

## RESEARCH ARTICLE

# Impact of a Stress Management Intervention Program on Sexual Functioning and Stress Reduction in Women with Breast Cancer

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### Abstract

Breast cancer as the most common cancer among women endangers various aspects of their sexual lives and is a major culprit regarding health impairment and low life quality. The aim of this study was to examine the effect of a stress management intervention program on sexual functioning and stress reduction in women with breast cancer. This study employed a quasi-experimental pre-test, post-test design which included follow-up checks and a control group. To this end, 104 women with breast cancer referring to Hamadan's Mahdiyeh MRI Center at the time of data collection were conventionally selected in 2015. Using permuted blocks, they were randomly divided into experimental and control groups (n= 52), only the former receiving stress management counseling for 18 hours. Data were collected through a demographic questionnaire, the Female Sexual Function Index (FSFI) questionnaire, and Harry's stress questionnaire, filled out by patients before and after the intervention. To analyze the data, descriptive statistics and two-way ANOVA were used. The results showed that cognitive - behavioral stress management group therapy improved total sexual functioning and its subscales. After the treatment, there was a significant difference in mean scores between the groups (p=0.01). Moreover, significant differences were observed in the mean scores for stress with improvement in the experimental group in post-test results. Cognitive - behavioral group therapy for stress management was thus found to improve total sexual functioning and its subscales and reduce the level of stress in the experimental group after the intervention and follow-up period with an interval of two weeks. Therefore, this method can be used as a complementary therapy along with medical treatment in oncology centers.

**Keywords:** Cognitive-behavioral group therapy- stress management- sexual function- stress- breast cancer

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### Introduction

Cancers consist of a wide range of diseases with their own specific etiology, prognosis, and treatment. After cardiovascular diseases, cancer is the second leading cause of death in human societies (Garssen et al., 2013). With regard to sexual function, breast cancer is the most common and the most influential cancer among the female (Salehi, 2008; Pedram et al., 2011). Iranian women are affected by breast cancer a decade earlier than their counterparts in developed countries. In Iran, over 70 thousand new cases of breast cancer are annually estimated (Falahatpisheh, 2011; Heidari et al., 2008). Meanwhile, breast cancer includes one-third of cancer cases in women (Siegel et al., 2012). Each year, about one million patients with breast cancer are identified in

the world and the cause of death among 370 thousand women with cancer is breast cancer (Porkiani et al., 2009; Anagnostopoulos and Myrghianni, 2009). Such malignancy contains about 33 percent of female cancers and its prevalence is estimated between 8%-10% among the general population in different countries of the world. The breast cancer incidence in Iran is estimated to be 31 in 100,000 women and the highest rate of incidences is related to women in the age group of 42-49 years (Kolahdoozan et al., 2010). Breast cancer diagnosis as a crisis causes imbalance in one's life. Because of the breast importance in the formation of female sexual identity, reaction to the disease can include fear, anxiety, and depression (Taira et al., 2011). Some of the causes of these problems are the implications of the diagnosis in the patient's mind such as the possibility of physical

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deformity, pain, lack of financial and social support, loss of female identity and sexual desire, decreased social activity, concerns about the uncertain future, relapse, death, etc. (Snoj et al., 2008). Although many definitions have been proposed for sex and intimacy, is difficult to understand these concepts (Taylor 1983). Sexual relations are an individual's physical and mental personality traits shaping his/her identity (Black et al., 2001). According to the 4th Diagnostic and Statistical Manual of Mental Disorders and the World Health Organization, the concept of sexual dysfunction is the disorder of sexual desire and social-psychosocial changes that affect the sexual response cycle and cause stress and interpersonal problems and contains the lack of sexual desire, sexual aversion, disorder in sexual arousal, and orgasm (Fahami et al., 2014; Shayan et al., 2015). The importance of breast as a symbol of femininity and sexual issues to the degree and level of preoccupation in the contemporary culture of America has been extensively documented and approved. Breast removal through surgery is regarded as the destruction of a part of the body which is the symbol of sexuality, femininity and maternal dimensions (Khajeh Aminean et al., 2014, Shayan et al., 2016; Shayan et al., 2016). The sexual dysfunction in women with gynecologic cancer has reached 80% and according to national survey conducted in 2005, 31.15% of women have sexual dysfunction in Iran. In gynecologic and breast cancers, impaired sexual function leads to the highest amount of stress in patients since diagnosis to long-term follow-up period and it seems that sexual self-image is an important concept in predicting sexual dysfunction (Plotti et al., 2012; Masoumi et al., 2016, Emilee et al., 2010). One of the effective ways to increase the quality of life is reducing and treating psychological distress and negative emotions caused by cancer and the intervention method of stress management and relaxation in women with breast cancer is an effective approach. This approach was designed and researched on patients with breast cancer, prostate cancer, and AIDS by Michael Anthony et al. at the University of Miami, Florida (Antoni et al., 2009). Stress management training adds elements of cognitive therapy to the treatment in which decentralization view will facilitate a person's thoughts. The approach informs the patient in terms of the disorder roots and its mechanism in the brain, prevents his anxiousness, consciously concentrates on his thoughts and desires and allows him/her not to select repetition of actions or thoughts and chewing them in order to reduce anxiety and to contemplate on the biological roots of disorder. Although the technology, human growth, and development has allowed humans not to have physical mobility to treat many diseases and to save time, it must be acknowledged that many diseases and mental disorders can still be solved in the light of the therapist's short-term guidance and training. Research has shown that stress management counseling improves mood and its short-term training lead to decreased fatigue and anxiety (Zeidan et al., 2010), increased self-esteem (Goldin and Gross, 2010), improved sexual function (Mohammadi, 2012) and reduced distress (Jamshidifar, 2013). Due to the increasing number of cancer patients in Iran and the world and increasing costs of health care and

its impact on other aspects of life and the stress, coping with it and enhancing the individual's quality of life is of particular importance. Considering the effectiveness of cognitive therapy behavior of stress management in patients with breast cancer, this study aims to investigate the effect of behavioral stress management intervention on sexual function of women with breast cancer referring to Hamadan MRI center.

## Materials and Methods

This study was a quasi-experimental design with pre-test, post-test, and follow-up checks consisting two groups of experimental and control. It aims to examine the effectiveness of stress management consulting on sexual function and stresses in women with breast cancer. Among patients with breast cancer referring to the MRI center of Hamadan, after obtaining informed consent, 104 cases who met the inclusion criteria were selected as convenience sampling. Random sampling as a block and with consideration to two groups of cases and (Allocation concealment) secret allocation witnesses were divided. The control and experimental groups were selected based on random tables. The study inclusion criteria included age range of 20-60 years, married, women with breast cancer of grade 3 and below after mastectomy surgery and under chemotherapy, lack of other chronic illnesses, and having passed at least one month of operating period and exclusion criteria included a history of important mental and physical illness such as psychosis including schizophrenia and severe depression and so on which require a special medicine or diet, not participating in more than one educational session, the occurrence of stressful events (death of close relatives/friends, divorce, etc.) during the study, and drug abuse. The experimental group participated in 9 two-hour sessions over consecutive weeks in stress management training classes of 10 persons. The control group received no psychological intervention and only received medical treatments. In this study, both groups are supposed to be homogenous with regard to influencing factors such as age, stage of disease, and other demographic specifications and non-participation in previous training courses. The objectives of the training sessions were designed (Table 1). Before treatment, the pre-test was performed via a questionnaire for the experimental and control groups. Post-test and follow-up test were also administered for both groups after the final session and two week later. The therapist specified some assignments each session to be done during the interval of the sessions by the patients. The patients presented a report on how they did their assignment in each session. The patients in the experimental group were asked to use their learned techniques. At the start of each training session, the participants were asked to express what they had learned in the previous training session to remove the misunderstandings. This led to further repetition and practice and stability of new learned issues. In the follow-up period, the control group is taught stress all issues related to stress management counseling. The used questionnaires consisted of:

#### *Demographic questionnaire*

Including age, education, employment, drug and tobacco consumption, age at first menstruation (menarche), menopausal status, marital status, contraception technique, grade (breast cancer grade), having or not having surgery.

#### *Sexual function questionnaire*

Including 19 four-choice questions. This standard questionnaire measures the six dimensions of sexual function (libido, orgasm, arousal, sexual pain, lubrication and sexual satisfaction) during the last 4 weeks. The sexual desire disorder, arousal disorder, erectile dysfunction, orgasm disorder, and sexual satisfaction are under 4.28, 5.08, 5.45, 5.05, and 5.04, respectively. The minimum score and maximum score of this questionnaire are 2 and 36, respectively. Questions 1 and 2 of this questionnaire are related to libido, questions 3, 4, 5, and 6 to sexual arousal, questions 7, 8, 9, and 10 to lubrication, questions 11, 12, and 13 to orgasm, questions 14, 15, and 16 to sexual satisfaction, questions 17, 18, and 19 to pain. To determine the score of each person in each section and the total score, the questionnaire table was used. The score of each section was obtained by summing the scores of questions of each section and multiplying the sum in the weights of each section. The minimum score for the sexual desire was 1.2 and it was zero for sexual arousal, lubrication, orgasm and pain. The sexual satisfaction score was zero or .8 and the minimum score for the total scale was equal to 2. The maximum score for each section was 6 and for the total scale, it was 36. Cut-off point to determine sexual function disorders was 28 or less so that those participants with the score 28 or below obtained for total sexual function have sexual function disorder. Total rating achieved in various sections is calculated. Obviously, the total score is obtained from the sum of the scores of 6 sections. Zero refers to having no sexual activity in the past month. Khadijeh-Mohammadi, Masoumeh-Heidari, and Faghihzadeh in the Department of Nursing-Midwifery at Shahed University studied the reliability and validity of Farsi version of the questionnaire in 2008. It was translated and re-translated from the source language (English) into Farsi. The reliability of the scales and subscales was obtained via Cronbach's alpha coefficient and it was calculated for all participants 70% and higher, representing the acceptable reliability of this instrument (Khosravi, 2000).

#### *Harry's Stress questionnaire*

The questionnaire was developed by Chandran in 2005 to measure mental pressure and stress in different life situations and contains 66 items. Grading questions is possible via using the Likert scale (0-5). If the sum is higher than 150, it means that the person is under stress and it is essential that his life conditions change and if the score is above 250, he shall be placed under specialized care. The result of the Spearman Brown formula was 0.74 and 79% to calculate the internal reliability and to check the reliability of the questionnaire time for a sample of 50 students in the retest (within 4 weeks). To check the validity, the content validity was examined and 66 items

out of 101 ones received the highest score; i.e. they were best representative of stress symptoms (Dadras et al., 2015).

#### *Ethical Considerations*

After obtaining permission from the Department of Research and Ethics Committee Code IR.UMSHA.REC.1394.205 of Hamadan Medical Sciences, providing explanations for research purposes, reminding of keeping the information confidential, voluntary participation in the study and completing the consent form, this study was conducted.

#### *Statistical methods*

Data was analyzed using SPSS version 21, descriptive statistics, chi-square tests, independent T-test, and two-way ANOVA. The significance level in this study was considered less than 5.

## **Results**

The study was carried on 104 women with breast cancer referring to the MRI center at Hamadan in 2015. The participants included 104 women with a mean age and standard deviation of 51.13±1.65 years and the mean age and standard deviation of the control group was 10.18±46.65 years. The results revealed that the two groups were similar in terms of demographic specifications (Table 1). Comparing the stress scores of experimental and control groups in three steps (Graph 1). Results show that the mean and standard deviation for the control and experimental groups in the pre-test stage were 25.2372±252.5192 and 23.3963±239.15, respectively. According to the scores obtained, both groups were exposed to stress. Moreover, the mean score of stress in the experimental group compared to the control group significantly decreased after the intervention. Stress score of control group did not significantly change in pretest and posttest and the person may still be exposed to stress. Two weeks after the intervention, the mean score of the experimental group was (15.259±81.65), the control group (25.751±251.01) had not changed. In the follow-up stage, the patients in the control group were still exposed to a lot of stress and tension that can represent the effect of stress management program and its enduring effects over time on stress and tension reduction. A significant difference between the two groups in three stages of pre-test, post-test and the two-week follow-up was seen ( $P<0.001$ ). The results of two-way ANOVA to measure the effect of stress management training in stress reduction of women with breast cancer showed that the mean score of stress for the control group during these three times did not change; however, it reduced in the control group and it had no change two weeks after the test compared to the second stage (Table 2). Two-way ANOVA was carried out to evaluate the differences of stress mean scores of two experimental and control groups over time. Given the significant amount of the variable group, there was a significant difference between the stress mean scores. This can also be observed in (Table 3). This means that stress

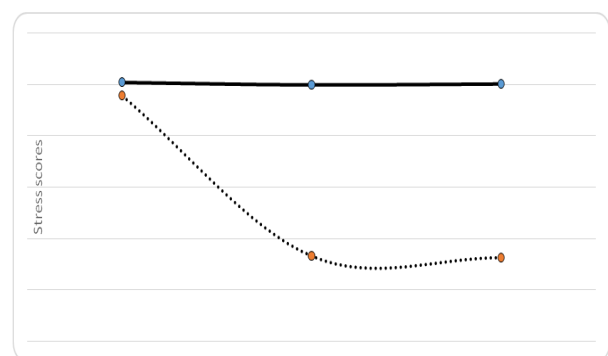
Table 1. Demographic Characteristics of Patients and Their Comparison in the Two Experimental and Control Groups

Variable	Features	Intervention group		Control group		P-value
		Number	Percent	Number	Percent	
Education	Illiterate	20	38.5	10	19.2	0.091
	Under the diploma	17	32.7	24	46.2	
	Diploma and Higher	15	28.8	18	34.6	
Prevention History	Yes	47	90.4	40	76.9	0.063
	No	5	9.6	12	23.1	
Prevention type	Lack of prevention	5	9.6	12	23.1	0.109
	Natural	16	30.8	8	15.4	
	Condom	24	46.2	27	51.9	
	Others	7	13.5	5	9.6	
Menopause	Yes	23	44.2	16	30.8	0.156
	No	29	55.8	36	69.2	
Grade of Cancer	1	6	11.5	10	19.2	0.197
	2	11	21.2	16	30.8	
	3	35	67.3	26	50	
Chemotherapy	Yes	49	94.2	44	84.6	0.111
	No	3	5.8	8	15.4	
Radiation Therapy	Yes	4	7.7	11	21.2	0.06
	No	48	92.3	41	78.8	

Table 2. Comparison of the Mean Stress Score in the Experimental and Control Groups Before and After the Intervention and Two Weeks After the Intervention

Scale	Experimental group			Control group		
	Mean Differences	Standard Error	Sig. Level	Mean Differences	Standard Error	Sig. Level
Pre and post-test	155.90385	3.72585	0.001	2.48077	5.0547	0.624
Pre-test and two weeks later	157.5	3.72585	0.001	1.5	5.0547	0.767
post-test and two weeks later	1.5961	3.72585	0.669	-0.98077	5.0547	0.846

scores in the control group had no significant change; however, it was decreasing in the experimental group which indicates that the intervention was effective in reducing stress. Due to the significance, the stress mean scores in general have changed over time. There is also an interaction between group and time, meaning that changes in stress scores between the two groups is not the same over the time. Sexual function and its aspects were reported to be low for both groups in pre-test because, on the basis of the questionnaire scoring, the minimum and maximum scores of sexual desire were 1.2 and 6, respectively (Table 4). These scores for area sexual arousal were 0 and 6, for lubrication 0 and 6, orgasm 0 and 6, sexual satisfaction 0 and .8, and pain is 0 and 6. For



Graph 1. Comparison of the Mean Stress Score in the Experimental and Control Groups in Three Stages

Table 3. The Evaluation of The Mean Stress Score Over Time as a Whole And Individually in the Experimental and Control Groups

Component	Source of changes	DF	Overall changes	F	Sig. level
Stress	Groups	1	1,058,752.003	2,065.394	0.001
	Sizes	2	436,514.564	425.772	0.001
	Interaction Effect	2	414,971.103	404.759	0.001



Table 4. The Changes of the Mean Sexual Function Score of in the Two Intervention and Control Groups

Scale	Pre-test				Post-test				Two week follow-up			
	Experimental		Control		Experimental		Control		Experimental		Control	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Sexual Desire	1.4192	0.44503	1.4423	0.57304	2.9423	1.4271	1.3269	0.43391	3.0692	1.33718	1.3269	0.43391
Sexual Arousal	1.0558	0.88814	1.0615	0.90579	3.0865	1.50685	0.7615	0.89599	3.1962	1.53188	0.7615	0.89599
Lubrication	1.05	0.9	1.0269	0.87786	2.8212	1.4664	0.8019	0.93126	2.8558	1.51637	0.8019	0.93126
Orgasm	0.9769	0.86922	1.2538	1.13974	3.2077	1.81754	0.8231	1.01877	3.2154	1.6596	0.8231	1.01877
Sexual Satisfaction	1.0692	0.86309	1.0923	0.97696	3.3	1.8843	0.7231	0.82714	3.2692	1.83854	0.7231	0.82714
Pain	0.9077	0.79257	0.8923	0.8627	2.0846	1.39317	0.7769	0.91836	3.0615	1.98486	0.7615	0.92464
Sexual Function	6.4788	4.13642	6.7692	4.44419	17.4423	7.99726	5.2135	4.49889	18.6673	8.25901	5.1981	4.51144

Table 5. Changes in Sexual Function and Its Dimensions in the Two Groups

Component	Source of changes	DF	Overall changes	F	Sig.
Sexual function	groups	1	5,594.774	160.139	0.001
	Sizes	2	1,756.691	25.141	0.001
	Interaction effect	2	3,012.505	43.114	0.001
Sexual desire	groups	1	96.37	122.307	0.001
	Sizes	2	37.724	23.938	0.001
	Interaction effect	2	50.416	31.992	0.001
Sexual arousal	groups	1	195.858	150.043	0.001
	Sizes	2	55.42	21.228	0.001
	Interaction effect	2	98.8	37.844	0.001
Lubrication	groups	1	145.413	112.363	0.001
	Sizes	2	42.385	16.376	0.001
	Interaction effect	2	70.285	27.155	0.001
orgasm	groups	1	175.5	103.356	0.001
	Sizes	2	56.401	16.608	0.001
	Interaction effect	2	123.142	36.261	0.001
Sexual Satisfaction	groups	1	225.42	135.272	0.001
	Sizes	2	59.089	17.729	0.001
	Interaction effect	2	115.803	34.746	0.001
pain	groups	1	113.765	76.255	0.001
	Sizes	2	53.25	17.847	0.001
	Interaction effect	2	68.243	22.871	0.001

the whole scale, the maximum score is 36. After the stress management intervention, scores of the sexual function aspects and total sexual function increased significantly, meaning that sexual function was enhanced. In the control group, no significant change was observed in the aspects of sexual function and sexual function remained at a low level. Using two-way ANOVA, a significant difference was observed between the two groups in terms of sexual function and its aspects. This means that stress management intervention in the intervention group resulted in improved sexual function in post-test and follow-up stages. However, no improvement in the sexual

function of the control group in three stages of pre-test and post-test and follow-up was reported (Table 5).

## Discussion

Sense of cancer transmission through sexual contact, risk of abortion, depression and side effects of antidepressants, impaired mental image after mastectomy, stress and diagnosis of a disease are among the causes of sexual dysfunction. Given the importance of sexual function and its impact on quality of life and sexual function of the people, the present study was conducted to investigate the effect of stress counseling on sexual function and stress in women with breast cancer in 2015. This studies conducted by Macgorjer et al., (2009) and Anthony et al., (2006) showed that the cognitive - behavioral stress management method causes to reduce distress (stress, anxiety and depression) in women with breast cancer. In fact, this method by working on stressful experiences, changes an individual's assessment of stressful consequences and the participants in these programs approach stressful factors with a new sense of power and self-confidence (Antoni et al., 2006, McGreger et al., 2009). Stress management training using cognitive behavioral group therapy can reduce the secretion of cortisol in response to stress by affecting the hypothalamic-pituitary-adrenal axis (HPA) (Snoek and Skinner, 2006). On the other hand, the major issues and problems that commonly affect the life quality and sexual function in patients with cancer include psychological and emotional effects caused by the disease and diagnostic and treatment measures, stress, etc., which are among the factors that affect sexual function in cancer patients. Both the experimental and control groups in the pretest reported a low sexual function which is in line with the findings of the research conducted in the field of the breast cancer on women's sexual functioning. Studies have shown that women with breast cancer in different countries feel that their sexual function has changed under the influence of illness and treatment (Manganiello et al., 2011). In the study conducted by Kedde et al., (2013) in the Netherlands, 64 percent of women, who were still under the treatment for breast cancer, had sexual dysfunction and after their treatment was terminated, this disorder was reduced to 45%. Sertoozet al., (2004) and Henan (2005) in their studies found that the incidence of cancer negatively affects sexual dysfunction and self-esteem in

a person and results in negative body image, loss of sense of femininity and decreased sexual activity. Following the change in the physical and psychological level, social relationships and intimate interactions with people around the patient change and the patient has a feeling of the rupture in their family and social life (Mohammadzadeh et al., 2014). Sexual dysfunction following the breast cancer probably remains more than one year of its diagnosis. It seems that chemotherapy is responsible for the majority of sexual problems including reduced sexual desire and mental arousal, vaginal dryness and dyspareunia. Two large groups of breast cancer survivors were studied on sexual function and satisfaction after the treatment of breast cancer and the most important predictors of sexual health were demonstrated to be lack of vaginal dryness, a sense of emotional well-being, positive body image, better relationship quality, and lack of partner sexual problems (Panjariet al., 2011). The results of the studies by Onen et al., (2004) and Hanoun et al., (2005) showed that mastectomy and chemotherapy cause negative changes in body image, low self-esteem and sense of femininity and sexual dysfunction, particularly in young women (Hannoun-Levi, 2005, OnenSertoz et al., 2004). In line with the results of this study, in a cross sectional study by Chen et al., (2013) in Taiwan conducted on 128 women with genital tract cancer, sexual satisfaction of women had a significant relationship with national status, age, and duration and type of treatment (Chen et al., 2013). Thus, breast cancer and its common treatments can cause sexual dysfunction. These group of patients experience early menopause and as a result, reduction in estrogen causes vaginal atrophy and decreased androgen causes a decline in sexual desire and arousal (Christie et al., 2010). After the intervention of the stress management counseling, no changes were observed in the control group regarding the sexual function in the post-test and follow-up, however, the sexual function was significantly enhanced in the experimental group. Overall, there was significant difference between the two groups in the three levels of pre-test and post-test and follow-up, which suggests that the stress management counseling can have a significant impact in improving the sexual function. The psychological and mental state of individuals after exposure to breast cancer has a profound effect on their sexual function. The anxiety and depression are among the most important factors influencing the quality of sexual and cognitive life in patients with cancer (Aghabarari et al., 2008). Terdolconcludes that marital intervention through reducing psychological distresses lead to improved sexual function among couples. In fact, marital and sexual function is highly correlated with sexual function (Trudel et al., 2010). Due to adverse effects of other breast cancer treatment methods on sexual function, cognitive - behavioral techniques and couples therapy are recommended to be further used for the greater enhancement of the sexual and cognitive qualities of life and educators must have enough information regarding the impact of cancer treatments on sexual function and techniques and treatments necessary to improve sexual function (Takahashi et al., 2005). Counseling programs can include the impact of cancer and type of treatments on

sexual function, improvement of intimate communication with a sexual partner, guidance to reduce the physical effects of the disease and treatment, such as hair loss and self-help strategies to overcome sexual problems such as pain during intercourse or loss of sexual desire (ShoaaKazemi and Namdari, 2008). Overall, this study showed that the cognitive-behavioral stress management therapy has an important role in improving sexual function and reducing stress in women with breast cancer. Due to the effectiveness of the cognitive-behavioral stress management therapy on quality of life and sexuality of these people, this therapy can be provided as a recommended treatment in addition to medical treatments in oncology centers and hospitals.

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