

## **Cognitive Behavioural Therapy Techniques for Management of Depression, Anxiety and Quality of Life in Breast Cancer Patients: A Systematic Review**

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### **Abstract**

This systematic review is to examine the effectiveness of cognitive behavioural therapy (CBT) techniques for management of depression, anxiety and Quality of life in breast cancer patients. Twenty One studies that used CBT technique with breast cancer patients were identified and effect sizes were calculated to determine (1) whether CBT techniques have a significant impact on management of psychological symptoms, (2) if individual or group treatments are more effective and, (3) whether severity of cancer diagnosis influences psychological symptoms. Review findings supported CBT as an effective intervention for improving the psychological symptoms in cancer patients. Studies with individual treatment approaches had significantly larger effects compared to studies that employed group approaches for CBT use. Studies also reported no significant differences in effects between those with or without metastasis. Most of the study results found CBT to be the treatment of choice for chronic insomnia, fatigue, depression and anxiety, for improving subjective and emotional well being and overall quality of life. In summary, the findings support the use of CBT techniques administered individually to manage psychological symptoms in breast cancer patients. However, more well-designed studies are needed.

**KEYWORDS:** Cognitive Behaviour Therapy, psychological symptoms, quality of life, subjective and emotional well being.

### **Introduction**

Cancer is a disease that poses a threat to many aspects of life. Everyone has fears about Cancer. The most important thing to understand is that cancer is not just one disease, but also a group of more than 100 diseases (Williams, 2000). The incidence of cancer is increasing in all the countries. Cancer patients come from various social strata and life styles with differences in caste, religion, language and culture. A diagnosis of cancer brings a variety of feelings and emotions causing tremendous disruptions in all facets of individual's life and family (Dawson, 1990). The emotional and psychosocial effects of a cancer diagnosis are well known (Rutledge & Raymon, 2001). Psychological problems such as anxiety and depression are common to many stages of cancer (Kubler -Ross 1970). Cancer is a disease that is associated with a lot of stigma even today. This is because it is equated with painful suffering and death. It is true that the prognosis of the disease is not favourable at least in some types of cancer especially when they are not detected and adequately managed early enough.

Even though advances in the management of cancer and the facilities for supportive care have resulted in longer survival and potential cure of cases, there are no simultaneous improvements with regard to the alleviation of physical and psychological strain of the patients & their families. It is in this context cancer is designated as a disease which causes not only physical suffering to the patient but also intense emotional & psychological reaction to patients and their families. The

incidence of cancer in India is around 75 per 100,000 (Indian Council of Medical Research, 1992), which is considerably lower than that in the developed countries. It has been estimated that there are approximately 2 to 2.5 million prevalent cases of cancer in India at any given point of time and about 7,00,000 new cases are detected every year. Approximately 2/3rd of the new cases of cancer are in the advanced and incurable stage at the time of diagnosis. According to Cancer Registry Abstract (CRAB), (2001), in India, in the year 2001, 566 thousand new cancer (incidence) cases were predicted. The predicted cases had more females (2, 99, 755) than males (2, 65, 927).

It is well documented that receiving a diagnosis of breast cancer is a stressful experience (Graydon, 1994). The psychological reactions most commonly identified are initial denial, intense emotional turmoil and trauma during the diagnostic phase and associated problems like insomnia, pain, nausea, irritability and excessive fatigue during the treatment phase. Reactions include feelings of isolation, vulnerability, uncertainty about the future, loss of control, and decline in sexual and marital functioning (Dow, 1996; Ganz et al., 1996).

Pharmacological treatments have been used for distress and pain in breast cancer patients. To combat distress antidepressants, anxiolytics and hypnotics should be considered (National Comprehensive Cancer Network Distress Management Panel, 2005). Commonly used medications for pain management include non-steroidal anti-inflammatory drugs, opioids, and co-analgesics (Lyne et al., 2002). However, pharmacologic interventions have not completely eliminated distress and pain in cancer patients and often come with their own set of side effects (Golden, 2004; Holland, 1998). Therefore, it is important to examine non-pharmacologic approaches to control distress and pain.

Fortunately, a variety of psychological interventions are available to help cancer patients manage their psychological problems during and after medical treatment. More specifically, cognitive behavioural therapy (CBT) techniques have been shown to be valuable tools to relieve depression and anxiety in various cancer populations (Mundy et al., 2003) and several such treatments have been empirically validated for use with cancer patients (Compas et al., 1998). For example both relaxation and imagery have been found to be efficacious for chemotherapy patients, while systematic desensitization, hypnosis and distraction are possibly efficacious (Compas et al., 1998). Additionally, Cognitive Behavioural group therapy is possibly efficacious for distress (Compas et al., 1998). Therapies such as relaxation are typically used as adjuncts in cancer pain management and their utility for all types of patients make them important tools in managing pain (Lyne et al., 2002).

Numerous intervention studies with varying results have been published on the effects of CBT techniques for cancer-related depression in cancer patients. These intervention studies have included a range of treatment components including relaxation, hypnosis, cognitive restructuring, biofeedback, skills training, etc. With the exception of one study (Bordelau et al., 2003), several studies have successfully used relaxation, imagery or hypnosis to treat depression in cancer patients of various stages of illness (i.e., Arathuzik, 1994; Hilderley and Holt, 2004; Larsson and Starrin, 1992; Molassiotis et al., 2002; Montgomery et al., 2002c; Walker et al., 1999; Williams and Schreier, 2004). A telephone treatment using cognitive therapy components found improvements in distress in a group of newly diagnosed breast

cancer patients (Sandgren et al., 2000), and cognitive therapy alone helped to decrease depression in post-surgery patients who were being treated with chemotherapy (Marchioro et al., 1996).

A qualitative way to aggregate these results and draw conclusions across a literature is to conduct a systematic review. There are seven meta-analyses examining the effectiveness of various psychological interventions for cancer patients (Devine, 2003; Devine and Westlake, 1995; Graves, 2003; Luebbert et al., 2001; Meyer and Mark, 1995; Rehse and Pukrop, 2003; Sheard and Maguire, 1999). Overall, these meta-analyses report promising results on the effectiveness of psychological interventions for controlling depression, anxiety and improving quality of life. However, none have specifically addressed the effectiveness of CBT techniques in breast cancer, which is surprising as breast cancer is the most commonly diagnosed cancer among women in the United States (ACS, 2004), and depression and anxiety are common in these women.

The goal of this study was to determine the effectiveness of CBT techniques for alleviating psychological problems in breast cancer patients. To our knowledge, no other systematic review have focused on this specific group of cancer patients despite breast cancer being the most common type of cancer in women (ACS, 2004). Additionally, most of the meta-analyses on psychological treatments with cancer patients have included a wide range of therapeutic approaches in their analyses including psychodynamic, existential, supportive/supportive expressive, crisis intervention, education only, music therapy and cognitive behavioural (Devine, 2003; Devine and Westlake, 1995; Meyer and Mark, 1995; Rehse and Pukrop, 2003; Sheard and Maguire, 1999), making inferences specifically regarding CBT techniques difficult to interpret.

This paper adds to the current literature in three very important ways. First, by focusing on breast cancer, the present literature review eliminates heterogeneity due to different treatments and mortality rates associated with different cancers (ACS, 2004). Such factors could potentially influence conclusions. Second, the current paper's focus on cognitive behavioural techniques previously reported to be effective in relieving psychological symptoms in cancer patients (Compas et al., 1998; Mundy et al., 2003), builds on the available data rather than replicating it. Including non effective treatments would only add heterogeneity to the present study, and potentially obfuscate the results. Third, women who are facing cancer have issues that can be completely different from those faced by men. Issues of sexual identity and body image are common for breast cancer patients (Petronis et al., 2003). Furthermore, even healthy women are extremely worried about breast cancer and its treatment (Montgomery et al., 2003). Providing information about effective interventions to ameliorate symptoms and side effects for breast cancer will hopefully alleviate some small portion of their distress.

### **Material and methods**

To identify relevant articles for this review, between-group studies measuring anxiety, depression and quality of life in breast cancer patients were reviewed.

### **Search Strategy**

Major databases including PsychInfo, Medline, CancerLit, and CINAHL were searched from January 1990 to May 2015. The search terms used were anxiety, behaviour, biofeedback, cancer, cognitive behavioural therapy, distress, depression, hypnosis, imagery, quality of life, relaxation, and treatment outcome(s).

The computer search was set to accept only randomized controlled trials and studies published in English. Additional studies were obtained from literature reviews and meta-analyses on the psychological management of cancer symptoms, as well as from reference lists associated with these studies (Bottomley, 1996 ;Devine and Westlake,1995; Edelman, Craig, and Kidman et al., 2000; Genuis, 1995; Graves, 2003; Luebbert et al., 2001; Meyer and Mark, 1995; Mundy et al., 2003; Newell et al., 2002; Rehse and Pukrop, 2003; Sheard and Maguire, 1999; Sims,1987; Trijsburg et al., 1992).

In this paper “CBT” was broadly defined and included any intervention containing components of either behavioural and/or cognitive techniques. Based on reviews (Bottomley, 1996; Compas et al., 1998; Mundy et al., 2003;Trijsburg et al., 1992), studies were included if they utilized any CBT techniques, containing any of the following: activity pacing, assertiveness/communication training, autogenic training, behavioural activation, biofeedback, cognitive/attentional distraction, cognitive restructuring, contingency management, goal setting, imagery, hypnosis, meditation, modelling, pleasant activity scheduling, problem-solving, relaxation training, role playing, systematic desensitization or visualization.

According to the most relevant conceptual differentiations of QoL currently discussed in the literature (Antoni et al, 2006) the following four aspects were considered for the present review: first, QoL instruments either focus on emotional adjustment {e.g. Profile of Mood States;[Badger et al, 2005]} or on functional adjustment (e.g. Functional Living Index for Cancer; [Banerjee et al, 2007]). Second, QoL instruments can either be classified as global (e.g. Psychological General Well-being Index; [Bordeleau et al, 2003]) or disease-specific (e.g. EORTC Quality of Life Questionnaire; [Song et al, 2002]). Third, QoL assessments can either be self-reports (e.g. Psychological Adjustment to Illness Scale; [Bridge et al, 1988]) or made by the consultant physician or some other observer (e.g. Karnofsky Performance Status; [Chan et al, 2006]). Finally, QoL can either be conceptualized as a more stable trait condition or as a short-term state depending on the wording in the instructions. Thus, QoL instruments were classified as emotional versus functional, global versus specific, self-report versus observer rating, and trait versus state.

A number of 65 studies initially met the inclusion criteria. Twenty-five studies had to be excluded due to an incomplete documentation of outcome measures or results, or an insufficient realization of the control condition. Finally, Twenty One studies marked by an asterisk in the reference list were included in the present systematic review. The majority of studies were organized in university hospitals. All the studies were published journal articles. Sample sizes (N) varied between 20 and 303 breast cancer patients. The average age of the total population was 54.1 years. First, as the focus of this review was on CBT techniques, studies that did not contain any CBT techniques were eliminated. A total of 19 studies were eliminated because the intervention did not appear to contain any CBT techniques (e.g., treatment was described as “counselling”, “supportive expressive”, “crisis intervention,” etc.). Next, since the focus of this systematic review was on distress, pain and quality of life,

studies that did not include these outcome variables were eliminated. The most common measure of depression and anxiety was Hospital Anxiety and Depression Scale (HADS). The most commonly used measure for quality of life was EORTC QLQ-30. Based on reviews (Bottomley, 1996; Compas et al., 1998; Mundy et al., 2003; Trijsburg et al., 1992), studies were included if they utilized any CBT techniques, containing any of the following: activity pacing, assertiveness/communication training, autogenic training, behavioral activation, biofeedback, cognitive/attentional distraction, cognitive restructuring, contingency management, goal setting, imagery, hypnosis, meditation, modeling, pleasant activity scheduling, problem-solving, relaxation training, role playing, systematic desensitization or visualization.

### Data Extraction

From the studies that were include in our review, we extracted data regarding the date of publication, type of the study, the setting of the study, the study population, the aim of the study, the follow-up period, the methods used to assess and measure psychological factors, the cognitive behaviour therapy technique used, therapy given in group or individually, the disease outcome and the main findings regarding statistically significant associations between CBT techniques and depression, anxiety and quality of life.

Table 1

References	N	Stage	Intervention	Outcome measures	Questionnaire
Allen (2002)	164	I-III A	Problem Solving Training	QOL, Stress	CARES, IES, MHI-5
Banergee (2007)	68	II-III	Intregrated Yoga	Depression, anxiety, stress	HADS, PSS
Bridge (1988)	154	I-II	Relaxation & Imagery	Fatigue, Depression, Anxiety	POMS
Edelman (1999)	124	IV	CBT, Relaxation	Fatigue, Depression, Anxiety, Body Image	POMS, CSE-D5
Nunes (2007)	34	I-II	Relaxation & Guided Imagery	Depression, Anxiety, Stress	ISSL, STAI, BAI, BDI
Savard (2006)	45	IV	Cognitive Therapy for depression	QOL, Fatigue, Depression, Anxiety	QLQ C-30, HADS, BDI, HDRS, MFI
Hidderly (2004)	31	I-II	Autogenic training	Depression, Anxiety	HADS
Kissane (2003)	303	I-II	Cognitive Group Therapy	Depression, Anxiety	HADS, mini-MAC
Bordelau et al. (2003)	235	I-III	Relaxation (gp)	Distress, Quality of Life	EORTC QLQ-C30
Christensen (1983)	20		Behavioral practice and role	Depression	BDI, STAI

			play (couple)		
Edelman et al. (1999)	92	IV	Behavioral activation, cognitive restructuring, positive self-talk, communication training, goal setting, problem solving and relaxation (indiv.)	Distress	POMS
Fukui et al. (2000)	50	Lymph node metastasis	Coping skills training, stress management (imagery and relaxation)(gp)	Depression, anxiety, Mood state	POMS, HADS
Gaston-Johansson et al. (2000)	110	I-II	Cognitive restructuring, imagery, and relaxation (indiv.)	Depression, Pain, Anxiety	BDI, STAI, Painometer
Marchioro et al. (1996)	36	0-III	Cognitive therapy (based on Beck's model) (indiv.)	Depression, quality of life, personality, quality of life	BDI, 16 PF &IIQ, FLIC
Samarel et al. (1997)	181	0-II	Communication, problem solving, role playing and stress management with coaching (gp)	Distress, quality of life	
Samarel et al. (1997)	123	0-II	Communication, problem solving, role playing and stress management without coaching (gp)	Distress, quality of life,	
Sandgren et al. (2000)	53	I-II	Cognitive restructuring, coping skills training, problem solving	Psychological distress, quality of life, perceived stress, satisfaction with therapy	POMS, CRI-R, MOS

			and relaxation (indiv.)		
Walker et al. (1999)	96	I-III	Guided imagery (visualization) and relaxation (indiv.)	Mood, Depression, anxiety, Quality of Life, Personality	Mood Rating Scale, EPQ, CECS, GQOL
Antoni et al. (2001)	100	0-II	Cognitive Behavioural Stress management intervention (gp)	Depression, Optimism, quality of life	HADS, MOS
Mann et al (2012)	96	I-III	CBT (including psycho-education, paced breathing) (gp)	Hot flushes, night sweats, mood, sleep and quality of life	HFNS
Williams and Schreier (2004)	71	I-II	Relaxation	Distress, anxiety	STAI

Note. Beck anxiety inventory (BAI), Beck Depression Inventory (BDI), , Cancer rehabilitation evaluation system (CARES5), Center for epidemiologic studies depression scale (CES-D5), Coping Response Indices-Revised (CRI-R), European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC QLQ-C30), Hamilton depression rating scale (HDRS), Hospital Anxiety and Depression Scale (HADS), Impact of Event Scale (IES), Profile of Mood States (POMS), Mental health inventory (MHI-5), Medical Outcome Scale (MOS), Mini-mental adjustment to cancer scale (mini-MAC), Multi dimensional fatigue inventory ( MFI), Perceived stress scale (PSS-5), State Trait Anxiety Inventory (STAI).

## Results

In total we identified 20 studies examining the effectiveness of various CBT techniques on depression, anxiety and Quality of Life of breast cancer patients. In table 1 we summarized these studies. A total of 2137 female patients with breast cancer were examined regarding CBT for depression, anxiety and quality of life in breast cancer patients.

Of the total 21 identified descriptive analytic studies, 8 done in USA, 3 in Australia, 5 in UK, 1 in Germany, 2 in Italy and 1 in Brazil.

Out of the 20 studies, 2 and 7 studies examined patients with metastatic/recurrent breast cancer and invasive stage of I or II-III cancer respectively whereas 12 studies examined patients with early stage cancer characterized either as operable, stage I & II in the TNM classification (i.e. the staging system based on tumor size, lymph node involvement and the presence of metastasis) or localized regional and non metastatic. Some studies also focused on patients' reactions to having cancer and their feelings

whereas others focused on social factors (i.e. marital status, social ties, and religion) that can offer significant support to breast cancer patients and some studies focused on both.

The results were obtained with random effects analyses for the outcome measures quality of life, depression, anxiety, body-image and stress and with fixed effects analyses for the outcome measure fatigue.

Out of the 21 studies, 18 (85.74%) support Cognitive Behaviour Therapy as an evidence based intervention to control depression, anxiety, and improve quality of life in breast cancer patients. CBT is non Invasive, has no adverse effects and its beneficial effects persist long after the last intervention session. CBT techniques varied from study-to-study, in some studies given in group while in others given individually. Individually given CBT are found to be more effective than therapy given collectively. Most of the studies used combination of various CBT techniques.

## **Discussion**

Depression and anxiety are common and aversive side effects of breast cancer and its treatment. From the results of our review of literature, there are conflicting data regarding the possible association of psychological therapeutic intervention and most common psychological symptoms associated with the treatment of breast cancer.

Inspection of Table I revealed that studies with larger sample sizes tended to be those which employed group interventions. Analyses of the effects of individual versus group formats indicated that for distress outcomes, patients were significantly better off in individual therapy formats. Effects of therapy format on depression and anxiety were in the same direction, but not significant. However, it should be noted that quality of life analyses were based on a total of seven studies, and should therefore be viewed with caution. Together, these data suggest that the pattern of smaller effect sizes for depression and anxiety with larger sample sizes may be accounted for by the differential effects of treatment format. This is not to imply that individual therapy is always better than group therapy, but rather that for the outcomes of depression anxiety and quality of life, an individual approach may be more beneficial for breast cancer patients. Of course, outcomes not evaluated by the present study (e.g., increased social support, decreased social constraints) may be more responsive to group interventions. Furthermore, other authors have reported results supporting group, rather than individual, therapy formats with cancer patients for anxiety and depression (Sheard and Maguire, 1999). As their results may have been influenced by outliers, large sample studies comparing individual and group therapy formats are needed to further clarify this issue.

Fifteen of the 20 studies in this systematic review focused on women with early stage disease or advanced (metastatic) cancer. Of those that included mixed stages (Gaston-Johansson et al., 2000; Larsson and Starrin, 1992; Larson et al., 2000; Walker et al., 1999; Williams and Schreier, 2004), none conducted specific statistical analyses examining treatment outcome comparing those with advanced versus early stage cancer. Sheard and Maguire's (1999) meta-analysis of anxiety and depression in cancer patients found significant differences in effect sizes for depression but not anxiety when comparing those with advanced versus good/mixed prognoses. As it may be possible that CBT techniques to control depression and anxiety may be influenced by breast cancer severity (Metastatic vs. Non-metastatic), we decided to

compare 13 studies examining depression and anxiety and five studies examining quality of life on this factor (the five studies containing patients with mixed stages were not included in the analysis). Our results did not reveal significant differences due to disease severity. However, based on the limited literature on the influence of disease severity on CBT techniques' effectiveness, it appears that more controlled trials of CBT techniques, including disease severity as a factor, are needed.

Though both depression and anxiety are well validated constructs, CBT techniques led to improvements in both, and the effect sizes associated with each did not significantly differ. This finding is consistent with previous studies (e.g., Zaza and Baine, 2002) and the literature suggesting that these constructs do share some variance (Syrjala and Chapko, 1995)

Additionally, to examine non specific effects of therapy, we looked at the relationship between amount of therapist contact and effect sizes. However, there did not appear to be a relationship between amount of contact and treatment outcome. Though it is beyond the scope of the present study, an inspection of Table I reveals that the largest treatment effect size was associated with a hypnosis intervention; a commonly used CBT technique with cancer patients (Mundy et al., 2003). The effect size reported in the present paper is consistent with previous meta-analyses on the efficacy of hypnosis in a wide variety of patients (e.g., Kirsch et al., 1995; Montgomery et al., 2000, 2002b). This literature has strongly supported the use of hypnosis as an adjunct to cognitive behavioural interventions for pain and distress, and further studies on the efficacy of hypnosis with breast cancer patients are needed.

No study is without its limitations, and the present one is no exception. First, some of the comparisons were based on small number of effect sizes. As such, those comparisons should be viewed with caution. However, the present paper benefit from its specific focus on the use of CBT techniques to reduce depression and anxiety in breast cancer patients, and on its rigorous study selection criteria. It is hopeful that the present paper will be viewed as both a commentary on the lack of studies in the breast cancer literature as well as a catalyst for future well designed research. Second, there are many remaining fine-grained comparisons that were beyond the scope of the present paper (e.g., comparisons of specific CBT techniques). As the literature grows, it is our hope that such areas of research will be pursued. Lastly, due to the state of the existing literature, studies with larger samples were also those that employed group formats. Though it is reasonable to presume that the effects reported here are due to differences between individual and group formats, it cannot be formally ruled out that the differences were simply due to sample size. Additional large sample studies of individual treatment format (which could be included in future meta-analyses), as well as studies directly comparing individual to group treatment format, are needed to completely address this issue.

## **Conclusion**

In summary, effects found here are consistent with those reported in the published literature on cancer patients. Future research in this area will allow more fine-grain analyses, but it also appears that study of differential effects of individual and group cognitive behavioural treatment formats should take precedence in studies of CBT techniques for breast cancer patients. In addition, the data suggest that hypnosis may be an especially effective therapeutic technique for this population. Findings reported

here were consistent with those in the broader hypnosis literature. After considering study limitations, the overall results of the present paper were consistent with positive effects of CBT techniques for control of depression and anxiety, with the majority of breast cancer patients benefiting.

From the above comprehensive discussion it can be concluded that Cognitive Behavioural techniques are effective in improving fatigue, depression, anxiety and stress in breast cancer patients and survivors. Physical exercise is an effective intervention to improve fatigue, depression, body-image and HRQoL. In Future more researches are needed on the effect of Cognitive Behaviour therapy on improving psychological symptoms and overall quality of life. In addition, the combined effect of CBT and other psychological interventions deserves further study.

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