RESEARCH ARTICLE

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The Effect of Cognitive-Behavioral Counseling on Sexual Function in Women with Breast Cancer: An Interventional Study

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Abstract

Objective: Breast cancer is the most common malignancy in women worldwide. This can expose all aspect of their life including sexual function. The aim of this research was to investigate the effect of cognitive-behavioral counseling on sexual function in women with breast cancer. **Methods:** This study was an interventional per-test, post-test design with control group. One hundred women with breast cancer referring to Maxa center in Esfahan at the time of data collection were conventionally selected in 2020. They were randomly divided into intervention and control groups (n=50), using permuted blocks. The intervention group receiving cognitive-behavioral counseling in 10 one-hour, sessions twice a week. Data were collected through a demographic questionnaire, the Female Sexual Function Index (FSFI) questionnaire, filled out by patients before and one month after intervention. Data analyzed using independent t-test, paired t-test, and chi-square. Significance level was considered P <0.05. **Results:** The results showed that cognitive-behavioral counseling group therapy improved total sexual functioning and its subscales. Four weeks after the counseling, there was a significant difference in mean scores of total sexual functions between the two groups (P = 0.001). In the intervention group the mean scores for lubrication and dyspareunia did not show a significant difference in post-test results (P = 0.129, P = 0.89, respectively). **Conclusion:** Cognitive - behavioral group therapy can be improved total sexual functioning and its subscales in the intervention group one month after the intervention. So, this method can be used besides with medical treatment as a complementary therapy in oncology wards.

Keywords: Breast cancer- cognitive- behavior- counseling- oncology- sexual function

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Introduction

Breast cancer is the most common malignancy in women worldwide. Sexual dysfunction is a common and distressing side effect of breast cancer treatment, with studies estimating that up to 70% of breast cancer survivors experience problems with sexual function. These issues can manifest in a variety of ways, including decreased libido, dyspareunia and difficulty achieving orgasm. The physical and emotional side effects of breast cancer treatment can exacerbate these problems and lead to increased levels of anxiety, depression and stress in the relationship [1]. Awareness of sexual dysfunction in cancer patients is important. Therefore, it is recommended to carry out appropriate educational/counseling interventions to increase the quality of life, reduce negative emotions caused by cancer, and treat cancer patients' mental distress and sexual health [2].

Today, the most famous and common methods used in the treatment of sexual problems are Cognitive Behavioral Therapies (CBT). CBT is a widely-used therapeutic approach that focuses on changing negative thought patterns and behaviors to improve mental health and overall well-being. It has been shown to be effective in treating a variety of psychological issues, including anxiety, depression, and post-traumatic stress disorder. In recent years, researchers have begun to explore the potential benefits of CBT for addressing sexual dysfunction in women with breast cancer [3].

The physical and emotional toll of breast cancer treatment can exacerbate these problems, leading to increased levels of anxiety, depression, and relationship strain. CBT offers a promising approach to addressing sexual dysfunction in this population by targeting the

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cognitive and behavioral factors that contribute to these issues. By helping women identify and challenge negative thought patterns related to their sexuality, CBT can empower them to develop healthier attitudes and beliefs about sex [4]. Additionally, CBT techniques such as relaxation training and mindfulness exercises can help women manage anxiety and stress, which are often barriers to sexual enjoyment [5].

Several studies recently have highlighted the potential benefits of CBT for improving sexual function in women with breast cancer. For example, a study found that mothers after puerperium who received CBT for sexual dysfunction reported significant improvements in sexual desire, arousal, and satisfaction compared to a control group [6]. A study in Iran also concluded that CBT interventions were associated with significant improvements in sexual function, increased the frequency of sex and reduced patients' sub scales scores of sexual absence, dissatisfaction and sexual avoidance. As well as increased marital satisfaction, especially in the areas of communication and solving skills the conflict of couples and their sexual intercourse has a great impact. In addition, this treatment enhances sexual knowledge, attitude and confidence in women [7]. CBT teaches people how to deal with destructive and mental releasing patterns that have a negative impact on their behavior and change these thoughts [4]. But the results of a study showed lack of the impact of education and CBT in improving sexual function in pregnancy [8].

In conclusion, cognitive behavior therapy shows promise as an effective intervention for addressing sexual dysfunction in women with breast cancer. By targeting the psychological factors that contribute to sexual problems, CBT may be help women develop healthier attitudes and behaviors around sexuality, leading to improved sexual function and overall quality of life [9]. So given the effect of CBT on sexual performance, the aim of this study was the effect of CBT counseling on the sexual function of women with breast cancer.

Materials and Methods

Design

This study was an educational design with pre-test, post-test, and follow-up checks consisting two groups of interventional and control. It aims to examine the effectiveness of cognitive-behavioral group counseling on the sexual function of women with breast cancer.

Setting and Sampling

The study was conducted at a cancer treatment center in Iran (Iranian Cancer Control Center (MACSA), which provided services according to international standards. The study population included 100 women with breast cancer attending the cancer center that was recruited through convenience sampling. Participants were invited to the center by appointment and before obtaining written consent, they were given verbal and written information about the study objectives. After obtaining informed consent, 100 cases who met the inclusion criteria were selected random sampling as a block to either the cognitive-behavioral group counseling (intervention group), or the control group (n=50 in each group).

Inclusion criteria

Married, level of education at least junior high school, breast cancer of 1-3 stage, undergoing chemotherapy or radiotherapy more than one month after mastectomy, lack of unresolved sexual problems, lack of other chronic disease or substance abuse, lack of recognized mental disorders, no use of medications affecting sexual responses, living with the spouse, not participating in counseling or educational programs in the past 6 months.

Exclusion criteria

Lack of willingness to participate, occurrence of any problem during the study (divorce, death of close relatives/ friends, etc.), absence from counseling sessions more than once, change of residence.

Instruments

Demographic questionnaire

Demographic questionnaire: Including age, employment, education, length of marriage, stage of disease, and frequency of chemotherapy treatment.

Female Sexual Function questionnaire

The Female Sexual Function Index (FSFI) questionnaire consists of 19 questions and assesses the six dimensions of sexual function (desire, arousal, lubrication, orgasm, sexual satisfaction and dyspareunia, over the past four weeks. The scoring is based on a 5-point Likert scale, ranging from "almost always" (5) to "never" (1). Questions 1- 2 of this questionnaire are related to desire, questions 3- 6 to sexual arousal, questions 7- 10 to lubrication, questions 11- 13 to orgasm, questions 14- 16 to sexual satisfaction, questions 17- 19 to pain. The questionnaire table was used to determine the score of each person in each section and the total score. The score of each section was gained from the sum of the scores of the questions of each section and multiplying the total by the weights. The minimum score for the sexual desire was 1.2 and it was zero for arousal, lubrication, orgasm and pain. The sexual satisfaction score was zero or 0.8 and minimum score for the total scale was equal to 2. The maximum score was 6 for each domain and 36 for the total scale, that higher scores indicating better sexual function. The total score obtained in different sections is calculated. The total score is obviously obtained from the sum of the scores of 6 sections. The cut-off points for determining sexual dysfunction was 28 or less, so that participants with a score of 28 or less on the total sexual function were considered to have sexual dysfunction.

The interpretation of scores included comparing the mean total scores of the questionnaires before and one month after counseling in the intervention and control groups, followed by statistical analysis to assess changes. The validity and reliability of the questionnaire were confirmed in previous studies, showing high internal consistency and reliability [10, 11].

A. Assessment Phase

Before the treatment began, participants in both the

intervention and control groups were provided with questionnaires for pre-tests. Post-tests and follow-ups were conducted one month after the last session for both groups.

B. Implementation Phase

Participants in the intervention group received sexual counseling with the CBT approach, 10 one-hour sessions twice a week. Participants in the control group just received routine hospital treatment. A summary of the content of the counseling sessions is given in Table 1 [4, 8, 12].

C. Evaluation Phase

This phase was completed after one month after the implementation phase. The efficacy of interventions on participants' sexual function was reevaluated using the FSFI questionnaire. Comparisons between intervention groups and control groups as well as pre - and post-intervention comparisons were done.

Method of intervention

Fifty women in the intervention group received ten counseling sessions (twice a week). The counseling sessions were held in 2 groups of 25, and each session lasted 60 min. At the end of the study, one compact disk on CBT sessions was also provided to the control group.

Statistical methods

Data was analyzed using SPSS version 21, descriptive statistics, chi-square tests, paired t-test, independent T-test. The significance level in this study was considered less than 0.05.

Results

The demographic characteristics of the participants are depicted in Tables 2 and 3, respectively, that the intervention and control groups were homogeneous (P>0.05). Other main findings are reported in Tables 2-3.

The mean sexual function index of the intervention group was 16.83 ± 4.34 and 18.74 ± 6.49 in the control group before intervention, with no significant difference (P=0.22). Based on the findings, four weeks after the counseling sessions, the mean sexual function score in the intervention group (23.3 ± 4.8) was significantly higher than the control group (18.56 ± 4.56) (P=0.001).

Sexual function and its dimensions were reported to

Table 1. Content of the Counseling Sessions

Sessions	Goals	Content
First	Introduction and goals	1- Introduction; 2- cooperation and confidence ; 3- importance of counseling and education; 4- goals of group counseling; 5- general guidelines of the sessions
Second	Familiarization with genital system anatomy	Familiarization with female and male anatomy
Third	Sexual response cycle	1-Familiarization with Sexual response cycle, 2- familiarization with sexual dysfunction and its management. 3-definition of sexual satisfaction; 4-mental image of the patients about their bodies
Fourth	Familiarizing with the benefits of sex	1-Role of intercourse for keeping and improving mental health; 2- increase of muscular relaxation after intercourse during their disease; 3- correction of misbeliefs about intercourse during their disease
Fifth	A different view of cancer	1- The concept of cancer; 2- Defense mechanisms in cancer patients; 3- dealing with inner emotions
Sixth	Familiarizing with side effects of treatments	Familiarization with physical and psychological complications of drug treatments, surgery, chemo and radiotherapy
Seventh	Familiarization with sex problems	1-Familiarization with common side effects of treatments related to sex; 2-education and counseling regarding solving the problems;3- education different positions during sex.
Eighth	Kegel exercises	Familiarization with Kegel exercises
Ninth	Familiarization with relaxation techniques	Education relaxation techniques, sensory-focused exercises, imagination and regular desensitization
Tenth	Physical care, review of previous sessions	1-Education breathing techniques, nutrition and physical activity;2- Recall and emphasis on the content and explanation of the past nine sessions

Table 2. Mean of the Characteristic Variables of the Participants in the Intervention and Control Groups

Variables	Intervention Mean (±SD)	Control Mean(±SD)	P value†
Age (y)	37.04 (±4.62)	37.48 (±4.63)	0.74
Duration of marriage (y)	14.16 (± 7.40)	14.84 (± 6.33)	0.73
Number of children	1.48 (±0.96)	1.52 (±0.92)	0.88
Number of chemotherapies	9.12 (±3.65)	8.36 (± 3.25)	0.44

† Independent sample T-test P.value<0.05

Table 3. Frequency of Demographic Variables in the Intervention and Control Groups

Variable	Features	Intervention group (n=50)	Control group (n=50)	P-value†
Female's education	Under the diploma	8 (4)	8 (4)	0.49
	Diploma	40 (20)	56 (28)	
	Higher than diploma	52 (26)	36 (18)	
Female's occupation	Housekeeper	88 (44)	84 (42)	0.16
	Employee	12 (6)	16 (8)	
Spouse's education	Under the diploma	16 (8)	28 (14)	0.22
	Diploma	56 (28)	32 (16)	
	Higher than diploma	28 (14)	40 (20)	
Spouse's occupation	Employee	84 (42)	88 (44)	0.16
	Unemployed	16 (8)	12 (6)	
Stage of cancer	1	48 (24)	60 (30)	0.66
	2	44 (22)	32 (16)	
	3	8 (4)	8 (4)	

† Independent sample T-test P.value<0.05

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

Sexual Function	group	Mean (±SD)		Pv†
Categories		Pre -test	Post-test	
Sexual Desire	Intervention	2.49 (±1.13)	4.13 (±1.51)	0.001
	Control	2.76 (±0.93)	3.27 (±1.25)	0.106
Pv††		0.373	0.033	
Sexual Arousal	Intervention	2.73 (±1.16)	3.69 (±1.61)	0.027
	Control	2.88 (±1.28)	2.72 (±1.07)	0.631
Pv††		0.671	0.018	
Lubrication	Intervention	2.88 (±1.45)	3.49 (±1.45)	0.129
	Control	3.42 (±1.58)	2.82 (±1.51)	0.154
Pv††		0.213	0.121	
Orgasm	Intervention	3.13 (±1.36)	4.15 (±1.21)	0.001
	Control	2.69 (±1.21)	3.31 (±1.44)	0.621
Pv††		0.235	0.031	
Sexual Satisfaction	Intervention	2.84 (±1.46)	4.62 (±1.49)	0.001
	Control	3.26 (±1.53)	3.72 (±1.62)	0.215
Pv††		0.332	0.047	
Pain	Intervention	3.17 (±1.80)	3.24 (±1.78)	0.891
	Control	3.27 (±1.44)	2.68 (±1.35)	0.176
Pv††		0.836	0.218	
Sexual Function	Intervention	16.83 (±4.34)	23.3 (±4.81)	0.001
	Control	18.74 (±6.49)	18.56 (±4.56)	0.876
Pv††		0.228	0.001	

†, Pair t-test; ††, Independent sample T-test; P value (between before and 4 weeks after the intervention)

be low in the pre-test for both groups as the minimum and maximum scores for sexual desire were 1.2 and 6 respectively. These scores for sexual arousal, lubrication, orgasm and pain were 0 and 6, and for sexual satisfaction were 0 and 0.8. This function was reported for both the intervention and control groups in the pre-test and one month after the test. Four weeks after the counseling, in the intervention group, difference in mean scores of sexual desires (P=0.033), sexual arousal (P=0.018), orgasm (P=0.031), sexual satisfaction (P=0.047) and sexual function (P=0.001) was significantly more than the control group. But the difference of lubrication (P=0.121) and pain (P=0.218) weren't significant. Also, in the intervention group the difference in mean scores of sexual desires (P=0.001), sexual arousal (P=0.027), orgasm (P=0.001), sexual satisfaction (P=0.001) and sexual function (P=0.001) was significantly more than before counseling. But in control group these weren't

significant (P>0.05) (Table 4).

Discussion

In the current research, it was tried to replace harmful thoughts with useful thoughts about sexual function. Given the importance of sexual performance and its impact on sexual function of the people, the present study was conducted to investigate the effect of cognitive-behavioral counseling on sexual function in women with breast cancer in 2020.

Both intervention and control groups reported low sexual function in the per-test, consistent with findings in breast cancer research. Studies in various countries have shown that women with breast cancer feel that their sexual function has been affected by the disease and treatment [13]. The results of a study showed that 64% of women still under breast cancer treatment had sexual dysfunction, which reduced to 45% after treatment [14].Two large groups of breast cancer survivors were studied in terms of sexual function and satisfaction after treatment, showing that the most important predictors of sexual health are lack of vaginal dryness, emotional well-being, positive body image, relationship quality, and absence of partner sexual problems. Sexual dysfunction following breast cancer probably remained for more than a year after its diagnosis .Chemotherapy seems to be responsible for most of the sexual problems, including decreased libido and mental arousal, vaginal dryness and dyspareunia [15]. According to the results, after group CBT counseling, the mean of total sexual function score and its subscales (except for lubrication and dyspareunia) showed a significant increase in the intervention group compared to the control group.

This results were in line with other studies such as [4-5, 13, 16-18], i . In a quasi-experimental study, Shayan and colleagues (2017) aimed to investigate the effect of a stress management intervention program on sexual performance and stress reduction in 104 women with breast cancer, referring to an MRI center in Hamadan. The results indicated the effect of group cognitive-behavioral therapy on reduction of stress level, improvement of sexual function, and its subscales in the experimental group after and two weeks of the intervention [13].

Moradi Nasab et al. (2023) conducted a study on cognitive-behavioral counseling in the treatment of sexual self-esteem and sexual performance in reproductive age women suffering from urinary incontinence. The study population included 84 women with urinary incontinence attending health centers in Dezful (n=42 in each group). The intervention group received 8 sessions of 45-minute CBT counseling. The scale was the Pelvic Organ Prolapse Incontinence Sexual Questionnaire (PISQ-12). They reported that CBT increased sexual self-esteem and improved sexual function in the women with urinary incontinence [4]. While the results of the mentioned study were in line with our findings, there were some differences between the two studies in terms of sample population, applied study tools and number and duration of counseling sessions.

Consistent with the findings of the present study, Hummel (2015) in the Netherlands investigated the effect of internet-based cognitive-behavioral counseling on the sexual function of 160 women with breast cancer (n=80 in each group). Internet counseling was provided in 20 sessions of 100 minutes each at weekly intervals, focusing on cognitive restructuring and sensory training. The Rosen's sexual function questionnaire was completed by the intervention group at the beginning, and then at ten weeks, 1, 3, and 9 months after the end of the intervention, while the control group completed the questionnaire at the beginning and ten weeks after the treatment. The results showed that this treatment led to increased sexual intimacy, improved body image and sexual performance in all areas, in the patient [17]. Differences in the mean of dyspareunia may be due to differences in the study tools, sample size, number of counseling sessions, longer follow-up periods, individual and internet-based counseling sessions vs. group counseling in the present study.

Following changes in the physical, mental and social levels, intimate relationships and interactions with the people around the patient have changed and the patient feels a disruption in her family and social life. In CBT, therapists consider cognitive processing more important than physiological factors. Negative thinking about sexual activity makes the symptoms worse and permanent, so uncovering these negative self-perceptions is effective in analyzing sexual problems successfully [3].

Unlike other studies indicating the positive impact of CBT on sexual function, in a study carried out in Arak, Iran, Vakilian et al (2018) evaluated the effect of cognitive-behavioral counseling on the sexual function of pregnant women. In total, 100 women were randomly assigned into two groups of intervention and control (n=50 per group). Moreover, 7 sessions of 90-minute CBT were held for the participants. The study tool was FSFI. The results showed no significant effect of CBT counseling on improving sexual function, beliefs, and attitudes of pregnant women [8]. This inconsistency could be due to the difference in the sample population and the number of sessions. Perhaps counseling could not overcome the physical and psychological changes that occur during pregnancy and be effective in enhancing sexual function in pregnant women. In mentioned study, before and after the intervention, the mean score of lubrication and pain in the group counseling, as well as with the control group, did not statistically significant.

The results of the studies by Saeidi et al (2017). showed that sexual dysfunctions management using CBT had a positive impact on women's sexual function but had no effect on lubrication and dyspareunia [18].

In another study, Fatehi et al (2019) evaluated the effect of group counseling with a psychological approach on the quality of life and sexual function of women with breast cancer. In total, 118 women were randomly divided into two groups of intervention and control (n=59 per group). The intervention group received six two-hour weekly counseling sessions. The study tools were Beck Depression, FSFI and Larson's questionnaire. According to the results, more than 65% of participants had mild depression. Scores for quality of life and sexual function in all areas, including lubrication, were significant after

the intervention [9]. The differences in sample size and longer follow-up period (3 months vs. 1 month) in mention study compared to our finding may have an impact on the findings. A longer follow-up period after the counseling sessions may have an effect on the results.

Studies show that CBT can improve sexual function in breast cancer patients, providing guidance on physical effects of treatment and strategies to overcome sexual problems. CBT may be more effective than surgery or medication in relieving pain and sexual dysfunctions. The exercises taught in CBT sessions can lead to complex psychological reactions, enhancing pleasure and reducing tension in sexual relationships. These exercises help individuals express emotions and communicate openly, reducing anxiety and facilitating emotional expression within relationships. By replacing incorrect cognitions with correct ones, CBT can eliminate guilt and fear, motivating patients to accept and express their sexual interests freely. The therapeutic intervention focuses on planning the sexual process to create a positive and tension-free environment for patients.

The findings of the study showed that cognitive-behavioral group counseling was effective in improving sexual function and its domains, including sexual desire, arousal, orgasm and sexual satisfaction of women with breast cancer. Sex counselors should be the initiators of sexuality discussion during treatment; this prevents the exclusion of women with cancer from these cares. Due to the effectiveness of the CBT on sexuality of these patients, this therapy can be provided as a recommended treatment in addition to medical management in oncology centers and hospitals.

Limitations of the study

The study had strengths such as randomization of participants and comparable demographic data between groups. However, limitations included the stigmatized view of sexual issues in Iran, limited research on sexual disorders in Iranian society, lack of a developed protocol suitable for Iranian patients, inclusion of only female patients preventing generalization to males, short follow-up period, and the suggestion to conduct longer follow-up and couple therapy. Larger sample sizes in future studies may confirm the benefits of Cognitive Behavioral Therapy on sexual function in women with breast cancer.

Author Contribution Statement

All authors contributed to the read equally. All authors studied and approved the final manuscript.

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General

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Approval

This study is the result of a master's thesis in midwifery counseling.

Ethical Declaration

This study is the result of a master's thesis in midwifery counseling. After obtaining permission from the Department of Research and Ethics Committee (ethic No.IR.ARAKMU.REC.1398.222) of Arak University of Medical Sciences, providing explanations for research objectives, reminding of keeping the information confidential, voluntary participation in the study and completing the consent form, this study was performed.

Conflict of Interest

No conflict of interest.

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