health and well-being.

Hypnotizability

Hypnotizability was evaluated via Spiegel test including the eye up-gaze (0-4 score), The eye roll up (0-4 score), and Lucy (0-2 score).[26] The score of Hypnotizability was recorded on a scale of 0-10, with 10 being the most roll/most susceptibility to hypnosis.[27]

Instruments

Demographic questionnaire

The questionnaire included age, marriage, education, occupation, spouse's education, number of children, stage of the disease, and history of chemotherapy.

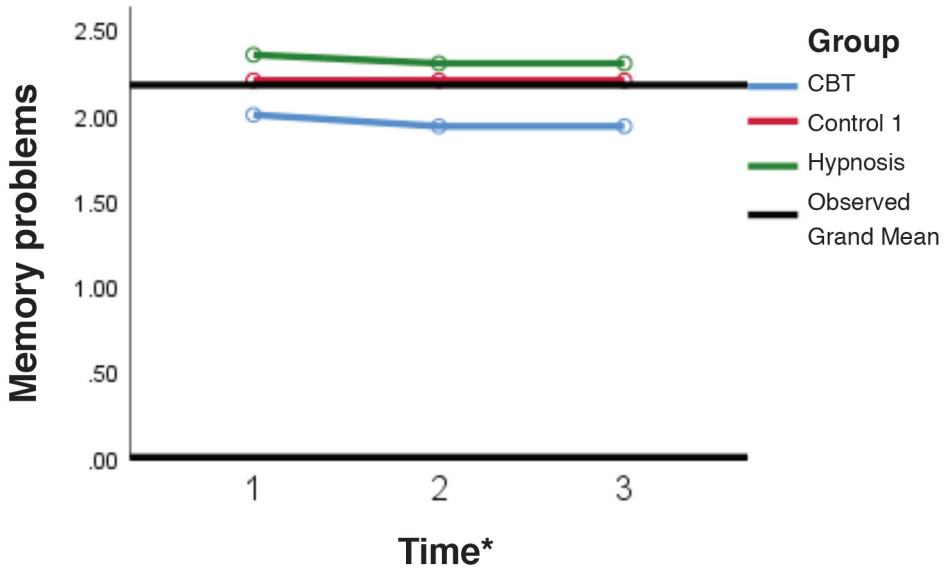

Figure 3. This figure shows memory problem trends over time in the various groups (*The first visit was after 8 weeks and the second was after 6 months).

QoL questionnaires

We used two QoL questionnaires in this research:

1. The European Organization for Research and Treatment of Breast Cancer-specific QoL Questionnaire (EORTC – BR 23): This questionnaire includes 23 questions, consisting of five functional scales (sexuality, body image, sexual pleasure, future perspective) and four symptom scales (side-effects of systemic therapy, breast symptoms, arm symptoms, and discomfort due to hair loss).[28,29] In Iran, the Cronbach's alpha coefficient for multipart scales of EORTC QLQ-BR23 varies from 0.63 to 0.95 in the baseline and from 0.75 to 0.92 in the follow-up.[30]

2. The European Organization for Research and Treatment of Cancer QoL Questionnaire (EORTC QLQ-C30): This questionnaire comprises 30 questions, including five functional scales (physical, role-playing, emotional, cognitive, and social), and nine symptom scales (fatigue, nausea and vomiting, pain, sleeping disorders, insomnia , loss of appetite, constipation, diarrhea, and occupational problems).[31,32] Montazeri et al. and Hosseini et al. validated the Persian version of this questionnaire in 2007.[30,33]

Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HADS)

This scale includes seven questions concerning anxiety and seven questions concerning depression.[34] The Cronbach's alpha of the Persian version was obtained at 0.86 for the depression subscale and 0.78 for the anxiety subscale.[35]

Statistical analysis

To assess whether the data were normally distributed, we utilized the Shapiro-Wilk test. Descriptive baseline characteristics for the comparison among the three groups were tabulated as Mean (SD) or as percentages. The comparison between these three groups for the categorical data was statistically analyzed using chi- square or Fisher-exact test. We employed intention-to-treat analysis for examining the initial efficacy data on the hypnosis and CBT functions. Using General Linear Model (GLM), the status of the outcomes across the three groups was examined via repeated measurement ANOVA test. The type

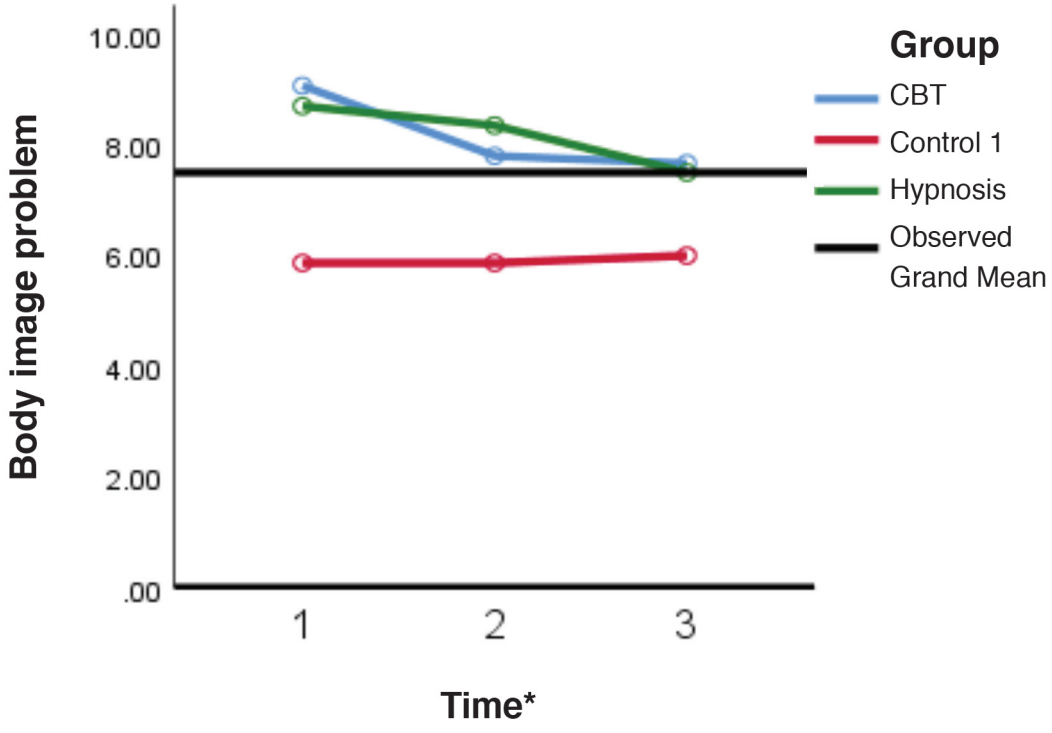

Figure 4. This figure shows body image problem trends over time in the various groups. (*The first visit was after 8 weeks and the second was after 6 months).

of intervention (CBT or Hypnosis) was considered as between-subject factor, and the evaluation time as the within-subject factor. The time groups (interaction term) was measured as group differences (among the three groups). Mauchley's sphericity test was applied for compound symmetry assumption. A *P*- value of 0.05 or less was considered statistically significant. Using IBM SPSS12 statistics version 16 and Stata version, we analyzed the obtained data.

Results

Participants

During this study, a total of 120 patients referring to our clinic were screened. Among these, 20 patients did not meet the eligibility criteria and 50 patients failed to participate in the study. The remaining 50 patients were assigned to three groups. A total of 50 patients participated in the present study and the data from all these patients were analyzed (Figure 1).

Ultimately, 50 women aged 25 to 65 (average 46.3±9 years of age) were assigned to three groups of 15, 20, and 15 patients (pertaining to CBT, Hypnosis, and control groups, respectively).[32] (64%) of the participants were in primary and guidance education, 47 patients (94%) were married, and 47 (94%) were house-wives. The average number of the children in the study groups was 2.4(±9) with a duration of cancer diagnosis of 12.4(±9) months. Mean of hypnosis ability in the patients was 7(±1.4); in addition, 9(18%) of them had undergone mastectomy. Table 1 represents the basic demographic and clinical characteristics of the patients in the three groups. Based on table 1, there were no significant

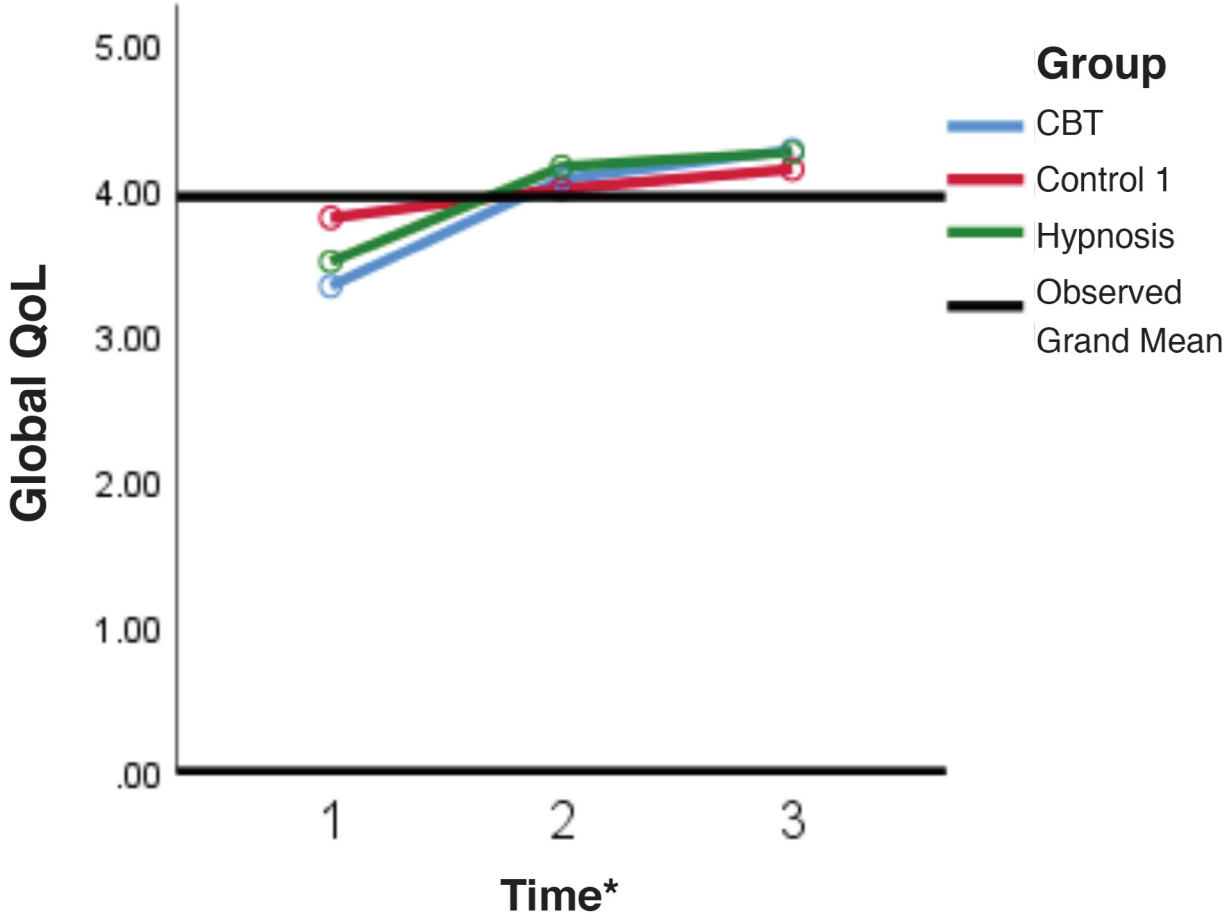

Figure 5. This figure shows the global quality of life trends over time in the various groups. (*The first visit was after 8 weeks and the second was after 6 months).

Table3. Score changes in the symptoms subscale of the quality of life in the participants (scores at baseline and time intervals of six weeks and six months after treatment) in the three groups

Variables	Time			Between effect	Group effect	Interaction effect
	First visit Mean(SD)	Follow-up after 8 weeks Mean(SD)	Follow-up after 6 months Mean(SD)			
Physical functioning						
CBT	21(±1.4)	20.6(±3.8)	20(±3.9)	0.001	0.5	0.001
HYP	21(±4.6)	19.3(±3.2)	17.9(±2.7)	0.001		
CONT	18.9(±6.4)	18.9(±6.4)	18.7(±6.2)	0.1		
Body image						
CBT	9.1(±2.8)	7.8(±1.6)	7.7(±1.5)	0.001	0.01	0.04
HYP	8.7(±3.6)	8.4(±3.2)	7.5(±2.4)	0.007		
CONT	5.9(±2.3)	5.9(±2.3)	6(±1.9)	0.7		
Sexual functioning						
CBT	8.2(±1.3)	8.2(±1.3)	8.7(±1)	0.02	0.9	0.1
HYP	8(±1.4)	8(±1.4)	8.7(±1.4)	0.01		
CONT	8.3± (0.8)	8.3(±0.8)	8.3(±0.7)	0.1		
Arm symptoms						
CBT	7(±2.5)	6.6(±2)	6.5(±2)	0.02	0.03	0.2
HYP	5.7(±1.8)	5.2(±1.4)	4.8(±1.2)	0.004		
CONT	6(±1.3)	5.9(±1.3)	5.9(±1.3)	0.2		
Breast symptoms						
CBT	8.3(±4)	7.9(±3.5)	8(±3)	0.02	0.8	0.2
HYP	8(±3.6)	7.3(±2.5)	6.7(±2)	0.004		
CONT	8(±2.6)	8(±2.5)	8(±2.5)	0.4		
Future perspective						
CBT	2.7(±1.3)	2(±0.8)	1.7(±0.7)	0.002	0.6	0.03
HY	2.2(±1)	2(±0.8)	1.8(±0.7)	0.02		
CONT	1.9(±1)	1.9(±1)	1.7(±0.8)	0.14		
Emotional functioning						
CBT	11.5(±3.8)	11(±3.4)	11(±3.4)	0.05	0.3	0.08
HYP	10.6(±3.1)	9.4(±2.1)	9.4(±2.1)	0.001		
CONT	9.6(±2.6)	9.5(±2.6)	9.5(±2.6)	0.4		
Cognitive functioning						
CBT	2.4(±1.5)	2.3(±1.4)	2.3(±1.3)	0.2	0.3	0.9
HYP	2.8(±1)	2.7(±1)	2.6(±0.9)	0.2		
CONT	2.2(±0.8)	2.2± (0.8)	2.1(±0.6)	0.1		
Social functioning						
CBT	2(±1.2)	1.8(±0.9)	1.8(±0.9)	0.05	0.16	0.6
HYP	2.5(±1.1)	2.4(±1)	2.4(±1)	0.05		
CONT	1.9(±0.9)	1.8(±0.9)	1.8(±0.9)	0.4		
Fatigue						
CBT	3(±1.2)	3(±1)	2.8(±1)	0.02	0.09	0.6
HYP	2.6(±1)	2.4(±0.8)	2.2(±0.9)	0.02		
CONT	2.4(±0.8)	2.4(±0.8)	2.3(±0.6)	0.14		
Pain						
CBT	2.2(±1.3)	2(±1.1)	1.9(±1)	0.04	0.4	0.5
HYP	2.2(±1)	2.1(±0.8)	2(±0.7)	0.04		
CONT	1.7(±0.6)	1.7(±0.6)	1.6(±0.5)	0.1		
Sleep problems						
CBT	2.5(±1)	2.3(±0.9)	2.3(±0.8)	0.1	0.3	0.02
HYP	2.9(±1.1)	2.7(±0.8)	2.3(±0.9)	0.01		
CONT	2.1(±0.8)	2.2(±0.8)	2.2(±0.8)	0.4		
Digestive problems						
CBT	12.5(±3.5)	11.6(±3.1)	11.3(±3.1)	0.001	0.007	0.004
HYP	10.4(±4)	8.7(±2)	7.6(±2)	0.001		
CONT	9.4(±2.5)	9.3(±2.3)	9.3(±2.3)	0.14		
Functional scale						
CBT	11.9(±3.2)	11.5(±2.7)	11.4(±2.6)	0.006	0.6	0.02
HYP	11.6(±2.9)	11.2(±2.4)	10.5(±2.1)	0.001		
CONT	10.5(±3.9)	10.4(±3.7)	10.5(±3.7)	0.4		
Global QoL						
CBT	3.3(±1.9)	4.1(±1.3)	4.3(±1)	0.004	0.1	0.3
HYP	3.5(±1.8)	4(±1.2)	4.3(±1)	0.002		
CONT	3.8(±1.5)	4(±1.2)	4.1(±1.1)	0.08		

*Interaction between time and group; Data are expressed as the mean (SD)

CBT: Cognitive behavioral therapy; HYP: Hypnotism; CONT: Control; QoL: Quality of life

differences regarding the average age, marital status, profession, and other characteristics of the patients.

Stress

According to table 2, the differences concerning stress reduction in the three study groups were statistically significant (group effect, P =0. 4, and 0.001, respectively). In CBT and hypnosis groups, the stress differences were statistically significant (between effect, P=0.001, and 0.005), while they were not statistically significant in the control group (between effect, P=0.4).

Depression

Table 2 depicts that the differences regarding depression reduction in the three groups were statistically significant (group effect, P=0.02 and 0.001, respectively). Furthermore, depression differences in CBT and hypnosis groups were statistically significant (between effect, P=0.001 and 0.002, respectively); whereas, it was not statistically significant in the control group (between effect, P=0.4).

QoL

Based on table 3 and figures 2-5, physical functioning, body image, sexual functioning, arm symptoms, breast symptoms, future perspective, emotional functioning, social functioning, fatigue, pain, digestive problems, functional scale, and global QoL improved in the CBT and hypnosis groups (P< 0.05), which was statistically significant. Cognitive functioning, however, was not found to be statistically significant within and between the three groups of study. Additionally, insomnia recovery was found to be statistically significant only in the hypnosis group. Memory and social functioning; however, were not found to be significant in the groups and among the three of them. In addition, emotional functioning; was recovered only in the hypnosis group, which was statistically significant.

Discussion

Our study revealed an improvement in QoL and a decrease in the chemotherapy side-effects in the patients in two intervention groups. However, the differences were not significant between the groups. Several studies have examined the effectiveness of CBT or hypnotherapy on minimizing the side-effects of chemotherapy in breast cancer patients. A study in the United States reported that the group undergone the combined hypnotherapy and CBT experienced significantly less fatigue and muscle weakness at all time-points.[36] On top of that, in another study, eight women under breast cancer treatment received self-hypnosis training for symptom management. Significant pre- to post-treatment reductions in pain intensity, fatigue, and sleep problems were revealed via analyses, and pain intensity was associated to the decrease from post-treatment to 6-month follow-up.[37] These findings are consistent with an earlier study on hypnosis with CBT in reducing fatigue in breast cancer patients,[12,38] which is compatible to our findings. Moreover, a clinical trial compared the effectiveness of combining four sessions of the hypnosis with CBT regarding the management of depression, pain, and distress with education control in 44 cancer patients. An improvement in these variables was reported.[39] Fatigue, depression and pain also decreased in the CBT and hypnosis groups in our study.

In another study, short-term CBT improved in Hamilton's anxiety scale.[40] CBT intervention in our work also demonstrated a significant improvement in HAD's anxiety scale. In addition, in a non-randomized trial with the control group, the effect of group cognitive therapy in breast cancer patients under chemotherapy showed a significant decrease in anxiety and depression in the intervention group.[41] According to our results, there was also a significant decrease in anxiety and depression in the CBT groups.

On the other hand, the meta-analysis of six pooled studies did not demonstrate any improvement in QOL in breast cancer survivors via CBT. The interpretation of these results, however, requires further attenion.[9] In another study, hypnosis was reported as an effective intervention for reducing distress, pain, and other symptoms and side-effects associated with cancer and its treatment.[19] Furthermore, a quasi-experimental study with a control group in Iranian breast cancer patients investigated the effects of

CBT on anxiety, depression, and stress in 24 women with breast cancer throughout 10 sessions. CBT had significant effects on reducing these variables in the trial group comparing with the control group.[42] Similarly, in our research, pain, anxiety, depression, and stress declined in CBT and hypnosis group.

Furthermore, in a quasi-experimental study[43] on 55 Iranian breast cancer patients, which focused on 2 guided imagery tracks, the frequency and severity of nausea and vomiting declined in the patients comparing to those in the control group. We also observed a decrease in nausea and vomiting. Moreover, in a quasi-experimental study among the Iranian breast cancer patients undergoing chemotherapy, family counseling led to the reduction of sleeping disorders, constipation, fatigue, worrying about the hair-loss, breast and arms related symptoms ,vomiting and nausea, pain, painful breathing, lack of appetite, diarrhea, and financial problems,[44] which is compatible to our findings. Additionally, in a trial, two groups of 100 breast cancer patients were enrolled with cognitive behavioral intervention, the scores of stress in the control group were significantly higher than those in the intervention group.[45] In the current study, we also observed a reduction in stress with CBT.

In a meta-analysis randomized controlled trial in women with metastatic breast cancer, psychological interventions were effective on enhancing the QoL, relationships, social activities, and sleep quality, and on alleviating the pain,[46] which is in accordance with our results. In a systematic review,[47] 13 randomized clinical trials (RCT)s with 1357 patients were involved. Hypnosis decreased the pain and distress in the women undergoing diagnostic breast biopsy (three RCTs); one RCT on breast cancer surgery was affected by hypnosis on pain, distress, fatigue, and nausea. Hypnosis combined with CBT improved the distress and fatigue in the women undergoing radiotherapy (three RCTs). Hypnosis also improved distress in three RCTs. Three RCTs on women with metastatic breast cancer revealed certain effects on pain and distress. Moreover, Richardson and colleagues[48] systematically reviewed randomized controlled trials of hypnosis for vomiting and nausea controlling attributed to chemotherapy. In a quasi-experimental design with 40 breast cancer women using EORTC QLQ-C3, the hypnotherapy group also showed a statistically significant improvement and a large effect size on the cognitive functioning and social functioning scales compared with the control group. The physical functioning, role functioning, and QoL scales illustrated an improvement with a medium effect size, yet the changes were not statistically significant.[49] In the current work, we observed an improvement in these QoL variables.

In a pilot clinical trial with 71 cancer patients, brief behavioral therapy on insomnia improved QoL and decreased insomnia more efficiently than the healthy-eating control intervention; the difference herein was significant.[50] Cancer patients struggle with insomnia, which impairs their QoL.[50] In our study, sleeping disorders decreased in CBT group.

In a quasi-experimental design, with the control group receiving standard medical care (n = 20) or a hypnotherapy group (n = 20) using EORTC QLQ-C30, the patients' QoL was investigated. A statistically significant improvement and a large effect size on the cognitive functioning and social functioning scales were found in the hypnotherapy group compared to the control group. The scales of QoL improved with a medium effect size; however, the changes were not statistically significant. Moreover, social activities, mood, sleep, concentration, relations with others, sexual activity, life enjoyment, and the overall QoL improved.[51] The enhancement observed in the cognitive functioning and social functioning scales suggests the improved QoL in breast cancer patients during chemotherapy with hypnotherapy.[52]

Following these interventions,[53] the physical functioning, social functioning scales and QoL of the patients improved in our study. The improved physical functioning is of great importance, since it makes it possible for the patients to achieve a greater level of independence in their routine activities, for instance getting up, getting dressed, and eating. It also helps the

patients to be capable of integrating into their work and social life and thereby, improving their life quality.

Conclusions

Considering the nature of cancer and severe complications of chemotherapy, including weakness and fatigue, it is difficult to encourage patients to attend psychotherapy sessions and participate in challenging programs. This made the randomization impossible. Thus, a larger sample size is recommended for future studies. Furthermore, even though the overall socio-demographic characteristics intervention groups were similar to the control group, we did not utilize a random sampling method for the participant recruitment, which is an advantage of our work.

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Conflicts of Interest

None declared.

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