CHAPTER II

REVIEW OF LITERATURE

This chapter is divided into part I and II. Part I consists of the review of literature made for the study and part II relates to conceptual framework. The review of literature includes the identification, selection, and written description that has been organized under the following headings.

2.1.RELATED LITERATURE

2.1.1 Prevalence of Breast cancer

2.1.2 Depression and breast cancer

2.1.3 Quality of life and breast cancer

2.1.4 Interventions for breast cancer

2.1.5 Meditation and breast cancer

PART II: CONCEPTUAL FRAMEWORK

Modified Sister Callista Roy’s Adaptation Model was adopted for this study

2.1.1 Prevalence of Breast cancer

According to the American Cancer Society (ACS), (2011) approximately 200,000 new cases of breast cancer are diagnosed each year in the United States and the disease causes about 41,000 deaths annually. The incidence of breast cancer rises after the age of 40. The highest incidence (approximately 80% of invasive cases) occurs in women over the age 50.

Atlas of Cancer in India Project (2011) conducted a study to assess nationwide patterns of cancer incidence across urban and rural parts of the country
suggested that breast cancer to be the most common cancer in metropolitan cities and predicted it to be the most common type of cancer in the coming decade. The Atlas project suggested that certain districts displayed even higher rates in Chandigarh 39.5 per 100,000, North Goa 36.8 per 100,000 than those reported by the population-based registry in New Delhi (28.9 per 100,000). In the metropolitan cities, breast cancer is the leading cancer diagnosis in women, with rates nearly twice as common as cervical cancer. In Bangalore, Chennai, Delhi, Mumbai and Kolkata, the age-adjusted incidence rates are 30.9, 33.0, 31.4, 29.3 and 20.6 per 100,000.

Dhillon (2011) stated in breast cancer fact sheet the statistics on breast cancer incidence and mortality in India as 22.9 age-standardized incident cases per 100,000 women (2008), 11.1 age-standardized breast cancer deaths per 100,000 women (2008) and 90,659 deaths in India (2010). The breast cancer being the most common cancer for women in metropolitan cities (Delhi, Mumbai, Chennai, Kolkata, Bangalore) (2004).

Jemal, Center, DeSantis, and Ward (2011) stated that the Global Patterns of Cancer Incidence and Mortality Rates and Trends in women rated breast cancer as the second most common type of cancer and the second leading cause of cancer-related deaths. One in eight women in the United States develop breast cancer during their lifetime.

National Cancer Registry Programme (2011) projected that age incidence rates in India suggest that the disease peaks at a younger age like 40-50 years than in Western countries and as a result, the majority of new diagnoses occur in
pre-menopausal women. Studies have shown a rising trend with steadily increasing rates since the mid-1980 with the largest increases observed in Mumbai. The number of breast cancer deaths in India will climb to 106,124 in 2015 and to 123,634 in 2020. The majority of new cases are advanced stage - locally advanced or higher stage - at the time of diagnosis. The increasing burden of disease may be associated with lifestyle factors such as later age at marriage, age at first birth, reduced breastfeeding and westernization of diet and physical activity patterns. Breast cancer rates tend to be higher in women with higher education and in specific communities that have adopted a more westernized lifestyle, such as the Christians and the Parsis, and are lowest in the Muslim communities. Differences in the prevalence of transforming growth factor beta signaling pathway associated gene polymorphisms may also be linked to the lower rates observed in certain sub-populations such as those from western India compared to the Parsis.

Dubash, Vidhubala, Cyriac, and Sagar (2010) conducted a study on QoL among women with breast cancer. A total of 51 patients were included for the study. The mean age at diagnosis was 30 years. The effect of breast cancer on the occupation and marital status was minimal. The global health status and the functional scores were high, while the overall sexual function was lower. The overall QoL in younger patients with breast cancer appeared to be good.

Kalyani, Das, Bindra, and Kumar (2010) conducted a ten year study on cancer profile which varied in different regions and depended on race, lifestyle and diet. Out of a total of 19,615 patients reported at the department of pathology, 2,744 (13.98%) were cancer patients. The peak incidence was in the fifth decade in females
and the seventh decade in males. Male: Female ratio was 0.7: 1. Overall there was a steady rise in the number of patients from 1997 to 2006. The top ten cancers in male were of oral cavity, stomach; esophagus, bone, non- Hodgkin’s lymphoma (NHL), prostate, liver, penis and bladder and those in females were oral cavity, cervix, breast, stomach, esophagus, thyroid, ovary, bone, rectum and melanoma.

Sandhu, Sandhu, Karwasra, and Marwah (2010) carried out a retrospective study on epidemiology and management strategies for breast cancer patients. A total of 304 patients admitted over a period of five years from 1998-2002 were used for data analysis. The result showed that the mean age of female breast cancer patients to be lower compared to the western world. Majority of patients were from rural background, had longer duration of symptoms than the urban patients.

Harrison, Sheree, Hayes and Sandra (2009) examined the age related differences in exercise and QoL among breast cancer survival. A population based sample of 287 breast cancer patients in Australia were assessed using behavioral risk factor surveillance system questionnaire once every 3 months from 6-18 months post surgery. Younger women who engaged in physical activity reported a higher Health Related Quality of Life (HRQoL) at 18 months compared with their more sedentary counterparts p< 0.05. Older women reported similar HRQoL irrespective of activity level and consistently reported clinically higher HRQoL than younger women. The study highlighted that increasing age, being obese and the restricting the use of the treated side at 6 months post surgery increased the likelihood of sedentary behaviour.

Lueboonthavatchai (2009) suggested that predictors of anxiety and depression in breast cancer patients were poor family relationship and functioning, maladaptive problem and conflict solving, and presence of pain and fatigue.
Promoting patients' social support, especially emotional support from family, and enhancing patient's coping skills might reduce the patients' psychological stress and psychiatric morbidities. Treatment of breast cancer patients should focus on reduction of patients' disturbing symptoms such as adequate pain control, and lessening the treatment complications. Moreover being alert on patients' emotional reactions and potential psychiatric disorders is essential.

Bagchi (2008) stated that breast cancer rises in India and India faces a potential breast cancer epidemic over the next decade as women adopt Western lifestyles by marrying and bearing children later in life. Oncology experts say that women nursing fewer children and weaning them earlier alters hormone flows and puts them at higher risk of contracting breast cancer. Studies indicate that as India becomes westernized, the incidence rate of breast cancer increases. A 2005 study conducted by the International Association of Cancer Research (IACR) based in Lyon, France, projected that there would be 2,50,000 cases of breast cancer in India by 2015, a 3% increase per year. Currently, India reports roughly 1,00,000 new cases annually. The overall rate is now estimated at 80 new cases per 1,00,000 population per year. But in Delhi, the rate is pegged at 146 per 100,000. By contrast, the national rate was 23.5 in 1990 (Current Science 2001).

Centers for Disease Control and Prevention (2008) reported that in United States 210,203 women were diagnosed with breast cancer and 40,589 women died from the disease. Centers for Disease Control (CDC) support breast cancer surveillance and research, and provides free or low-cost mammograms to underserved women.
Table 1. GLOBOCAN (2008) stated as per International agency for research on cancer (IARC) report on estimated incidence, mortality, and 5-year prevalence among women with breast cancer as follows:

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Incidence</th>
<th>Mortality</th>
<th>5-year Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>Breast</td>
<td>692634</td>
<td>26.7</td>
<td>189455</td>
</tr>
</tbody>
</table>

Lueboonthavatchai (2007) stated in prevalence and psychosocial factors of anxiety and depression in breast cancer patients, that breast cancer is considered as a terrifying disease due to a high mortality rate, its impact on self-image, and the sexual relationship. Many patients experience psychological reactions, and may have psychiatric morbidities, especially anxiety and depressive disorders. Although anxiety and depressive disorders are common in breast cancer and worsen the disease course and treatment outcomes, these psychiatric disorders are ignored and left untreated. Understanding these common psychiatric disorders and associated psychosocial factors can help to plan for treatment and may result in more treatment success. Three hundred female breast cancer patients, aged above 18 years old from the Surgical Outpatient Department, King Chulalongkorn Memorial Hospital were recruited for this study. The prevalence of anxiety disorder was 16%, and that of anxiety symptoms was 19%. The prevalence of depressive disorder was 9%, and that of depressive symptoms was 16.7%. Factors associated to anxiety and depression were psychosocial factors (social support, family relationship and functioning, and problem and conflict solving) (p < 0.01), number of hospital admissions, and presence of disturbing symptoms: pain, respiratory symptoms, and fatigue (p< 0.01).
regression analysis, the significant predictors of anxiety and depression were poor family relationship and functioning (p < 0.05), maladaptive problem and conflict solving (p < 0.05), and symptoms of pain (p < 0.01) and fatigue (p < 0.05).

Sim et al. (2006) conducted a study on ethnic differences in the time trend of female breast cancer incidence from 1968-2002. In the 1970s, Indian women had the highest age-standardized breast cancer but by the mid-1980s the highest rate were seen among Chinese. Remarkable differences were seen in the age specific incidence rates by ethnic groups. After age 49, the incidence rates for the Chinese and Malays leveled off whereas it continued to rise in the Indians. The three ethnic groups experienced similar changes in their fertility in the 1970s, which explained much of the increase in their breast cancer incidence but not the ethnic differences. There was a strong inverse association between total fertility rate and pre-menopausal breast cancer incidence in the Chinese and Malays than the Indians.
Zhang et al. (2001) examined the trends in the prevalence of breast cancer risk factors in relation to breast cancer incidence trends and to explore whether the changes in risk factors differed by ethnicity in Hawaii over a 25-year period. Investigators pooled 17 population-based epidemiological studies conducted in Hawaii between 1975 and 2001. The study population of 82,295 women included subjects of Caucasian, Japanese, Native Hawaiian, Chinese, and Filipino ancestry. They computed age-adjusted prevalence estimates by ethnic group for 5-year time periods. Logistic regression was used to evaluate trends over time. The prevalence of an early age at menarche, nulliparity, and parity of fewer than three children, but not that of a late age at first live birth, increased during the study period. Whereas current smoking decreased for all ethnicities over time, the age-adjusted prevalence of overweight, obesity, college education, and alcohol use increased. Trends differed by ethnicity. For Native Hawaiians, the prevalence of overweight, obesity, alcohol use and nulliparity rose over time. For Japanese, the prevalence of overweight, early age at menarche, and having fewer than three children increased. Caucasians showed an increasing prevalence of overweight, obesity, college education, and nulliparity. In Filipina women, changes in reproductive behavior and increasing obesity were observed. Despite a slowing trend for some breast cancer risk factors, the overall risk profile in the population lead to further increase in breast cancer incidence. Different ethnic groups may benefit from specific prevention strategies.

Capocaccia, Verdecchia, Micheli, Sant, Gatta and Berrino (1990) conducted a study on the survival probability for female breast cancer patients, used the estimate incidence rates from breast cancer mortality data in Italy. The female breast cancer survival curve from the Lombardy Cancer Registry (LCR) was used to
test the method on data from four local cancer registries, covering areas in different regions of Italy. Female breast cancer incidence and prevalence rates were then estimated for Italy, making use of a mathematical model specifically developed for chronic diseases. In 1985, crude incidence and prevalence rates of female breast cancer, for ages up to 74 years, were estimated at 71 and 701 per 100,000 women, respectively. Estimated incidence rates show a complex trend with age, increasing to a temporary pronounced peak at the age of 52. A marked cohort effect was found to increase significantly the risk of the disease from 1886 to 1930 birth cohorts by a factor of 2.9. After the 1930 cohort, risks have continued at a constant high level.

Breast cancer (24.6 and 17.5 per 100,000) is also the leading cancer in cities such as Bhopal and the Kamrup Urban district while the rates are much lower in rural areas such as the non-urban Ahmedabad district and Barshi (9.2 and 9.4 per 100,000). The rates in Northeastern states are generally lower and often intermediate to the urban and rural regions like Imphal West District, Mizoram and Sikkim have breast cancer age-standardised rates of 14.6, 14.1 and 6.8 per 100,000. Mortality data on breast cancer is inconsistent and inadequate and there are no good nationwide data to provide reliable estimates. A recent report by the Indian Council of Medical Research predict the number of breast cancer cases in India to rise to 106,124 in 2015 and to 123,634 in 2020.

2.1.1 Depression and Breast cancer

**Bigatti, Steiner and Miller (2012)** stated that depression in breast cancer patients and survivors is related to negative disease outcomes and worse QoL. Factors that explain this depression could serve as targets of intervention. This study, guided by the Transactional Theory of Stress, examined the relationship between cognitive appraisals, coping strategies and depressive symptoms in a group of women with
mostly advanced-stage breast cancer (N=65), who scored mostly within the normal range for depressive symptoms. Path analysis was used to determine the relationships among variables, measured with the Cognitive Appraisals of Illness Scale, the Ways of Coping Questionnaire and the Center for Epidemiological Studies Depression Scale. The results of the path analysis showed that higher appraisals of harm/loss and greater use of escape-avoidance coping predicted higher depressive symptoms. These findings enhance the prediction of depression among breast cancer patients and suggest the need to examine cognitive appraisals when attempting to understand depressive symptoms.

Jang et al. (2012) did a 1-year prospective longitudinal study to investigate the association among religiosity and depression, anxiety, and QoL in women with breast cancer. The sample consisted of 284 patients with breast cancer who were undergoing surgery. They were assessed with Duke Religious Index (DRI) instruments at baseline and at one year after surgery. The prevalence of depression at baseline and at one year was 22.5% and 16.5%, respectively. The religious groups did not differ significantly with respect to the prevalence of depression or scores on psychiatric measures at either baseline or at one year. The prevalence of depression significantly decreased only in the Protestant group, from 30.1% to 15.7%. Scores on the DRI were significantly negatively correlated with scores on all of the anxiety and depression scales at one year after surgery in this group. In contrast, scores on the religious activity subscale of the DRI were significantly positively correlated with scores on the Hospital Anxiety Depression Scale at baseline or at one year among Catholic participants. The DRI scores of Protestant respondents were significantly positively correlated with scores on the European Organization for the Research and Treatment of Cancer QoL Questionnaire Core 30 at one year after surgery. Religiosity
plays an important role in the emotional state and QoL of Korean women with breast cancer. However, its clinical meaning may differ according to the type of religious affiliation and the stage of illness.

**Kim et. al (2012)** the few studies on the associations between cytokines and depressive mood in patients with cancer have produced conflicting results. This study investigated the associations between plasma cytokines and depressive mood in patients with breast cancer using a large panel of pro-inflammatory, anti-inflammatory, and immune-modulating cytokines. We recruited 273 hospitalized patients with breast cancer awaiting surgery. Preoperative plasma samples were obtained for cytokine analysis, including pro-inflammatory (interleukin [IL]-2, IL-12, interferon [IFN]-gamma, and tumor necrosis factor [TNF-alpha]), anti-inflammatory (IL-4, IL-5, IL-10, and IL-13), and immune-modulating (granulocyte/macrophage colony-stimulating factor [GM-CSF]) cytokines. The findings suggested that depressive mood was associated with a generally decreased inflammatory reaction or immune function in patients with breast cancer. Cytokine levels were significantly inter-correlated. Depressive mood was associated with lower levels of pro-inflammatory (IL-2, IL-12, and TNF-alpha), anti-inflammatory (IL-5, IL-10, and IL-13), and immune-modulating (GM-CSF) cytokines independent of potential covariates such as living area or functional level.

**Bigatti, Wagner, Lydon-Lam, Steiner, and Miller (2011)** did a study on to examine depression in husbands of women with breast cancer, as depression is typically as high in husbands as in patients, and impacts functioning in both. The husbands of patients were compared to husbands of women without chronic illness on depressive symptoms with the Center for Epidemiological Studies Depression Scale,
social support with the Interpersonal Support Evaluation List, and coping with the Ways of Coping Questionnaire. Using the stress and coping model, it was examined whether coping mediated social support and depression differently by group, as has been found in the literature. Husbands of patients reported higher scores on the measure of depression and lower use of problem-focused coping, while groups reported equivalent social support. Escape-avoidance coping emerged as a full mediator between social support and depression in husbands of patients, but was only a partial mediator in comparison husbands. Accepting responsibility, coping partially mediated social support and depression in both the groups. Low social support appeared particularly detrimental in husbands of patients as it was associated with ineffective coping and depression. Findings suggested that among husbands of patients, social support related to depression only through its relationship with coping, indicating that healthcare providers should direct attention and intervention to the coping strategies employed by husbands with low social support.

Bower, Ganz, Irwin, Kwan, Breen, and Cole (2011) conducted a study confirming high rates of behavioral symptoms in breast cancer survivors, particularly those treated with chemotherapy, and indicated a role for TNF-α signaling as a contributor to postchemotherapy fatigue. Results also suggested that fatigue, sleep disturbance, and depression could stem from distinct biologic processes in post-treatment survivors, with inflammatory signaling contributing specifically to fatigue. Symptoms were elevated at the end of treatment; greater than 60% of participants reported clinically significant problems with fatigue and sleep, and 25% reported elevated depressive symptoms. Women treated with chemotherapy endorsed higher levels of all symptoms and also had higher plasma levels of sTNF-RII than women who did not receive chemotherapy (all P < .05). Fatigue was positively associated with sTNF-RII,
particularly in the chemotherapy-treated group (P < .05). Depressive symptoms and sleep problems were correlated with fatigue but not with inflammatory markers. Women (N = 103) who had recently finished primary treatment (ie, surgery, radiation, chemotherapy) for early-stage breast cancer completed self-report scales and provided blood samples for determination of plasma levels of inflammatory markers: soluble tumor necrosis factor (TNF) receptor II (sTNF-RII), interleukin-1 receptor antagonist, and C-reactive protein. Fatigue, depression, and sleep disturbance were common adverse effects of cancer treatment and frequently co-occurred. However, the possibility of inflammatory processes that may underlie this constellation of symptoms has not been examined.

Sharpley, Bitsika, and Christie (2011) conducted a study to understand the functionality of depression among Australian breast cancer patients: implications for cognitive and behavioural interventions. Depression in breast cancer (BCa) patients can reduce QoL, relationships and treatment compliance, thus constituting a major target for cognitive behavioural (CBT) interventions. Although CBT treatments, which are built upon consideration of the roles of antecedents and consequences for depressive behaviour, are effective, the nature of those antecedents which trigger depression among BCa patients has received relatively little attention. Two hundred fifty-three BCa patients completed a standardised depression scale, and data were analysed by factor analysis. Components were interpreted for their relationship to punishment type I or II. Two major components emerged: (1) loss of previously available sources of personal or social reinforcement (i.e. punishment type II or negative punishment) and (2) behavioural, emotional and cognitive responses to those losses. These two components represent the total symptomatology of major depressive episode from DSM-IV-TR. These findings support the application of a
functional analytic model of depression within CBT assessment and treatment procedures with BCa patients.

**Brintzenhofe et al., (2009)** conducted a study on mixed anxiety/depression symptoms in a large cancer cohort: prevalence by cancer type. The results showed the presence of mixed anxiety/depression symptoms in 12.4% of patients, overall depression symptoms in 18.3%, overall anxiety symptoms in 24.0%, pure anxiety, pure anxiety symptoms in 11.7%, pure depression symptoms in 6.0% and 70% had neither.

**Christensen et al., (2009)** did a study on prevalence and risk of depressive symptoms 3-4 months post-surgery in a nation wide cohort study among 4917 Danish women treated for early stage. The results indicated an increased prevalence of depressive symptoms and a major expression (13.7%) compared to population-based samples.

**Gingrras and Savard (2008)** conducted a literature review on depression in women with metastatic breast cancer and concluded that the prevalence of depression appeared to be elevated in patients with advanced cancer. Many demographic, medical, and psychosocial factors might increase the risk of women to develop depressive symptoms during the course of their illness. Despite the fact that depression appears to be associated with numerous negative consequences, this disorder remains under diagnosed and undertreated. Both pharmacotherapy and psychotherapy have been found to treat effectively depressive symptoms in this population.

**Klassen et al., (2008)** conducted a study on how worldview relates to attitudes about breast cancer screening in a cross-sectional survey of low-income women. The
result of the survey data from 576 African-American women showed that age was associated with lower motivation to screen, depressive symptom, anomiae, and fear of medical research.

**Reich (2008)** conducted a study on depression, QoL and breast cancer and concluded that breast cancer survivors report a higher prevalence of mild to moderate depression with a lower QoL in all areas except for family functioning. Treatment of depression in breast cancer women improves their QoL and may increase longevity.

**Badger, Segrin, Dorros, Meek, and Lopez (2007)** conducted a study on depression and anxiety in women with breast cancer and their partners. Psychosocial interventions could improve the psychological QoL (symptoms of depression and anxiety) of both women with breast cancer and their partners, but were not offered routinely to women and their partners. The design of the study was a three-wave repeated measure with a between-subjects factor (treatment group). Ninety-six women and their 96 partners were assigned randomly to participate in one of three different 6-week programs: (a) telephone interpersonal counseling (TIP-C); (b) self-managed exercise; or (c) attention control (AC). The mixed-model analysis of variance for symptoms of depression among women with breast cancer revealed that the women's depressive symptom scores decreased over time in all groups. For anxiety symptoms decreased in the TIP-C and exercise groups over time, but not in the AC group. A parallel set of analyses was conducted on partners' depression and anxiety data. Symptoms of depression and anxiety among the partners decreased substantially over the course of the investigation. Findings from this study support that these telephone-delivered psychosocial interventions were effective for decreasing the symptoms of
depression and anxiety to improve psychological QoL when compared to an AC group.

**Nausheen and Kamal (2005)** did an exploratory study investigating the relationship between familial social support and depression in a Pakistani sample of 80 female breast cancer patients, and whether the groups of demographic and medical variables differed on the levels of familial social support and depression. Familial social support and depression were measured by indigenous scales administered in Urdu language and found to be significantly inversely correlated. The groups based on age, number of children, financial sources of treatment, and disease stage differed significantly on familial social support and depression. No significant group differences were found on familial social support and depression between the groups of patients living in joint and nuclear families, and those who had and had not undergone mastectomy. Results are discussed in the respective social and cultural context.

**Roscoe et al.,(2005)** conducted a study double-blind clinical trial of 94 female breast cancer patients receiving at least four cycles of chemotherapy randomly assigned to receive either 20 mg of the selective serotonin re-uptake inhibitor (SSRI) paroxetine (Paxil, SmithKline Beecham Pharmaceuticals) or an identical-appearing placebo. Patients began their study medication seven days following their first on-study treatment and continued until seven days following their fourth on-study treatment. Seven days after each treatment, participants completed questionnaires measuring fatigue (Multidimensional Assessment of Fatigue, Profile of Mood States-Fatigue/Inertia subscale and Fatigue Symptom Checklist) and depression (Profile of Mood States-Depression subscale [POMS-DD] and Center for Epidemiologic Studies-
Depression (CES-D). Repeated-measures ANOVAs, after controlling for baseline measures, showed that paroxetine was more effective than placebo in reducing depression during chemotherapy as measured by the CES-D ($p = 0.006$) and the POMS-DD ($p = 0.07$) but not in reducing fatigue (all measures, $ps > 0.27$). Although depression was significantly reduced in the 44 patients receiving paroxetine compared to the 50 patients receiving placebo, indicated that a biologically active dose was used, no significant differences between the groups on any of the measures of fatigue were observed. Results suggest that modulation of serotonin may not be a primary mechanism of fatigue related to cancer treatment.

Roscoe, Morrow, Hickok, Bushunow, Matteson, Rakita, and Andrews (2002) conducted a study about temporal interrelationships among fatigue, circadian rhythm and depression in breast cancer patients undergoing chemotherapy treatment. The investigators used Seventy-eight female breast cancer patients who were assessed for fatigue, depression, overall mood, and circadian rhythm at their second and fourth on-study chemotherapy cycles as part of a larger study examining the efficacy of paroxetine in reducing chemotherapy-induced fatigue. The Multidimensional Assessment of Fatigue (MAF), the Fatigue Symptom Checklist (FSCL), the Center for Epidemiologic Studies-Depression (CES-D) questionnaire, the Hamilton Depression Inventory (HDI), and the Profile of Mood States (POMS) were completed by patients at home 7 days after each treatment to assess symptom severity. Circadian rhythm was assessed over a 72-h period with the Mini-Motionlogger Actigraph (Ambulatory Monitoring, Ardsley, NY), starting 6 days after treatment. Daily patterns of sleep and activity were compared across the 3-day period by autocorrelation analyses to calculate a circadian rhythm score for each patient, with higher scores associated with lower disruption. Comparisons of fatigue, depression, and mood with
patient circadian rhythm measures taken after the second cycle indicate that all five paper and pencil measures correlated well with the measure of circadian rhythm (all r(partial) < -0.30, all P<0.05). Changes in the fatigue, depression and mood measures from the second on-study treatment to the fourth were significantly correlated with concurrent changes in circadian rhythm (MAF r=-0.31; P=0.04; FSCL r=-0.30; P=0.04; CES-D r=-0.39; P=0.008; HDI r=-0.34; P=0.03; POMS r=-0.40; P=.007).

These findings provide evidence that circadian rhythm disruption is involved in the experience of fatigue and depression in cancer patients.

Gaston-Johansson, Fall-Dickson, Bakos, and Kennedy (1999) conducted a study to determine the influence of fatigue, pain, and depression on health status in breast cancer patients who had completed adjuvant chemotherapy and were scheduled for autologous bone marrow/peripheral blood stem cell transplant (AT). A convenience sample of 127 women with stages II, III, and IV breast cancer was recruited. The setting was an urban National Cancer Institute-designated comprehensive cancer center. The subjects were aged from 22 to 60 years (Mean = 45; SD = 7.6), and primarily were married, white, Protestant, college educated, employed in a professional position, and had an average yearly household income of equal to or greater than $50,000. All subjects had previously received surgery and chemotherapy. Ninety-one percent of the participants reported fatigue as measured by the Fatigue Visual Analogue Scale. Forty-seven percent of the participants reported pain as measured by the Gaston-Johansson POM visual analogue scale. Fifty-four percent of the participants reported depression, ranging from mild to severe/high. Subjects reported a mean total perceived health status rating of 50.73 (SD 10.79). Fatigue, pain, and depression were all significantly correlated to each other and to total health status. Depression (P < .001) and pain (P < .01) significantly accounted
for 64% (adjusted R2 = .60) of the variance in total health status. Fatigue (P < .05) and depression (P < .001) accounted for 42% (adjusted R2 = .36) of the variance in the perception of health status. Women with breast cancer previously treated with chemotherapy and awaiting AT may experience fatigue, pain, depression, and alterations in health status. Pain and depression had a significant impact on a woman's total health status, whereas depression and fatigue had an influence on perceived health status. Of the different dimensions of health status, one's perceptions of health status had the strongest correlation to total health status (r = .84, P < .001). Healthcare professionals need to be aware of the effects of multiple symptoms on health status and to provide appropriate care to alleviate them.

Maraste, Brandt, Olsson, and Ryde-Brandt (1992) stated that using a self-report questionnaire, the Hospital Anxiety and Depression (HAD) scale, feelings of anxiety and depression were assessed in 133 breast cancer patients referred for adjuvant radiotherapy following surgical treatment. Eighteen patients (14%) had scores indicating morbid anxiety. Significant depression was recorded for only 2 patients (1.5%). Severe anxiety was recorded for 10 out of 54 patients with mastectomy (19%) and for 8 out of 79 patients treated with breast conserving surgery (10%). The difference was not significant (p = 0.13). In a subgroup aged 50-59 years, morbid anxiety was significantly more common among patients with mastectomy than among patients operated conservatively, 4 out of 9 (44%) vs. 1 out of 23 (4%) (p = 0.01). Such a pattern was not discernible in the patients < 50 years of age or those > or = 60 years old. The results suggest that, at the start of adjuvant radiotherapy, emotional distress is characterized by anxiety rather than depression and the risk of morbid anxiety is especially large for women with mastectomy in their fifties.
2.1.2 Quality of life and Breast cancer

Fallowfield (2012) assessed about QoL and breast cancer effective treatment for breast cancer can produce a reasonably good ten-year survival rate in comparison to many other cancer sites. Nevertheless, the potential psychological, sexual and physical dysfunction caused by both the diagnosis and treatments would have a deleterious impact on the quality of a woman's life. The range of possible treatments may have similar outcomes in terms of response and survival, but can produce very different effect on emotional well-being. Therefore, monitoring QoL in breast cancer should be a mandatory part of follow-up in clinical trials. Data derived from various studies of QoL can also be used to assist the doctor and patient in decision-making about treatment options. Furthermore, assessment of QoL can help identify those patients who might profit from psychosocial interventions.
Montazeri (2008) conducted a study on Health-related QoL in breast cancer patients: a bibliographic review of the literature from 1974 to 2007. A total of 971 citations were identified and after exclusion of duplicates, the abstracts of 606 citations were reviewed and 477 papers were selected and examined. The major findings showed that the QoL data provided scientific evidence for clinical decision-making and conveyed helpful information concerning breast cancer patients’ experiences during the course of the disease diagnosis, treatment, disease-free survival time, and recurrences; otherwise finding patient-centered solutions for evidence-based selection of optimal treatments, psychosocial interventions, patient-physician communications, allocation of resources, and indicating research priorities were impossible.

Valenti et al. (2008) conducted a study related to Physical Exercise and QoL in Breast Cancer Survivors. A total of 212 female breast cancer survivors consecutively registered from January 2002 to December 2006 at a Supportive Care Unit in an Italian Oncology Department were enrolled. Exercise behavior was assessed by the Leisure Score Index (LSI) of the Godin Leisure-Time Exercise Questionnaire. Patients were asked to report their average weekly exercise for three cancer-related time periods, i.e. pre-diagnosis, during active treatment and off-treatment. QoL was assessed by the Italian version of the WHOQOL-BREF standardized instrument. Statistical analysis indicated significant differences across the cancer-relevant time-periods for all exercise behavior outcomes: the exercise behavior was significantly lower during both on- and off- treatment than during pre-diagnosis; exercise during active treatment was significantly lower than during off-treatment. QoL strongly decreased during active treatment. Significant correlations were found between total exercise on- and off-treatment and all QoL indicators.
Strenuous exercise is strongly correlated with QoL. Absent/mild exercise seemed to be inversely correlated with a positive perception of disease severity and with QoL on all axes.

**Goodwin et al. (2004)** conducted a study on Health-Related QoL and Psychosocial Status in Breast Cancer Prognosis: Analysis of Multiple Variables. Three hundred ninety-seven women with surgically resected T1 to T3, N0/N1, M0 breast cancer were selected for this study and Treatment of Cancer QoL Questionnaire (Core 30 items), Profile of Mood States, Psychosocial Adjustment to Illness Scale, Impact of Events Scale, Mental Adjustment to Cancer Scale, and the Courtauld Emotional Control Scale 2 months after diagnosis and 1 year later. Data on tumor-related factors, treatment, and outcomes were obtained prospectively from medical records, and Cox survival analyses were performed. The study concluded that HRQOL and psychosocial status at diagnosis and 1 year later were not associated with medical outcome in women with early-stage breast cancer.

**Wenzel and Lari (1999)** conducted a study on age-related differences in the QoL of breast carcinoma patients after treatment. The objective of this study was to compare the QoL of younger (≤ 50 years) versus older (> 50 years) women on recent completion of treatment of breast carcinoma. The sample sizes were 304 breast carcinoma patients. These patients were enrolled in a multi-institutional, randomized trial testing a psychosocial telephone counseling intervention for breast carcinoma patients immediately after treatment. The assessment was made using a self-administered (mail) questionnaire, with an overall response rate of 86%. Included in this questionnaire were standardized measures of QoL using the Functional Assessment of Cancer Therapy-Breast instrument, the Center for Epidemiologic
Studies Depression Scale, and the Impact of Event Scale. Results suggest that younger women with breast carcinoma should be considered to be at high risk for QoL disruption and significant clinical distress. Targeted interventions for this cohort were recommended.

Magarey (1998) conducted a study on psychological management of breast cancer. Unrecognized psychological morbidity can impair the quality of a patient’s life for years. Such psychological morbidity may be reduced by more open communication with the patients, by encouragement of the expression of feelings, by preoperative diagnosis of the cancer by biopsy and by greater time allowance before a mastectomy was performed. Morbidity may also be reduced by encouraging the patients to take an active part in their treatment decisions, by the avoidance of a mastectomy, by immediate breast-reconstruction surgery, and by appropriate psychological support which include self-help techniques, such as meditation.

2.1.3 Interventions for breast cancer

Hawkins et al. (2010) did randomized clinical trial on three mediating processes of Self-Determination Theory (SDT) which are involved in intervention effects on QoL for breast cancer patients. Women recruited were newly diagnosed breast cancer patients for 6 months of (1) Internet training and access, (2) access to an integrated eHealth system for breast cancer (CHESS), (3) a series of phone conversations with a Human Cancer Information Mentor, or (4) both (2) and (3). This paper reported the results after the initial 6 weeks of intervention, at which point patients in the combined condition had higher QoL scores than those in the other three conditions. All three SDT constructs (autonomy, competence, and relatedness) mediated that effect as hypothesized. In addition, the single-intervention groups were
superior to the Internet-only group on relatedness, though perhaps this was too soon for that to carry through to QoL as well. The SDT constructs do mediate these interventions’ effects.

Sheppard et al. (2010) reported that the process used to develop a decision-support intervention for Black women is eligible for adjuvant therapy. Aims were to use qualitative methods to describe factors that influence Black women's adjuvant therapy decisions, use those formative data to develop messages for a treatment decision-support intervention, and pilot test the acceptability and utility of the intervention with community members and newly diagnosed women. Thirty-four in-depth interviews were conducted with breast cancer patients in active treatment, survivors and cancer providers to gather qualitative data. Participant ages ranged from 38 to 69 years. A cultural framework was used to analyze the data and to inform intervention messages. Most women relied on their providers for treatment recommendations. Several women reported problems communicating with providers and felt unprepared to ask questions and discuss adjuvant treatment options. Other factors related to treatment experiences were: spiritual coping, collectivism and sharing breast cancer experiences with other Black survivors. Using those formative data, intervention was developed which was survivor-based and included an in-person session which incorporated sharing personal stories, communication skills training and decision support. Intervention materials were reviewed by community members, researchers/clinicians and patients newly diagnosed with breast cancer. Patients reported satisfaction with the intervention and felt better prepared to talk with providers. The intervention will be tested in a randomized trial to enhance decision support and increase use of indicated adjuvant treatment.
Ramachandra, Booth, Pieters, Vrotsou, and Huppert (2009) had done a feasibility study on brief self-administered psychological intervention to improve well-being in patients with cancer among 22 women with metastatic breast cancer and 24 men with metastatic prostate cancer. The results showed statistically significant improvement in QoL scores on WHOQoL-BREF post-intervention (p=0.046). The brief intervention appeared to be a promising technique for improving QoL of cancer patients, without making undue demands on staff resources or patient time.

Rabin, Pinto, Dunsiger, Nash and Trask (2009) did a study on beneficial effects of physical activity (PA) interventions for breast cancer survivors, not all interventions have produced significant improvement in mood. Relaxation training may be a promising strategy for enhancing mood effects from those interventions. The goals of Be Calm and Move On were to assess the feasibility, acceptability and preliminary effects of a 12-week combined PA and relaxation intervention for breast cancer survivors. Twenty-three early-stage breast cancer survivors were enrolled and 19 were retained for the intervention and 12- and 24-week follow-ups. Participants received a theoretically grounded intervention delivered via telephone. Participant evaluations of the intervention indicated that it was feasible and acceptable (e.g. 100% would recommend it to others); objective data further supported its feasibility (e.g. 83% completed the trial, 91% of intervention calls were received). In addition, when compared with 12- and 24-week follow-up to baseline data, participants demonstrated significantly increased PA, improved mood and sleep quality, and reduced fatigue (p <0.05). Thus, this pilot study suggests that intervention is feasible and acceptable and produces promising effects on mood, sleep, and fatigue.

Reavley et al. (2009) evaluated the effects of psychosocial intervention on mood, coping, and QoL in cancer patients. The results suggest that the program has
significant beneficial effects on adjustment but that they may not be fully maintained at follow-up, possibly because of difficulty in incorporating program recommendations into everyday life, increasing disease severity, and lack of accountability.

Kremser et al. (2008) conducted a study on use of complementary therapies by Australian women with breast cancer. The survey was done among women with breast cancer to assess the type of complementary therapy used, reason for use, and sources of information about these therapies. Of 367 respondents with breast cancer, 87.5% had used complementary therapies. Most commonly used were vitamin supplements (54.2%), support groups (49.8%) and meditation (38.7%). Common reasons for the use included improving physical (86.3%) and emotional (83.2%) wellbeing and boosting the immune system (68.8%). Women sought information about complementary therapies from variety of sources.

Allard (2007) did randomized clinical block trial to determine the efficacy of a nursing intervention based on self-regulation theory known as the Attentional Focus and Symptom Management Intervention (AFSMI) in enhancing physical and emotional well-being in women who underwent day surgery for breast cancer. 117 patients with primary breast cancer who underwent day surgery as part of their initial treatment for cancer subjects were randomly allocated to the experimental group (n = 61) or the usual care (control) group (n = 56). Subjects in the experimental group received the AFSMI during two phone sessions, at 3-4 days and 10-11 days after surgery. Significant differences between the experimental and control group were found at post-test on home management, total mood disturbance, confusion, and
tension scores. The AFSMI was effective in reducing emotional distress and enhancing physical functioning.

Moadel et al. (2007) did a randomized controlled trail of yoga among a multiethnic sample of breast cancer patients to examine the impact of yoga, including physical poses, breathing, and meditation exercises on QoL, fatigue, distressed mood, and spiritual well-being among 84 samples in intervention group and 44 in control group for 12 weeks. They concluded that yoga is associated with beneficial effects on social functioning among a medically diverse sample of breast cancer survivors. Among patients not receiving chemotherapy, yoga appears to enhance emotional well-being and mood and may serve to buffer deterioration in both overall and specific domains of QoL.

Zimmermann, Heinrichs and Baucom (2007) shed light on potential moderators of intervention efficacy for BC patients, such as the intervention type (e.g., education, supportive), the composition of the sample (only BC patients or BC mixed with other cancer types), and the practitioner of the intervention (psychologist, nonpsychologist). Fifty-six randomized-controlled studies investigating the effectiveness of psychosocial interventions with adult BC patients were meta-analytically reviewed. The overall ES of $d = 0.26$ was similar to previous meta-analyses and moderated by several variables. The ES varied notably based on the composition of the sample, the profession offering the intervention, and the type of intervention. Studies with samples consisting of only BC patients and studies with nonpsychologist-led interventions showed lower ES. Psychoeducation yielded the strongest ES. These moderators maintained their significance even when controlling for the nature of the control group, the format of the intervention, the timing of the intervention, or the
stage of disease. These results suggest that among the current interventions, psychoeducation is a treatment of choice for BC patients, preferably prior to surgery and led by individuals with a medical expertise. Other psychosocial interventions appear most effective when administered individually and led by a psychologist. In addition, there is a need for improved psychosocial interventions to enhance the present ES for women with BC.

Weis (2006) stated about funding programme of the German Federal Research Ministry and the statutory German Pension Insurance scheme, as well as an extensive Pension Insurance quality assurance programme, major scientific progress has been achieved in rehabilitation in terms of structures, processes and outcomes. Continuing the systematic assessment and evaluation of the increasing knowledge available, the German Pension Insurance scheme has introduced a comprehensive practice guidelines programme for the development of process guidelines in rehabilitation. In the framework of this sponsored programme and exemplary for the field of cancer rehabilitation, practice guidelines are also being developed for the rehabilitation of breast cancer patients. This article summarises the results of the first phase of this project, which had included a systematic literature analysis of the interventions in the rehabilitation of breast cancer patients, an analysis aimed at verifying whether these interventions had been evidence-based as well as at deriving specific recommendations for treatment in the framework of in-patient rehabilitation. Both ambulatory and in-patient interventions were included, whereas diagnostic, medical and nursing procedures as well as drug trials were excluded from the analysis. In all, some 200 articles have eventually been extracted for systematic analysis from a total of 480,317 articles. The articles were analysed and evaluated according to the Oxford Level of Evidence. Various interventions for breast cancer
patients could be validated as treatment modules by this literature analysis, such as:
relaxation techniques, physiotherapy, sport therapy, massage, lymph drainage,
psycho-social counselling and therapies as well as artistic therapies. There are
considerable differences among the modules with respect to their various levels of
evidence. Whereas good levels of evidence could be found for relaxation techniques,
sport therapy and psycho-social counselling and therapy, only a low level of evidence
was found for lymph drainage and artistic therapies. In summary, it can be stated that
different levels of evidence are applicable concerning the various interventions
available in the rehabilitation of breast cancer patients.

Ahmad, Cameron and Stewart (2005) did a study on developing and
evaluating a socioculturally tailored intervention to improve knowledge, beliefs and
clinical breast examination (CBE) among South Asian (SA) immigrant women. The
intervention comprised a series of socioculturally tailored breast-health articles
published in Urdu and Hindi community newspapers. A pre- and post-intervention
design evaluated the impact of the mailed articles among 74 participants. The mean
age of participants was 37 years (SD 9.7) and they had lived 6 years (SD 6.6) in
Canada. After the intervention, there was a significant increase in self-reporting 'ever
had' routine physical checkup (46.4-70.8%; p < 0.01) and CBE (33.3-59.7%; p <
0.001). Also, the total summed scores of accurate answers to 12 knowledge items
increased (3.3-7.0; p < 0.001). For constructs of health belief model, participants rated
their level of agreement for a number of items on a scale of 1-4 (disagree to agree).
After the intervention the following decreased: misperception of low susceptibility to
breast cancer among SA immigrant women (3.0-2.4; p < 0.001); misperception of
short survival after diagnosis (2.7-1.8; p < 0.001); and perceived barriers to CBE (2.5-
2.1; p < 0.001). Self-efficacy to have CBE increased (3.1-3.6; p < 0.001). The change
scores of five predictor variables were entered in a direct logistic regression to predict the uptake of CBE among participants who never had it prior to the intervention. The model, as a set, was statistically reliable \[\chi^2 (5, n = 48) = 14.2 , p < 0.01\] and explained 35% of variance in the outcome; perceived barriers remained an independently significant predictor. The results support the effectiveness of written socioculturally tailored language-specific health education materials in promoting breast cancer screening within the targeted population. Future research should test the intervention in other vulnerable populations.

Curbow et al. (2004) conducted a study where a total of 262 women in the USA (161 breast cancer survivors and 101 controls) were exposed to a video vignette using modeling in which a physician discussed the concept of a clinical trial (CT) with a woman who was in the process of making a treatment decision. A pretest-posttest design was used and improvements in clinical trial knowledge and beliefs were assessed. Results indicated video modeling to be a powerful tool for increasing CT knowledge (pretest mean=41.5% correct, post-test mean=77.5% correct) but not for improving CT beliefs. Increased clinical trial knowledge, as measured by change scores, was associated with white race, lower levels of education and pretest breast cancer knowledge, more negative pretest CT beliefs, and a higher estimate of the lifetime probability that a woman will have breast cancer. When pretest CT knowledge was added to the analysis using hierarchical multiple regression, all variables except white race became nonsignificant; an increase in CT knowledge was associated with having lower pretest CT knowledge. Results indicated that the effects of low education, low breast cancer knowledge, and biased probability assessment were mediated through the pretest score. An increase in post-test positive CT beliefs was associated with older age, thinking about breast cancer less often, and having
lower pretest CT knowledge in the total sample. When pretest CT beliefs was added to the analysis using hierarchical multiple regression, all other variables became non-significant; an increase in CT beliefs was associated with having lower pretest CT beliefs, again indicating mediation of the effects of other variables.

**Coward (1998)** examined the facilitation of self-transcendence in a breast cancer support group to identify the feasibility and patterns of effectiveness of a breast cancer support group intervention specifically designed to facilitate self-transcendence views and perspectives that would enhance emotional and physical well-being. The findings showed that relationships among participant’s scores on study variables indicated an association between self-transcendence and emotional well-being. Scores on self-transcendence and well-being variables at the end of the intervention increased from baseline, but only functional performance status, mood state, and satisfaction with life reached statistical significance.

**Henderson and Donatelle (2004)** conducted a study on complementary and alternative medicine (CAM) use by women after completion of allopathic treatment for breast cancer among 551 women. The results showed that two-thirds (66%) of women in the study followed conventional treatment for breast cancer with one or more complementary and alternative medicine therapies, which, they believed, could prevent cancer recurrence and improve their QoL. CAM use did not reflect negative attitudes towards conventional medical care, but rather an orientation to self-care in the optimization of their health and well being.

**Ashikaga, Bosompra, Brien and Nelson (2002)** conducted a study on use of complementary and alternative medicine by breast cancer patients: prevalence, patterns and communication with physicians among 148 patients. The results
concluded that a large proportion (72.3%) had used at least one complementary and alternative medicine treatment after surgery. The most frequently used treatments were vitamins and non food supplements (72.3%), with herbal treatments, meditation, and traditional massage each being reported by about one-fifth of the women. Age, education, adjuvant chemotherapy, and extremity swelling were associated with the use of more complementary and alternative medicine treatments in a regression model. A large proportion (73.8%) of complementary and alternative medicine users reported that their using of complementary and alternative medicine was known to their physicians.

Valdez, Banerjee, Ackerson, and Fernandez (2002) discussed about the results from the field test of a multimedia health education intervention, designed to provide breast cancer education for low income Latinas. The purpose of the field test was to ascertain whether the intervention produced significant changes in breast cancer knowledge and attitude, and screening intentions. A total of 1,197 Latina women participated in the field study at six different sites. The majority of the participants were under 65 years of age, foreign-born with less than eight years of education and a weekly household income that fell in the lowest income quintile for 1998 (<$350.00). Participants were randomly assigned to a control or intervention condition. The control group was interviewed about their breast cancer knowledge, attitude and mammography intentions prior to exposure to the intervention, and served as the baseline group. Women in the intervention group exhibited higher knowledge scores than the pretest group (Chi^2p < .0001). Never-screened women exhibited the largest differences in knowledge scores relative to the baseline sample. The intervention also increased the likelihood of women seeking information about a mammogram.
Braden, Mishel and Longman (1998) conducted a study to determine the efficacy of self-care/self-help promotion and uncertainty management interventions offered by the Self-Help Intervention Project (SHIP) for women receiving chemotherapy, radiation therapy, or hormone therapy for breast cancer. One hundred ninety-three women were randomly assigned either to one of the three intervention groups (self-help course, uncertainty management, or self-help course plus uncertainty management) or to a control group. Data were analyzed by a repeated measures multivariate analysis of variance procedure using a two-level blocking factor (high and low resourcefulness) and four outcome variables (self-care, self-help, psychological adjustment, and confidence in cancer knowledge). At baseline, women having high resourcefulness compared with women having low resourcefulness evidenced greater self-care, self-help, psychological adjustment, and confidence in cancer knowledge. Participation in SHIP interventions resulted in higher levels of self-care, self-help, psychological adjustment, and confidence in cancer knowledge by time effect in a significant number of women regardless of their baseline resourcefulness. Women participating in SHIP interventions who had low baseline resourcefulness demonstrated the greatest change over time in the outcome variables. Post hoc results indicated that the effect primarily was the result of changes in psychological adjustment, confidence in cancer knowledge, and self-care. Some SHIP interventions evidenced more strength than others; data indicated that large percentages of women with low resourcefulness who received no SHIP interventions experienced a decrease in self-care, self-help, confidence in cancer knowledge, and psychological adjustment over the time that they received adjuvant therapy. Women's level of confidence in their knowledge about cancer was sufficient for self-management and self-help activities were not linked to baseline resourcefulness level.
Healthcare providers should note that although the women with low resourcefulness benefited the most from the interventions, women who evidenced high resourcefulness at baseline reported the same level of need for confidence in cancer knowledge and for self-help.

Curran, Dongen, Aaronson, Kiebert, Fentiman, Mignolet, and Bartelink (1998) stated on QoL of early-stage breast cancer patients treated with radical mastectomy or breast-conserving procedures: Results of The European Organization for Research and Treatment of Cancer (EORTC) Trial 10801. EORTC, Breast Cancer Co-operative Group (BCCG). In 1980 the EORTC-BCCG initiated a multicentre randomised clinical trial comparing modified radical mastectomy (MRM) with breast-conserving therapy (BCT) in stage I and II breast cancer. The main endpoint of the trial was survival. A brief QoL questionnaire consisting of two multi-item scales (body image and fear of recurrence) and two single items (satisfaction with treatment and cosmetic result) were included in the trial. A cosmetic evaluation of the breast after conservative surgery was also performed. This report concentrated on the results of the QoL study and the cosmetic evaluation. Multi trait scaling analysis was employed to verify the hypothesised scale structure of the questionnaire. Treatment comparison of the QoL scores at 2 years post-treatment was performed using a stratified Wilcoxon rank sum test. Both patients' and doctors' ratings of the cosmetic result were documented on the clinical follow-up form. A multivariate analysis was performed to identify the factors that influenced the cosmetic outcome. In total, 127 patients in the MRM arm and 151 in the BCT arm completed a QoL questionnaire at approximately 2 years after randomisation (months 25-36). The Cronbach's alpha coefficients were 0.79 and 0.73 for the body image and fear of recurrence scales, respectively. Significant benefit in body image and satisfaction with treatment was
observed in the BCT patients. No significant difference was observed in fear of recurrence between the two groups. Ratings of cosmetic results decreased with time, in line with clinical observations of long-term side-effects of radiotherapy. Wide excision appeared to be the most important predictive factor for poor cosmetic result. In this multicentre randomised study, BCT helped to maintain the patients' body image, resulted in higher satisfaction with treatment and yielded no significant difference from MRM with respect to fear of recurrence.

Schwartz (1998) investigated about evaluation of a brief Problem-Solving Training (PST) intervention designed to reduce distress among women with a first-degree relative recently diagnosed with breast cancer. Participants were randomly assigned to either the PST group (N = 144) or a General Health Counseling (GHC) control group (N = 197). At baseline, these groups did not differ on any sociodemographic, risk factor, or psychological distress variables. Researcher evaluated the impact of PST, relative to GHC, at the three-month follow-up assessment using a 2 (treatment group) x 2 (time of assessment) mixed factor analysis of variance (ANOVA). Although there were significant decreases in both cancer-specific and general distress in both the PST and GHC groups, the magnitude of these decreases did not differ. However, when PST participants were divided into those who regularly practiced the PST techniques and those who did not, significant differences emerged. Participants who regularly practiced the PST techniques had significantly greater decreases in cancer-specific distress [Impact of Event Scale (IES) intrusion and avoidance subscales] compared to infrequent practicers and GHC participants. Effects on general distress were not found. Additional studies are needed to identify ways to promote the practice of PST techniques and to evaluate other psychosocial interventions for female relatives of breast cancer patients.
2.1.4 Meditation and breast cancer

Carlson, Speca, Patel and Goodey (2012) did a study to investigate about the relationship between a mindfulness-based stress reduction meditation program for early stage breast and prostate cancer patients and QoL, mood states, stress symptoms, lymphocyte counts, and cytokine production. Forty-nine patients with breast cancer and 10 with prostate cancer participated in an 8-week MBSR program that incorporated relaxation, meditation, gentle yoga, and daily home practice. Demographic and health behavior variables, QoL (EORTC QLQ C-30), mood (POMS), stress (SOSI), and counts of NK, NKT, B, T total, T helper, and T cytotoxic cells, as well as NK and T cell production of TNF, IFN-gamma, IL-4, and IL-10 were assessed pre- and post intervention. Fifty-nine and 42 patients were assessed pre- and post intervention, respectively. Significant improvements were seen in overall QoL, symptoms of stress, and sleep quality. Although there were no significant changes in the overall number of lymphocytes or cell subsets, T cell production of IL-4 increased and IFN-gamma decreased, whereas NK cell production of IL-10 decreased. These results are consistent with a shift in immune profile from the one associated with depressive symptoms to a more normal profile. MBSR participation was associated with enhanced QoL and decreased stress symptoms in breast and prostate cancer patients. This study is also the first to show changes in cancer-related cytokine production associated with program participation.

Galantino (2012) did a qualitative exploration of the impact of yoga on breast cancer survivors with aromatase inhibitor-associated arthralgias Social cognitive theory was used and provided the foundation for developing a yoga intervention through sources of efficacy information: (1) performance accomplishment, (2) structured experience, (3) verbal support from instructor and group, and (4) physical
Ten postmenopausal women with stage I-III breast cancer and AI associated arthralgia (AIAA) received yoga twice a week for eight weeks for 90 minutes and were instructed to continue in a home-based yoga program. They were provided social cognitive theory (SCT) to structure a yoga intervention as an ongoing physical activity to manage joint pain and function. Participants completed journal reflections on their experience and received weekly phone calls. Participants experienced an eight-week yoga intervention as an effective physical activity and support group that fostered various improvements in QoL and reduction in AIAA. Participants were highly motivated to improve physical fitness levels and reduce pain. This study revealed benefits from alternative forms of exercise such as yoga to provide a structure, which is transferable in other situations. Information, structured physical guidance in yoga postures, support, and feedback are necessary to foster physical activity for BCS experiencing pain. Yoga appeared to positively impact these side effects of hormonal therapies. Additional research would aid in the development of other interventions.

Henderson, Clemow, Massion, Hurley, Druker and Hébert (2012) conducted a study about the effects of mindfulness-based stress reduction on psychosocial outcomes and QoL in early-stage breast cancer patients. The aim was to determine the effectiveness of a MBSR program on QoL and psychosocial outcomes in women with early-stage breast cancer, using a three-arm randomized controlled clinical trial (RCT). This RCT consisted of 172 women, aged 20-65 with stage I or II breast cancer consisted of the 8-week MBSR, which was compared to a nutrition education program (NEP) and usual supportive care (UC). Follow-up was performed at three post-intervention points: 4 months, 1, and 2 years. Standardized, validated self-administered questionnaires were adopted to assess psychosocial variables.
Statistical analysis included descriptive and regression analyses incorporating both intention-to-treat and post hoc multivariable approaches of the 163 women with complete data at baseline, those who were randomized to MBSR experienced a significant improvement in the primary measures of QOL and coping outcomes compared to the NEP, UC, or both, including the spirituality subscale of the FACT-B as well as dealing with illness scale increases inactive behavioral coping and active cognitive coping. Secondary outcome improvements resulting in significant between-group contrasts favoring the MBSR group at 4 months included meaningfulness, depression, paranoid ideation, hostility, anxiety, unhappiness, and emotional control. Results tended to decline at 12 months and even more at 24 months, though at all times, they were as robust in women with lower expectation of effect as in those with higher expectation. The MBSR intervention appears to benefit psychosocial adjustment in cancer patients, over and above the effects of usual care or a credible control condition. The universality of effects across levels of expectation indicates a potential to utilize this stress reduction approach as complementary therapy in oncologic practice.

**Hoffman, Erser, Hopkinson, Nicholls, Harrington and Thomas (2012)** A controlled trial was carried out in 229 women after surgery, chemotherapy, and radiotherapy for breast cancer. Patients were randomly assigned to the 8-week MBSR program or standard care. Profile of Mood States (POMS; primary outcome), Functional Assessment of Cancer Therapy-Breast (FACT-B), Functional Assessment of Cancer Therapy-Endocrine Symptoms (FACT-ES) scales and the WHO five-item well-being questionnaire (WHO-5) evaluated mood, QoL, and well-being at weeks 0, 8, and 12. For each outcome measure, a repeated-measures analysis of variance model, which incorporated week 0 measurements as a covariate, was used to compare
treatment groups at 8 and 12 weeks. There were statistically significant improvements in outcome in the experimental group compared with control group at both 8 and 12 weeks (except as indicated) for POMS total mood disturbance, FACT-B, FACT-ES and Functional Assessment of Cancer Therapy subscales of physical, social [8 weeks only], emotional, and functional well-being, and WHO-5. MSBR improved mood, breast- and endocrine-related QoL, and well-being more effectively than standard care in women with stage 0 to III breast cancer, and these results persisted at three months. To their knowledge, this study provided novel evidence that MBSR could help alleviate long-term emotional and physical adverse effects of medical treatments, including endocrine treatments. MBSR is recommended to support survivors of breast cancer.

**Kang, Oh (2012)** conducted a study to examine the effects of the Mindfulness Meditation program on perceived stress, ways of coping, salivary cortisol level, and psychological stress response in patients with breast cancer on 50 patients who had completed breast cancer treatment (experimental group, 25, control group, 25). The experimental group received the Mindfulness Meditation program for 3 hours/session/ week for 8 weeks. The experimental group had significantly lower scores for perceived stress, emotional focused coping, salivary cortisol level, and psychological stress response compared to the control group. However, no significant differences were found between two groups for the scores on problem focused stress coping. According to the results, the Mindfulness Meditation program was useful for decreasing perceived stress, emotional focused coping, salivary cortisol level, and psychological stress response. Therefore, this program is considered to be an effective nursing intervention to decrease stress in patients with breast cancer.
Sealy (2012) researched and shared about personal stories that relate to the broader cultural context. Living through breast cancer showed how reflective journaling and meditation can help one to cope with locally advanced breast cancer. The purpose of this autoethnography is to assist nurses in gaining a greater understanding of the primary cultural implications of (a) unresolved emotional issues from the past complicating current treatment and recovery for locally advanced breast cancer, and that (b) reflective journaling and meditation can provide an opportunity to "socially reconstruct" past psychological injury. In this example of autoethnography, the author reconstructed the past by re-experiencing childhood wounds through meditation, accompanied by her role as the nurturing mother providing comfort and support to the wounded inner child. That approach affirmed her current mothering role and provided imagery of the comfort that she lacked in her childhood. Such duality empowered the author toward self-acceptance and self-worth. Loss, grief, fear, and anxiety are considered universal states and emotions that interfere with QoL. Finding meaning in suffering can heal pain and free energy for the pursuit of justice, peace, and joy.

Weitz, Fisher and Lachman (2012) did phenomenological study exploring the "lived experience" of 8 women with stage I or II breast cancer who used mindfulness-based stress reduction (MBSR). The following 4 themes were identified: (1) the cancer journey: a shift in perception, (2) the treatment journey: the experience of MBSR, (3) the journey toward recovery, and (4) the journey toward self.

Chatman and Green (2011) investigated that African-American women face a disproportionally high breast cancer mortality rate and a significantly low five-year survival rate after breast cancer treatment. This study investigated, through a series of
focus groups, how 32 African-American women (N = 32) breast cancer patients and survivors managed their cancer-related health needs. Participants also reported important barriers to care including problematic interactions with medical professionals, challenges in intimate relations, difficulties in handling the stigma and myths about breast cancer, and the psychological challenges that they faced. A patient navigation model was implemented at an eastern urban hospital that emphasized integrative therapies such as meditation, nutritional instruction, and yoga. Follow-up telephone interviews with 37 additional African-American participants (N = 37) indicated the rating of effectiveness to be at 3.8 to 3.9 out of 4 for the integrative patient navigation program. Over half of the survivors reported using some complementary techniques after treatment was completed, thus suggesting a long-term improvement in their QoL as a result of the integrative techniques.

Garlick, Wall, Corwin and Koopman (2011) conducted a study to show that breast cancer can present physical and psychological challenges, and can also result in post traumatic growth (PTG). Twenty-four women completed Psycho-Spiritual Integrative Therapy (PSIT) treatment and completed assessments for PTG and QoL before, immediately following, and 1 month after treatment. Women showed improvement (p < .01) on the FACT-B (Functional Assessment of Cancer Therapy-Breast) Physical Well-being, Emotional Well-being, and Functional Well-being subscales, on the Profile of Mood States (POMS) Depression, Anger, and Fatigue subscales (p < .05), and on their POMS Tension, Vigor and Total Mood Disturbance (TMD) scores (p < .01). Also, women showed improvement on the FACIT-Sp-Ex (Functional Assessment of Chronic Illness Therapy-Spiritual) Meaning/Peace subscale, the Spiritual Well-being total scale (p < .01), and on the New Possibilities (p < .01) and Personal Strength (p < .05) subscales of the Post traumatic Growth
Inventory (PTGI). This preliminary study suggested that PSIT might improve the well-being and stimulate PTG in breast cancer patients.

McComb (2011) stated that the rationale and protocol for a pilot study in women with breast cancer that integrates the two complementary therapies of mindfulness and exercise. A sample of 30 women diagnosed with breast cancer within the previous 12 months who have completed initial treatment for their disease were recruited from oncology physicians’ offices. The pilot was pre-post design, and the study was done within a hospital counseling center for 2 hours a day/week for 8 weeks. Participants completed pre-and post-questionnaires on anxiety, depression, QoL, and the post-traumatic stress disorder (PTSD) checklist. Patients received audiotapes and pedometers and kept detailed logs of their weekly homework assignments. Appropriate statistical analyses were carried out to arrive at data-driven results. If the results showed significant benefit for the participants, the program would be revised as needed for improvement. A future goal, if preliminary findings and a replication study are encouraging, will be the development of a Mindfulness-based Exercise Program Manual for dissemination and use by researchers and clinicians to help empower patients with cancer.

Tacón (2011) did an exploratory study to add to the literature by exploring the pre-post effects of an 8-week mindfulness-based intervention on existential well-being, summed self-identified losses, and grief scores as well as to assess mental adjustment to cancer; also, 6-month follow-up data as to intervention maintenance were obtained. Sixty-five women, all of whom had been diagnosed with breast cancer within the past 12 months, participated in this study. The data indicated significant improvements for existential well-being, number of self-identified losses, grief scores
as well as three mental adjustment styles. Six-month follow-up revealed that of the 58 responding participants, 88% maintained mindfulness strategies at varying schedules on a weekly basis with mindfulness-based walking as the preferred strategy. This is the first known mindfulness-based intervention study to investigate existential, loss, and grief factors in those with cancer. Further investigations earnestly are needed in this area to provide full psychosocial care to those confronting cancer.

Loizzo et al. (2010) did a study on the effect of a contemplative self-healing program on QoL in women with breast cancer and gynaecologic cancers. Assessments were performed at the first session and at 20 weeks, including QoL, anxiety, and depression. Biologic markers of immune function were obtained. A 20-week program was implemented: the initial 8 weeks addressed open-mindfulness, social-emotional self-care, visualization, and deep breathing followed by 12 weeks of exposing stress-reactive habits and developing self-healing insights. Daily practice involved CD-guided meditation and manual contemplations. Sixty-eight women were enrolled, and 46 (68%) completed the program. Participants had significant improvement in mean score of 6.4 points. In addition, they reported clinically important improvement in emotional and functional domains and social, role-emotional, and mental health status domains. Biologic data revealed significant improvement in maximum AM cortisol and a reduction in resting heart rate at 20 weeks. These findings suggested that a contemplative self-healing program could be effective in significantly improving QoL and reducing distress and disability among female breast and gynaecologic cancer survivors.
Lengacher (2009) conducted a randomized controlled trial for 84 female BC survivors (Stages 0-III) recruited from the H. Lee Moffitt Cancer and Research Institute. All subjects were within 18 months of treatment completion with surgery and adjuvant radiation and/or chemotherapy. Subjects were randomly assigned to a 6-week MBSR program designed to self-regulate arousal to stressful circumstances or symptoms (n=41) or to usual care (n=43). Outcome measures compared at 6 weeks by random assignment included validated measures of psychological status (depression, anxiety, perceived stress, fear of recurrence, optimism, social support) and psychological and physical subscales of QoL (SF-36). Compared with usual care, subjects assigned to MBSR(BC) had significantly lower (two-sided p<0.05) adjusted mean levels of depression (6.3 vs 9.6), anxiety (28.3 vs 33.0), and fear of recurrence (9.3 vs 11.6) at 6 weeks, along with higher energy (53.5 vs 49.2), physical functioning (50.1 vs 47.0), and physical role functioning (49.1 vs 42.8). In stratified analyses, subjects more compliant with MBSR tended to experience greater improvements in measures of energy and physical functioning. Among BC survivors within 18 months of treatment completion, a 6-week MBSR(BC) program resulted in significant improvements in psychological status and QoL compared with usual care.

Nidich et al. (2009) did a randomized controlled trial on the effects of transcendental meditation on QoL in older breast cancer patients. The results showed a significant improvement in the transcendental meditation group compared with control group in emotional well-being, social well-being and overall QoL, measured by Functional Assessment of Cancer Therapy-Breast total score. The improvement is also seen in mental health of patients in transcendental meditation group. This stress reduction program, with its ease of implementation and home practice, could be adopted in public health programs.
Rabin, Pinto, Dunsiger, Nash and Trask (2009) conducted a study regarding the beneficial effects of physical activity (PA) interventions for breast cancer survivors, not all interventions have produced significant improvement in mood. Relaxation training may be a promising strategy for enhancing mood effects from these interventions. The goals of Be Calm and Move On were to assess the feasibility, acceptability and preliminary effects of a 12-week combined PA and relaxation intervention for breast cancer survivors. Twenty-three early-stage breast cancer survivors were enrolled and 19 were retained for the intervention and 12- and 24-week follow-ups. Participants received a theoretically grounded intervention delivered via telephone. Participant evaluations of the intervention indicated that it was feasible and acceptable (e.g. 100% would recommend it to others); objective data further supported its feasibility (e.g. 83% completed the trial, 91% of intervention calls were received). In addition, when comparing 12- and 24-week follow-up data to baseline data, participants demonstrated significantly increased PA, improved mood and sleep quality, and reduced fatigue (p <0.05). This pilot study suggests that the intervention is feasible and acceptable and produces promising effects on mood, sleep, and fatigue.

Janusek, Albuquerque, Chroniak, Arvizu and Mathews (2008) investigated on the effect of mindfulness based stress reduction on immune function, QoL and coping in women newly diagnosed with early stage breast cancer by using a non-randomized controlled design to evaluate the effect and feasibility of a MBSR program on immune function QoL and coping in women recently diagnosed with breast cancer. Early stage breast cancer patients, who did not receive chemotherapy, self-selected into an 8-week MBSR program or into an assessment only, control group. Outcomes were evaluated over time. The first assessment was at least 10 days after surgery and prior to adjuvant therapy, as well as before the MBSR start-up.
Further assessments were mid-MBSR, at completion of MBSR, and at 4-week post-MBSR completion. Women with breast cancer enrolled in the control group (Non-MBSR) were assessed at similar times. At the first assessment (i.e., before MBSR start), reductions in peripheral blood mononuclear cell NK cell activity (NKCA) and IFN-gamma production with increases in IL-4, IL-6, and IL-10 production and plasma cortisol levels were observed for both the MBSR and Non-MBSR groups of breast cancer patients. Over time women in the MBSR group re-established their NKCA and cytokine production levels. In contrast, breast cancer patients in the Non-MBSR group exhibited continued reductions in NKCA and IFN-gamma production with increased IL-4, IL-6, and IL-10 production. Moreover, women enrolled in the MBSR program had reduced cortisol levels, improved QoL, and increased coping effectiveness compared to the Non-MBSR group. In summary, MBSR is a program that is feasible for women recently diagnosed with early stage breast cancer and the results provide preliminary evidence for beneficial effects of MBSR; on immune function, QoL, and coping.

Srinivasan, Spence, Perumal, Trakhti, Esquifino, Cardinali and Maestroni (2008) stated that although many factors have been suggested as causes for breast cancer, the increased incidence of the disease seen in women working in night shifts led to the hypothesis that the suppression of melatonin by light or melatonin deficiency plays a major role in cancer development. Studies on the 7,12-dimethylbenz[a]anthracene and N-methyl-N-nitrosourea experimental models of human breast cancer indicate that melatonin is effective in reducing cancer development. In vitro studies in MCF-7 human breast cancer cell line have shown that melatonin exerts its anticarcinogenic actions through a variety of mechanisms, and that it is most effective in estrogen receptor (ER) alpha-positive breast cancer cells.
Melatonin suppresses ER gene, modulates several estrogen dependent regulatory proteins and pro-oncogenes, inhibits cell proliferation, and impairs the metastatic capacity of MCF-7 human breast cancer cells. The anticarcinogenic action on MCF-7 cells has been demonstrated at the physiological concentrations of melatonin attained at night, suggesting thereby that melatonin acts like an endogenous antiestrogen. Melatonin also decreases the formation of estrogens from androgens via aromatase inhibition. Circulating melatonin levels are abnormally low in ER-positive breast cancer patients thereby supporting the melatonin hypothesis for breast cancer in shift working women. It has been postulated that enhanced endogenous melatonin secretion is responsible for the beneficial effects of meditation as a form of psychosocial intervention that helps breast cancer patients.

**Cameron, Booth, Schlatter, Ziginskas and Harman (2007)** conducted a study assessing the efficacy of a group intervention in altering emotion regulation processes and promoting adjustment in women with breast cancer. Using a design with 10 alternating phases of availability of the intervention versus standard care, women participating in one of three conditions: a 12-week group intervention (N = 54); a decliner group who refused the intervention (N = 56), and a standard care group who were not offered the intervention (N = 44) were assessed. The intervention included training in relaxation, guided imagery, meditation, emotional expression, and exercises promoting control beliefs and benefit-finding. Emotion regulation processes and adjustment were assessed at baseline (following diagnosis), 4 months (corresponding with the end of the intervention), 6 months, and 12 months. At 4 months, intervention participants (compared to decliners and standard care participants) reported greater increase in use of relaxation-oriented techniques, perceived control, emotional well-being, and coping efficacy, and, greater decrease in
perceived risk of recurrence, cancer worry, and anxiety. Intervention participants also reported relatively greater decrease in emotional suppression from baseline to 12 months, suggesting that the intervention had a delayed impact on these tendencies. The findings suggest an emotion regulation intervention can beneficially influence emotional experiences and regulation over the first year following diagnosis.

**Shannahoff-Khalsa (2005)** The ancient system of Kundalini Yoga (KY) includes a vast array of meditation techniques. Some are specific for treating psychiatric disorders and others are supposedly beneficial for treating cancers. To date, 2 clinical trials have been conducted for treating obsessive-compulsive disorder (OCD). The first was an open uncontrolled trial and the second a single-blinded randomized controlled trial (RCT) comparing a KY protocol against the Relaxation Response and Mindfulness Meditation (RRMM) techniques combined. Both trials showed efficacy on all psychological scales using the KY protocol; however, the RCT showed no efficacy on any scale with the RRMM control group. The KY protocol employed an OCD-specific meditation technique combined with other techniques that are individually specific for anxiety, low energy, fear, anger, meeting mental challenges, and turning negative thoughts into positive thoughts. In addition to OCD symptoms, other symptoms, including anxiety and depression, were also significantly reduced. Elements of the KY protocol other than the OCD-specific technique also may have applications for psycho-oncology patients. Two depression-specific KY techniques are described which also help combat mental fatigue and low energy. A 7-part protocol is described that would be used in KY practice to affect the full spectrum of emotions and distress that complicate a cancer diagnosis. In addition, there are KY techniques that practitioners have used in treating cancer. These techniques have not yet been subjected to formal clinical trials but are described here
as potential adjunctive therapies. A case history demonstrating rapid onset of acute relief of intense fear in a terminal breast cancer patient using a KY technique specific for fear was presented. A second case history was reported for a surviving male diagnosed in 1988 with terminal prostate cancer who has used KY therapy long term as part of a self-directed integrative care approach.

Henderson and Donatelle (2004) did a survey to determine post breast cancer treatment health behaviors with regard to the use of complementary and alternative therapies on 551 women who had been diagnosed with breast cancer and were post treatment. Two-thirds of women in this study followed conventional treatment for breast cancer with one or more CAM therapies, which, they believed, could prevent cancer recurrence and/or improve their QoL. CAM use did not reflect negative attitudes towards conventional medical care, but rather an orientation to self-care in the optimization of their health and well being. Telephone interviews were conducted with 551 females in the Portland, Oregon, metropolitan area who had been diagnosed with breast cancer on an average of 3.5 years earlier. Two-thirds (66%) of the women used at least one CAM therapy during the previous 12 months, and the majority of them perceived that their CAM use was without the recommendation of their doctor. Relaxation/meditation, herbs, spiritual healing, and megavitamins were used most often. Significant predictors of CAM use included younger age, higher education, and private insurance. The majority of the CAM therapies were perceived by their users to be at least "moderately important" in remaining free of cancer. The reasons given for using CAM were to enhance overall QoL, to feel more in control, to strengthen the immune system, and to reduce stress.
Shen, Andersen, Albert, Wenger, Glaspy, Cole and Shekelle (2002) coordinated a study describing the pattern of CAM use among a group of patients with advanced breast cancer, to examine the main reasons for their CAM use, to identify patient's information sources and their communication pattern with their physicians. Face-to-face structured interviews of patients with advanced-stage breast cancer at a comprehensive oncology center. Seventy three percent of patients used CAM; relaxation/meditative techniques and herbal medicine were the most common. The most commonly cited primary reason for CAM use was to boost the immune system, the second, to treat cancer; however these reasons varied depending on specific CAM therapy. Friends or family members and mass media were common primary information source about CAM. A high proportion of advanced-stage breast cancer patients used CAM. Discussion with doctors was high for ingested products. Mass media was a prominent source of patient information. Credible sources of CAM information for patients and physicians are needed.

Coward (1998) conducted a study to examine the feasibility and patterns of effectiveness of a breast cancer support group intervention specifically designed to facilitate self-transcendence views and perspectives that would enhance emotional and physical well-being at Survivor-established breast cancer resource center in Austin, TX. The investigator used women with recently diagnosed breast cancer (N = 16) participating in 90-minute support group sessions that met weekly for eight weeks. Good networking, coordination, and follow-up were essential for participant recruitment and retention throughout the intervention period. Although specific theory-driven activities were planned for group sessions, facilitators maintained flexibility in meeting immediate concerns of the participants. Relationships among participants’ scores on study variables indicated an association between self-
transcendence and emotional well-being. Scores on self-transcendence and well-being variables at the end of the intervention increased from baseline, but only functional performance status, mood state, and satisfaction with life reached statistical significance.

Magarey (1998) reported that psychological factors influence the survival of patients with breast cancer through the early detection of the cancer and through compliance with the treatment. There is now evidence that psychological factors also influence the immune factors which control micrometastases. In particular, social acceptance of cancer is associated with a shorter survival of the patient, while the expression of hostility towards cancer is associated with a longer survival of the patient. Unrecognized psychological morbidity can impair the quality of a patient's life for years. Such psychological morbidity may be reduced by more open communication with the patient, by encouragement of the expression of feelings (especially anger), by preoperative diagnosis of the cancer by biopsy and by a greater time allowance before a mastectomy is performed. Morbidity may also be reduced by the encouragement of patients to take an active part in their treatment decisions, by the avoidance of a mastectomy, by immediate breast-reconstruction surgery, and by appropriate psychological support which includes self-help techniques, such as meditation. Breast cancer can be a positive turning-point in a person's life.
PART II

MODIFIED CONCEPTUAL FRAME WORK BASED ON ROY’S ADAPTATION MODEL

Conceptual Framework based on Roy’s Adaptation Model

Investigator identified that Roy’s adaptation model was suitable for the study and it was modified according to the study, to assess the effectiveness of meditation on depression and QoL, among women with breast cancer subjected to mastectomy admitted in selected hospitals, Chennai, Tamil Nadu, India.

Sister Callistra Roy developed the humanism value based model. A person is bio-psychosocial being in constant interaction with changing environment. The person as living system on the whole is made up of parts or subsystems that function as unity for some purpose.

The person is a holistic perspective. Individual aspects of parts act together to form unified being. Additionally, on living systems, persons are in constant interaction with their environment. The system includes inputs, controls and feedbacks.

The adaptation level is determined by combined effect of the focal, contextual, and residual stimuli. There are two interrelated subsystems, primary and secondary. The primary includes functional or control process subsystem consisting of the regulator and the cognator. The secondary include, effector subsystem consisting of four adaptive modes: physiological needs, self-concept, role function and interdependence.

Theorist views the regulator and cognator as methods of coping. Perception of the person links the regulation with the cognator in that “input into the regulator is
transformed into perception. Perception is a process of the cognator, the responses following perception are feedback in to both the cognator and the regulator”.

The four adaptive modes of the second subsystem in this model provide form or manifestations of cognator and regulator activity. Responses to stimuli are carried out through these four modes, they are: physiologic, self-concept, interdependence and role function. Inputs are favorable, the adaptive level is high and enhanced the optimum health in an individual. If it is not a favorable stimuli, leads to maladaptive response where in there is a constant friction between stimuli and the environment. It leads to intensity, which causes the disease condition to be terrible.

Nurses play a vital role in bringing positive external stimuli to enhance the optimal health of an individual. The nurses direct the ways to adapt to environment which reduces sickness behaviors. Theorists insist that nurses play a different role in influencing the external stimuli in performing various nursing interventions which include CAM and providing health education to the individuals.

For the current study the model was modified to make it most suitable. The study identifies women with breast cancer in the urban and rural are equally distributed. The depression and QoL of women in breast cancer is altered due to innate and acquired stimuli. The eight individual stimuli in each are considered in the study. The innate stimuli include age, marital status, education, locality, occupation, religion, family income per month and type of family.

The three acquired stimuli are period of illness, stages of cancer, types of treatment. The stimuli also include the diagnosis of cancer and cost of treatment and surgical procedure. The economy dependency, social support from the family
members and also relatives, friends, etc are the other stimuli that is included in the study.

These stimuli are assessed along with the level of depression and QoL in women. In the internal stimuli, the level of perception about diagnosis of breast cancer, implicitly influence the health and depression and QoL of women with breast cancer in two groups, the study and control groups.

External stimuli meditation was installed only to the study group. Meditation being a mind body intervention is input to develop and strengthen control process in the way women’s coping mechanism will help cognator and regulator and influence the four modes of effectors. After regular practice of meditation the women with breast cancer in the study group experience energetic, improved sleep, better appetite, weight maintenance, tolerable pain, regular menstruation and improvement in sexual relationships as some of the physiological function mode.

The self concept including fear, crying spells, withdrawn behavior, dissatisfaction, disappointment on the events, sadness over the surgical procedure will be alleviated leading to improved assertiveness and empowerment as interdependence leading to a level of adaptation. These levels can form the base for role function.

The role functions are well understood by women with breast cancer leading to one adaptive response. These adaptive levels on reaching peak bring the highest possible optimum health there by reducing the level of depression and improving QoL.

The outcome measurement with BDI and QoL breast cancer version clarifies the findings. The measurement which includes minimal, mild and moderate level of
depression identified and QoL have shown average, good and very good score among women with breast cancer in the study group. During the study period, women are reinforced every fortnight constantly and their performances are checked during post assessment one and two.

The women with breast cancer subjected to mastectomy in control group responds to maladjustment behaviors because external stimuli meditation is not given. They maintain same level of depression and impaired QoL in their day to day practice. Women in this group are given to video assisted teaching after the post assessment two along with routine care. The routine care includes care provided by other health care professionals. The outcome is measured by BDI to assess the level of depression and QoL using breast cancer patient version to assess the QoL among women with breast cancer subjected to mastectomy.