

The Effect of Cognitive Behavior Stress Management Program on the Distress, Coping Skills, and the Social Support of Omani Women with Breast Cancer: A Pilot Study

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Abstract

Cognitive behavior stress management (CBSM) is an effective intervention that is suitable for use with women who have been diagnosed with breast cancer; however, the effectiveness of CBSM in an applied clinical setting has not been examined in an Omani cultural context. Therefore, we examined the effectiveness of an 8-week CBSM group program using a sample of 6 Omani women who had been diagnosed with early-stage breast cancer. The purpose of this case study was to examine clinically significant changes in distress, social support, and the psychological ability to cope with breast cancer from pretest to posttest and follow-up (i.e., 1 month later). Overall, the group yielded strong positive effect sizes indicating clinical improvement over time in distress symptoms and social support, but strong unfavorable effect sizes in cognitive avoidance. All women met the measurement criteria for anxiety and depression at baseline. The 2 participants who had the highest levels of baseline distress demonstrated the most pronounced improvements in depression and anxiety at posttest; however, their scores had returned to baseline levels at follow-up. On the other hand, the qualitative feedback of all 6 women underscored the effectiveness of the program in facilitating cognitive restructuring, relaxation, and social support. The present findings offer preliminary support to the effectiveness of CBSM in reducing psychological distress, improving coping skills, and fostering social support skills among Omani women with breast cancer. However, the program also had a few unfavorable results with regard to one coping strategy, namely, cognitive avoidance. Nevertheless, the findings suggest that social support can alleviate distress and improve coping skills among Omani women who struggle with breast cancer and its treatment. Further, strategies that can address cognitive avoidance and temporally sustain the positive effects of CBSM must be examined in future studies.

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Keywords: Omani women; cognitive-behavior therapy; effectiveness; breast cancer; cognitive behavior stress management.

1. Introduction

The Sultanate of Oman is a developing Asian country that has an efficient healthcare system, which offers free medical services to Omani nationals and non-Omani individuals who work for the government through the Ministry of Health [4,6]. Breast cancer is the most common type of cancer among Omani women, compared to other countries in the world [7,8,9]. According to the authors in [4], one out of every five Omani women lives with breast cancer. This indicates that 15.6 women per 100 000 female inhabitants of Oman are in need of breast cancer treatment.

In Oman, the late stage and early age presentation of breast cancer; however, there has been an improvement in the 5-year relapse-free survival (RFS) and 5-year overall survival (OS) of Omani women with breast cancer. This improvement in RFS and OS is due to the use of advanced treatment modalities, including updated chemotherapy and treatment protocols [4,6]. Despite the high prevalence of advanced breast cancer among Omani women, their survival rates have significantly improved. The survival rate of Omani women with breast cancer is currently 78 %, and it used to be 64 % between the years of 1996 and 2002 [7].

Omani women have significantly high rates of breast cancer incidence and associated mortality. The authors in [7] found that Omani women suffered from high levels of anxiety, depression, and a distorted view of the world, the future, and the self. Further, feelings of low self-confidence, self-esteem, and self-efficacy were found to be directly related to depression and anxiety [7]. The authors in [7] also found that these women experienced the fear and depression that were precipitated by complications of cancer, medication side effects, and the fear of cancer recurrence on a daily basis. However, they also used several strategies to cope with the disease, including wishful thinking, emotional expression, family and social support, yoga exercise, and increased religious practice [7]. In studies that have been conducted among breast cancer patients in Saudi Arabia, the participants reported that their faith helped them cope with the pain and suffering that they experienced during the entire traumatic period of diagnosis and treatment [7]. Their faith in Allah's (God) power to heal them filled them with hope, and they accepted that their diagnosis of breast cancer was accorded by Allah's will; this improved their ability to cope with their predicament. The role of religion in reducing the distress that the treatment and pain of breast cancer entails has been further validated by scholars [4,7,10,15] who have conducted studies among Muslim women with breast cancer in Iran, Egypt, and Turkey.

Denial is one of the coping strategies that Omani women use to adapt to the challenges of a breast cancer diagnosis [7,19,20]. Nonetheless, this coping mechanism could delay their initiative to seek early treatment [7]. In a study that was conducted among Egyptian Arabic women with breast cancer, the authors in [10] found that denial was a coping style that allowed the women to distance themselves from negative thoughts and feelings, and foster hope about the treatment outcomes of breast cancer. However, it was also observed that denial delayed their initiative to seek medical attention; hence, denial was associated with the metastasis of cancer [10].

The presentation of advanced cancer ailments is common among cancer patients in developing countries. A lack of mass education about breast cancer, cultural barriers, ineffective screening programs, and a poor literacy rate are a few of the common factors that are responsible for advanced-stage presentations of cancer. According to the World Health Organization [27,28], the number of breast cancer cases is lower in the Middle East than in Western countries. However, the mortality rates of women who are diagnosed with breast cancer are much higher in Middle Eastern countries than in Western countries [16]. The WHO explained that this might be the case because the people who live in Arab nations do not receive regular screening checkups, which will ensure the early detection and treatment of cancer. The sociodemographic characteristics that were associated with a delay in seeking medical treatment were an older age, a low educational level, and the occupational status of being a housewife. In a mixed-methods study, the authors in [17] examined the factors that influenced Omani women's level of breast cancer awareness and early detection practices. A total of 369 women consented to participate in their study and completed a questionnaire [17]. Out of the total sample, 68 (19 %) women had poor knowledge, 219 (59 %) women had average knowledge, 77 (21 %) women had good knowledge, and five (1 %) women had excellent knowledge about breast cancer [17]. These findings showed that there was a lack of awareness and knowledge about breast cancer symptoms among Omani women. The researchers also showed that general awareness about breast cancer was significantly associated with age, education, income, and familiarity with cancer patients, and that early detection of breast cancer was significantly associated with age, marital status, and education. A majority of the women (59.5 %) endorsed the belief that an "evil eye" or envy from others is a risk factor for breast cancer [17]. The women also articulated the various factors that could empower or inhibit their awareness; these included the cultural-religion-fatalistic system, personal-familial-environmental system, and healthcare-political-social system [17]. The findings of this study were consistent with previous findings that Arab women tend to have low levels of knowledge about breast cancer symptoms, investigations, and treatment options [18].

In comparison to Western countries, a majority of Omani women who are diagnosed with breast cancer face advanced cancer ailments (Stage III or IV), and they tend to be a decade younger than their Western counterparts [6,7,26]. In addition, it is still common for Omani women to not speak about their condition due to the shame and stigma that is attached to breast cancer in Omani society; this may result in a delay in diagnosis [1].

Breast cancer diagnosis remains one of the main causes of distress among female cancer patients in Oman [20]. Depression, fear, and stress, which are the most experienced forms of cancer-related psychological disorders, have a negative impact on the hypothalamic-pituitary-adrenal (HPA) axis. The persistent stimulation of the HPA axis during a chronic stress response and a depressive episode weakens the immune response and contributes to the development and progression of some types of cancer. Further, both depression and stress are linked to decreased natural killer cell cytotoxicity and the T-cell activities that affect processes such as the immune surveillance of tumors [21]. Other relevant biological processes that are affected by stress (i.e., an increase in DNA damage, the accumulation of somatic mutations, and alterations in DNA repair) may be involved in the onset and outcomes of some types of cancer. Future research in the field of psychoneuroimmunology is needed to understand the pathways that are involved in the relationship between stress, the HPA, and the immune system, with respect to cancer onset and progression [20,22].

Distress is an element of a patient's clinical presentation [23]. Depression, anxiety, and posttraumatic stress disorder (PTSD) symptoms are present in approximately 20 % to 66 % of women during the 12 months that follow a breast cancer diagnosis [24]. The symptoms of distress that women with breast cancer experience include concerns about the illness and a decline in health, sleep disturbances, poor appetite, anger management skills, concentration difficulties, and preoccupation with thoughts about death [National Comprehensive Cancer Network Distress Management Panel, 2005]. Anxiety and fear about cancer recurrence are also issues that breast cancer patients face [26]. Psychotropic medications like anxiolytics, hypnotics, and antidepressants [25] have been used to alleviate the distress and pain that breast cancer patients experience; however, pharmacological interventions have not been successful in alleviating pain and distress [26]. Thus, it is crucial to examine non-pharmacological approaches that can alleviate the depression, pain, and anxiety that are associated with breast cancer.

The latest psychological interventions like psycho-educational programs, mindfulness-based therapies, and support groups effectively facilitate adjustment to a cancer diagnosis [27,28]. In studies on cognitive behavior therapy (CBT), the authors [29] demonstrated its beneficial outcomes for disease-related symptoms, emotional distress, and functional adjustment. The most effective CBT program that has been designed for breast cancer patients is the Cognitive Behavior Stress Management (CBSM) [30] Program, which addresses five core areas: improving coping skills and emotional expression, increasing awareness to one's stress response, and teaching anxiety-reduction and cognitive restructuring skills. CBSM enhances benefit-finding [30,31], alleviates depression, anxiety, and intrusive thoughts [33,34,37], and improves immune function and the quality of one's life [33]. A recent study [31] showed that out of 15 studies on psychological intervention, CBT was more effective in improving depression, fatigue, and physical functioning when compared to standard care. Cognitive Behavioral Stress Management (CBSM), has validated efficacy in several chronic illnesses [28]. In another study [25] CBSM interventions reduce distress by utilizing relaxation skills, coping methods, cognitive appraisal and modifying patients' outlook. CBSM applied in a group format with cancer patients also improve the perceptions of social support [33]. Group-based CBSM decreases overall stress level and improves quality of life and anxiety by modulating cortisol output, and recovers cellular immune functioning among patients tackling with immunomodulating diseases or treatments [23, 24].

Although the empirical basis for CBSM is strong, there were no previous studies conducted in Oman to examine the program's efficacy in the applied clinical setting for breast cancer management strategy. CBSM has been implemented only during the time of diagnosis. This is an appropriate target for empirical studies because the distress levels of cancer patients are usually elevated at the time of diagnosis. However, in applied clinical settings, patients may be referred for CBSM at any stage of their treatment plan. Thus, group programs have a mixed composition of current patients, recent completers, and long-term survivors. The feasibility of CBSM in a mixed group has not been examined. In addition, there are no published CBSM studies found in populations outside of the Western world.

In this case study, we evaluated the effectiveness of a CBSM group program that was offered by a psychologist within the oncology department of Sultan Qaboos University Hospital. In this project, we aimed to examine whether CBSM is effective in alleviating distress, enhancing social support, and promoting adaptive coping

strategies among Omani breast cancer patients and survivors.

2. Method

Omani culture is different from Western traditions. Therefore, some aspects of the therapeutic design of the CBSM program were customized to suit the Arab culture. There are several significant cognitions from the Islamic faith that can be assimilated into the counseling process with Muslim clients to ensure that the cognitive restructuring model, core beliefs, and the client's dysfunctional automatic thoughts are identified. This process involves an evaluation and alteration of automatic thoughts, and subsequently, the restructuring of core beliefs and assumptions. Modification occurs primarily through an examination of the evidence and the search for alternative explanations; other methods may also be used. The client is encouraged to question, evaluate, and restructure their dysfunctional thoughts and beliefs. Islamic beliefs can be offered as alternatives to the dysfunctional thoughts that are associated with distress. The principles of this method are based on the cognitive-behavioral model of the author in [34], and it has been adapted to suit the religious principles and sociocultural context of Oman. The sample size was determined based on pragmatic considerations; indeed, case studies are one of most effective means to stimulate new research. If the findings of the present study are deemed valuable, they can lead to new and progressive research in this field. The wide range of studies that have already been conducted would not have been possible without the case study methodology [24]. Since this study was the first of its kind to be conducted in Oman, we decided to use the case study method and a sample of six Omani women with early breast cancer.

2.1. Measurement/procedure

2.1.1. Measures

2.1.1.1. Distress

Anxiety and depression were measured using the short version of the Depression Anxiety Stress Scales (DASS-21; Lovebird, 1995). It is a 21-item self-report measure that has adequate psychometric validity and reliability for both community and clinical populations (Antony and his colleagues 2006). The depression subscale measures dysphoria, self-deprecation, lack of interest, anhedonia, and hopelessness. The anxiety subscale measures autonomic arousal, situational anxiety, subjective experience of anxiety affect, and skeletal musculature effects. The participants indicated the frequency with which they had experienced each item during the past week on a 4-point scale that ranged from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). A composite score was computed by summing the individual item scores for each 7-item subscale. The resultant scores were doubled so that the ranges were identical to the original 42-item assessments. Thus, scores could range from 0–42, and higher scores were indicative of a greater severity of the respective symptoms [36]. The subscale scores can be further categorized as *normal*, *mild*, *moderate*, *severe*, and *extremely severe* based on conventional cutoff scores. In the present study, these cutoff scores were used as a measure of clinically significant change.

2.1.1.2. Coping

The short form of the Mental Adjustment to Cancer scale (Mini-MAC) [37] consists of 29 items that assess five factors: fighting spirit (four items), fatalism (five items), anxious preoccupation (eight items), helplessness/hopelessness (eight items), and cognitive avoidance (four items). The participants indicated the extent to which each statement currently applied to them on a 4-point scale; a composite score was calculated by summing the items for each corresponding domain. The possible range of scores was 4–16 for cognitive avoidance and fighting spirit, 5–20 for fatalism, and 8–32 for anxious preoccupation and helplessness/hopelessness; higher scores were indicative of a greater use of the respective coping style. The psychometric properties and factor structure of the mini-MAC have been well-established [37].

2.1.1.3. Social support

The 19-item Medical Outcomes Study Social Support Survey [38] was developed using a sample of approximately 4000 patients who had chronic health conditions. Participants were required to indicate the frequency with which each type of social support was available to them at times when they required it on a 5-point rating scale (1 = *none of the time*, 2 = *a little of the time*, 3 = *some of the time*, 4 = *most of the time*, 5 = *all of the time*). The total scale score was used in the present study. It can be computed by averaging the individual item scores and transforming the resultant values based on a 0–100 scale; higher scores are indicative of higher levels of perceived social support accessibility. The psychometric properties of this scale have been well-established [38].

2.1.1.4. Qualitative post-treatment feedback

Participants were required to complete a short feedback form, in addition to the measures that have been previously presented. This form contained items that assessed the extent to which participants were satisfied with (a) the content of the program, (b) the pace of the program, (c) its efficiency in addressing their presenting problems, and (d) the recommended changes. Participants were required to respond to each of these items on a 5-point rating scale that ranged from 1 (*unsatisfactory*) to 5 (*very satisfactory*). The form also contained a blank space that participants could use to provide qualitative feedback about the program content.

2.2. Setting

The population that was of interest to the present study was women who were diagnosed with breast cancer in Oman. The Participants were recruited from the Sultan Qaboos University Hospital (SQUH). This hospital was chosen because it is one of the primary hospitals in the country that provides complete cancer treatment. Patients who attended the inpatient and outpatient oncology clinics in SQUH were approached; patients who were receiving chemotherapy in the daycare room in SQUH were also requested to participate in the study.

2.3. Participants

The participants were selected from the inpatient and outpatient oncology units of SQUH, Muscat. The sample inclusion criteria were as follows: aged 18 years or older, Omani by birth, cognitively intelligent (i.e., able to understand the content of the program and provide informed consent), possession of basic Arabic writing skills,

and a diagnosis of Stage I breast cancer. The participants were not required to meet the DSM-V diagnostic criteria, as the program was advertised as one that would merely offer therapeutic and general support. Ethical approval for the present study was obtained from the Local Ethics Committee of the Sultan Qaboos University. We conducted the program in accordance with Oman's medical rules and regulations that are prescribed by the national statutes, and the participating institution's in-house policies.

2.3.1. Participant A

Participant A was a 47-year-old woman who had received her diagnosis 2 months prior to the baseline psychological assessment. Her medical treatment plan consisted of a unilateral mastectomy and adjuvant chemotherapy during the entire course of the group program. Her presenting problems pertained to coping with cancer (e.g., anger and depression related to her diagnosis) and the associated feelings of grief and loss. Patient A exhibited anger and blamed the local healthcare centers of the country for her late diagnosis. According to her, the healthcare clinicians had failed to notice the signs of breast cancer at an early stage, thereby delaying her referral to primary tertiary treatment facility. She was not under the influence of any mood medication at the time of the assessment.

2.3.2. Participant B

Participant B was a 51-year-old woman who had been diagnosed with invasive breast cancer 2 months prior to the assessment. Her medical history showed that she had also suffered a previous ductal carcinoma in situ. She required only a mastectomy, and she had completed her treatment before the commencement of the group program. She presented with anxiety about cancer recurrence, stress management, feelings of emotional vulnerability, and difficulties with assertiveness. Participant B was not under the influence of any mood medication at the time of the assessment.

2.3.3. Participant C

Participant C was a 46-year-old female who had received her diagnosis 5 months prior to the assessment. Her treatment regimen consisted of a partial mastectomy and chemotherapy. The radiotherapy treatment was initiated during the course of the group program. Her presenting problems included feelings of helplessness/hopelessness, depression, and interpersonal/relationship difficulties. She reported feeling anxious about the treatment procedures in SQUH because she had initially been treated outside Oman and was satisfied with the level of care that she had received. Participant C was not under the influence of any mood medication at the time of the assessment.

2.3.4. Participant D

Participant D was a 42-year-old woman who had received her diagnosis 16 months prior to the assessment. Her medical treatment, which had been completed at the time of assessment, had consisted of bilateral mastectomies, chemotherapy, radiotherapy, and a prophylactic hysterectomy because she had tested positive for the BRCA-II gene. Her presenting problems included anxiety, depression, anger, and a loss of self-confidence. She was not

under the influence of any mood medication at the time of the assessment.

2.3.5. Participant E

Participant E was a 45-year-old woman who had received her diagnosis 9 months prior to the assessment. Her medical treatment consisted of a mastectomy and chemotherapy. She was receiving adjuvant Herceptin treatment (a targeted gene therapy medication) during the course of the group program. Her presenting problems included feelings of emotional vulnerability, anxiety about her family's well-being, and feelings of isolation. This participant also expressed concerns about her poor knowledge about breast cancer and its treatment. She was not under the influence of any mood medication at the time of assessment.

2.3.6. Participant F

Participant F was a 46-year-old woman who had received her diagnosis 2 months prior to the assessment. Her medical treatment included chemotherapy. She was receiving adjuvant therapy during the course of the group program. Her presenting symptoms included feelings of sadness and anxiety that were primarily due to the side effects of chemotherapy. She also reported anxiety about cancer recurrence, general life-related worries, and concerns about grief and loss.

2.4. Procedure

The participants individually completed a semi-structured (pre-intervention) assessment. This was used to establish the eligibility, presenting problems, and treatment goals of the participants. A number of self-report measures were administered as a part of the assessment. Subsequently, the intervention was conducted, and the self-report assessment was re-administered at the end of the final group session (post-intervention). Additionally, the assessment questionnaire (follow-up) was mailed to the participants 1 month after the completion of the group program. The participants gathered in a room that was equipped with chairs that could be used for relaxation exercises, group discussion, and psycho-educational components. The group leader was a psychologist who had received doctoral-level training in CBT and relaxation therapy techniques.

2.5. The intervention

The CBSM intervention was delivered using a structured closed group format. Each of the 8 weekly sessions lasted for 2 hours [30]. Each session comprised two major components: relaxation and cognitive therapy. Weekly homework assignments, such as writing down one's negative thoughts (Arabic/English) about breast cancer, were provided to the participants (blank notebooks were provided to patients). The topic of each session was founded on the concepts that had been introduced in the previous session. The topics that were addressed included the following: (a) an introduction to the stress response, (b) the cognitive model, (c) automatic thoughts and common unhelpful thought patterns, (d) cognitive restructuring, (e) an introduction to these authors' [39] coping model, (e) coping and acceptance, (f) social support, (g) anger management, (h) assertive communication, and (i) relapse prevention/treatment summary. The women were taught breathing exercises during the third session. The patients were encouraged to practice relaxation exercises with the assistance of the

psychologist during the session and to continue to independently practice them once a week. Arabic and English instructional handouts on relaxation exercises were provided to the participants. We ensured that the instructions were in a simple language with respect to Arab culture.

2.6. Analysis

Two indicators of clinically significant changes were used. First, within-subjects effect sizes (Cohen’s *d*) were calculated using the following formula to determine whether the intervention had led to any temporal improvements in the group:

$$d = \frac{MT1 - MT2}{SD_{pooled}} \quad (1)$$

In this equation, MT1 refers to the raw mean score at baseline, MT2 refers to the raw mean score at the end of the intervention or at follow-up, and *SD*_{pooled} refers to the average standard deviation of the sample. Therefore, a positive effect size indicates that the score had reduced over time, and a negative effect size indicates that the scores had improved over time. Values of 0.2, 0.5, and 0.8 are indicative of a small, moderate, and large effect size, respectively [40]. Clinically significant individual changes in distress was examined using the established clinical cutoffs for the DASS, and the qualitative feedback was analyzed thematically.

3. Results

The participants of this study attended an average of 8.8 sessions (*SD* = 0.84, Range = 8–10). The within-group effect sizes for all the study variables are presented in Table 1. Table 2 shows individual changes in depression and anxiety based on the respective clinical cutoffs. Individual temporal changes were examined for outcomes that evidenced large effect sizes at the group level.

Table 1: Clinical significance from prepost and pre-follow-up of the Group: Effect sizes for social support, distress, and coping

Variable	<i>d</i> : Pretest versus posttest	<i>d</i> : Pretest versus follow-up
<i>Distress</i>		
Anxiety	0.29	0.24
Depression	0.54	0.13
<i>Coping</i>		
Fighting spirit	-0.04	0
Anxious preoccupation	0.41	0.52
Cognitive avoidance	-0.18	-2.18
Helpless/hopeless	-0.04	0.39
Fatalism	0	0.14
<i>Social support</i>	0.92	-0.74

Note. Interpretation of effect sizes: *d* = 0.2 (small effect size), *d* = 0.5 (moderate effect size), and *d* = 0.8 (large effect size).

Table 2: Individual clinical outcomes for distress

Participant	Time	Participant A	Participant B	Participant C	Participant D	Participant E	Participant F
Depression	Pretest	6 (Normal)	20 (Moderate)	32 (extremely severe)	22 (severe)	0 (normal)	18 (Moderate)
	Posttest	6 (Normal)	18 (Moderate)	8 (normal)	10 (mild)	4 (normal)	6 (normal)
	Outcome	Unchanged	Unchanged	Recovered	Improved	Unchanged	Unchanged
	Follow-up	8 (Normal)	10 (Mild)	42 (ext. severe)	16 (Moderate)	0 (normal)	10 (Mild)
	Outcome	Unchanged	Improved	Deteriorated	Deteriorated (overall improved)	Unchanged	Improved
Anxiety	Pretest	8 (Mild)	4 (Normal)	18 (severe)	20 (extremely severe)	2 (normal)	18 (Mild)
	Posttest	8 (Mild)	6 (Normal)	12 (moderate)	6 (normal)	8 (mild)	6 (Mild)
	Outcome	Unchanged	Unchanged	Improved	Recovered	Deteriorated	Improved
	Follow-up	2 (Normal)	2 (Normal)	22 (extremely severe)	16 (severe)	0 (Normal)	2 (Normal)
	Outcome	Improved	Unchanged	Deteriorated	Deteriorated	Improved	Improved

3.1. Distress

Table 1 shows that the CBSM program resulted in a reasonable decline in depression from pretest to posttest ($d = 0.54$); however, this trend was not sustained at follow-up.

Table 2 shows that there was a significant and substantial temporal decline in depression between pretest and posttest for Participants C (current patient) and D (survivor). However, these improvements were not sustained at follow-up, and their scores had lowered to the baseline levels. Participants B and F demonstrated a clinically significant improvement between pretest and posttest (moderate), and follow-up (mild). Participants A and E's depression scores were in the normal range at all time points.

For anxiety, the intervention had a slight effect size. Specifically, although Participants C and D demonstrated clinically significant diminutions at posttest, they had rebounded at follow-up (Table 2). Two participants (A and F) demonstrated a clinically significant improvement between pretest and posttest (mild), and follow-up

(normal). Two participants' (B and E) scores were normal at baseline, and they remained unchanged across time.

3.2. Coping and social support

As shown in Table 1, there was a large clinically significant escalation in cognitive avoidance from pretest to follow-up ($d = 2.18$). Figure 2 shows that from pre- to post-treatment, four participants (B, D, E, and F) expressed reductions, and Participants A and C experienced a rise in avoidance, while all participants increased in avoidance from posttest to follow-up. There was no other clinically significant group change in any other coping strategy. Cognitive avoidance is an unhealthy coping mechanism that can alleviate the emotional pain that is associated with anxiety and depression. For example, generalized anxiety disorder (GAD) is characterized by persistent and uncontrollable worry. According to the cognitive avoidance theory of GAD, worry may function as an affective damping strategy that is motivated by an intolerance for negative emotional states. By enabling the avoidance of distressing cognitions and the associated affect, worry impedes the modification of the representation of fear memory, and consequently maintains threats that could perpetuate further anxiety and worry.

As far as social support is concerned, the intervention had a clinically significant effect at posttest, $d = 7.92$ (large effect size), and at follow-up, $d = 7.74$ (moderate/large effect size). Figure 3 shows that there was an increase in social support from pretest to posttest for all the participants stated. At follow-up, Participants C, E, and F demonstrated further increase in social support, while the remaining participants decreased.

3.3. Qualitative feedback

The qualitative feedback that was obtained pertained to three discrete topics: the level of satisfaction with the group program, the personal benefits of attending the group program, and how the group helped them in other areas of their lives (i.e., generalized benefits).

3.3.1. Satisfaction with therapy

All participants rated the therapy length, quality, content, and facilitator as helpful. Further, all six women reported that they would like to participate in similar programs that should be more often conducted in the oncology unit. All participants also reported that the severity of their presenting problems had declined over the course of the program.

3.3.2. Personal benefits

The results of the thematic analysis suggest that the intervention had yielded beneficial outcomes in three major areas: (a) the opportunity to engage in relaxation exercises, (b) open communication and discussion with other women with breast cancer, and (c) learning and practicing cognitive restructuring techniques.

3.3.3. Generalized benefits

Participants were encouraged to report whether the program had any impact on other areas of their lives. All six women individually reported that the program had enabled them to talk about their illness with their family members. They also reported that they were able to enhance their quality of life by thinking positively and engaging in healthier interactions with their family members.

None of the participants of the program suggested any changes. Instead, all six women stated that they “wished the program would be longer and look forward to see these kinds of programs happening more frequent in hospital.”

4. Discussion

In this pilot study, we sought to evaluate the effectiveness of an existing CBT program, with confirmed, validated, empirical efficacy in improving adjustment for six Omani women with breast cancer in an applied clinical setting of SQUH. The CBSM program was designed to enhance the general wellbeing of women with early-stage breast cancer [30]. To our knowledge, this is the first paper to report the implementation of the CBSM program in an applied population outside of the United States with participants at varying points in the cancer treatment trajectory. Further, this is the first evidenced-based psychological intervention program that has been conducted among Omani women who have been diagnosed with breast cancer. The present findings offer partial support for the efficacy of this program. Specifically, the CBSM intervention alleviated depressive symptoms, and the corresponding effect sizes were moderate in magnitude and positive in direction at posttest and follow-up. Further, CBSM enhanced social support, and the corresponding effect sizes were large in magnitude and negative in direction at both posttest and follow-up. However, the benefits must be balanced against the negative effects size that was pointed out in cognitive avoidance at the follow-up stage and the lack of clinically sustained improvements on coping measures and distress for the two participants (C and D) with the highest levels of baseline distress.

Previous studies that have examined how Arab patients cope with breast cancer have found that their primary coping skills include faith, spirituality, and religious beliefs that were endorsed by the family [7]. Given the religious support that Omani women receive, the standard CBSM program was tailored in accordance with the religious and cultural values of Arab patients. In order to include religious components in the CBSM program, the patients were taught to learn to recognize uncomfortable emotions, activating events, negative automatic thoughts, talk about their faith in Allah and its desirable effects on automatic negative thoughts, practice relaxation (i.e., breathing) exercises, and complete home assignments. Patients were also encouraged to talk about their religious notions of good and evil and their reliance on Allah’s power and patience.

With respect to distress, four participants reported moderate to severe depression at baseline, and three participants demonstrated a clinically significant improvement at posttest (Participants C, D, and F). Although Participant B did not demonstrate a clinically significant improvement at posttest or at follow-up, her scores had changed from being indicative of moderate depression to mild depression at follow-up. On the other hand, Participant F demonstrated a consistent reduction in distress from posttest to follow-up. The moderate effect size that emerged for the group was not sustained at follow-up; nevertheless, two out of the three depressed

participants demonstrated a delayed albeit sustained improvement. These results are collectively distinct from these authors' [41] findings that the prevalence of moderate depression had decreased by 20–30 % at posttest, and that this effect was sustained at follow-up (i.e., 8 months after the completion of the group program). CBT frequently leads to long-lasting gains that sustain even after the treatment ends; this is because participants learn to implement and reinforce the skills that they have recently acquired. Although this appears to be applicable to Participants B and F, Participants C and D may have failed to use the concepts that were taught to them, thereby leading to a rebound effect.

The CBSM program did not produce consistent changes in anxiety for the four participants who had reported anxiety symptoms at baseline. Although Participants C, D, and F demonstrated improvement at posttest, Participant E's symptoms deteriorated from normal to mild, and Participant A's mild symptoms remained unchanged. Thus, the program was effective only for the women who had severe levels of baseline anxiety. At follow-up, the scores of Participants C and D were similar to what was observed at baseline; on the other hand, those who had reported mild anxiety demonstrated an improvement (Participants A and E). Participant F who had high levels of anxiety at baseline had mild levels of anxiety at follow-up. These findings can be summarized as follows: (a) mild anxiety might not consistently respond to group CBT and may resolve outside the therapeutic setting and (b) severe anxiety can be adequately addressed by group therapy; consequently, additional booster sessions are required to augment the CBT skills that participants acquire during the program. This overall lack of sustained effect that was found in the present study is similar to these authors' [41] finding that the program did not influence general mood disturbances. However, it contradicts these authors' [33] finding that the levels of distress and anxiety of highly distressed participants who had undergone a CBSM program had reduced, and that this effect was sustained across a 12- month period.

The high levels of cognitive avoidance rose for all six women even after the group concluded. This implies that the group was effective at alleviating avoidance while women were actively engaged in skill gaining, and it is an area meriting further attention [33]. The primary contribution of the present study is toward the facilitation of social support, which has not been explored as an outcome of the CBSM program. Social support is a worthy intervention outcome because one of the CBSM modules is dedicated to this topic. One of the primary reasons for running the group program using the selected format is to build a reliable social support framework for women suffering with the same type of illness to share their experiences with each other in a group program. Therefore, the clinically significant improvement in social support that was observed from pretest to follow-up implies that the design of the CBSM program (i.e., in a group setting) achieved its dual purpose. Such a contention was also supported by the qualitative feedback, whereby all women reported that the support that they received from each other was one of the beneficial outcomes of the program. With regard to the individual trajectories, all six participants demonstrated an improvement in social support across the 8-week program. However, only three participants (C, E, and F) continued to report further minor improvements between posttest and follow-up. Of the two participants whose distress scores returned to baseline levels, the total social support score was higher for Participant C and lower for Participant D at follow-up.

Regardless of the time of diagnosis, all six women achieved clinically significant improvements on two measures of distress at either posttest or follow-up. The findings of this study can be applied across the spectrum

during the breast cancer treatment and posttreatment phase. This contention is further supported by the qualitative feedback: all six participants considered the program content and group facilitator to be helpful and satisfactory. Although demand-effects were likely to have influenced this finding, other metrics also suggested that the program was well received. Indeed, the retention rate of the present study was 100 % (the minimum number of sessions that was attended by each participant was eight).

The findings of the present study offer preliminary support to the contention that the CBSM group is an effective intervention that can be used in applied clinical settings to alleviate the traumatic stress that Omani women with breast cancer experience. The intervention was well- received, and it was relevant to women who differed in their temporal positions within the treatment trajectory. Unfortunately, however, the program did not lead to enduring improvements. The CBSM module that was used in this study can be implemented in health institutions in Oman. However, it requires continuous modifications to ensure the maintenance of the resultant improvements in symptoms and coping skills. Further, there is a need to educate Omani women about breast cancer by means of routine booster sessions. It is also important to respect the religious and cultural beliefs of Arab women by redesigning the CBT program in such a manner that it includes components that are grounded in the Islamic faith.

5. Limitation

The conclusions that have been drawn about the beneficial outcomes of this CBT program only provide preliminary evidence about its applicability in an applied clinical setting. Given that the present study used a case study methodology, small sample size and dependency on self-report measures, the findings have limited generalizability. Therefore, a replication study that employs a larger sample size is required in future. Given that our sample was predominantly Omani women with a low education, generalizability of results is also questionable.

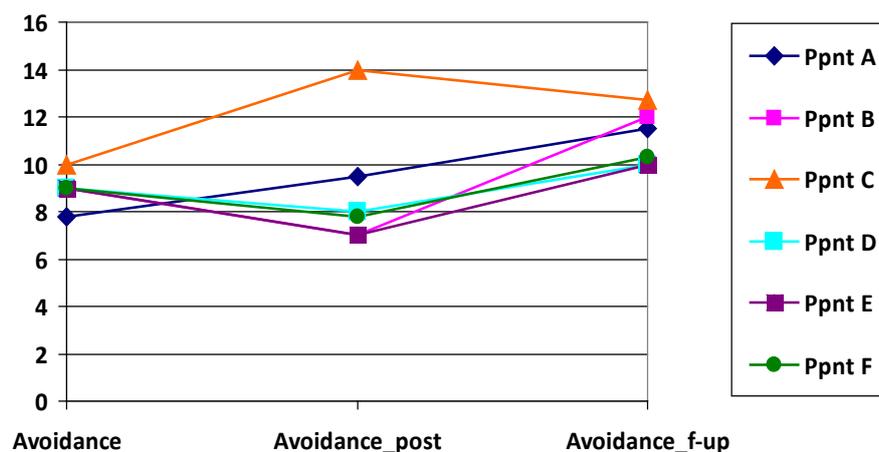


Figure 1: temporal changes in cognitive avoidance

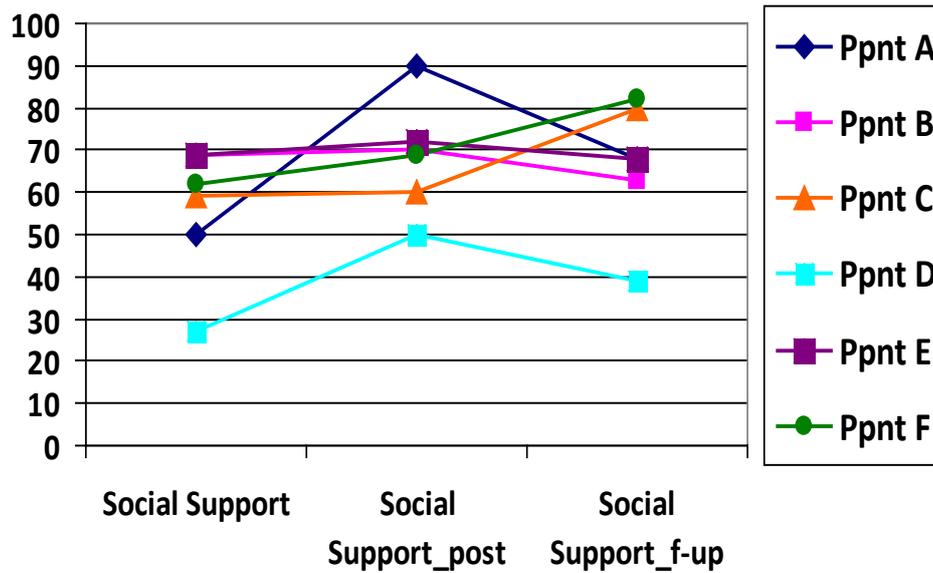


Figure 2: temporal changes in social support

6. Conclusion

The present findings are consistent with those of previous studies. Similar to women around the globe, Omani women also experience significant distress when they receive a breast cancer diagnosis and undergo the corresponding treatment. If these conditions are left untreated, they can lead to serious medical and health consequences, and adversely impact the quality of life and healthcare expenditure of patients. Therefore, the incorporation of psychological services into the medical treatment package may alleviate depression and anxiety, and consequently improve the quality of life of Omani women with breast cancer. In addition, the results of this pilot study indicate the potential benefits and probability of a stress management-based group CBSM intervention program for breast cancer patients in Oman. Future work should focus on enlisting a larger sample, and comparing the effects of CBSM with those of well-established CBT-based interventions with equal contact time to ensure which CBT programs are most appropriate with cancer survivors patients of Oman.

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