DEPRESSION, ANXIETY AND STRESS IN YOUNG ADULT BREAST CANCER WOMEN UNDERGOING ADJUVANT THERAPY IN HUSM

BY

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ABSTRACT

Depression, anxiety and stress are normal psychological and emotional disturbances occurs among young adult women with breast cancer due to side effects of breast cancer treatments and alteration in physical image. Meanwhile, breast cancer continues to develop especially in countries, such as Malaysia. There is little attention paid to describe these treatment side-effects experienced by young adult breast cancer women, thus this led the researcher to undertake this study. The aims of this study was to identify the association between ages or the time after initial diagnosis and the level of depression, anxiety and stress among young adult breast cancer women. This is a descriptive study on young adult breast cancer (BC) women undergoing adjuvant therapy in Hospital University Sains Malaysia (HUSM). Data was collected by self-administered, anonymous questionnaire. A total of 21.6% (n=11) young breast cancer women undergoing adjuvant therapy experienced depression, 51% (n=25) with anxiety, and 11.8% (n=6) of the young adult breast cancer women with stress. More than 10% of young adult BC women are suffered from depression, anxiety and stress. These results suggest that young adult BC women are affected by psychological burden.

ABSTRAK

Kemurungan, kecemasan dan stres adalah gangguan psikologi dan emosional yang berlaku di kalangan wanita muda dengan kanser payudara kerana kesan-kesan sampingan rawatan kanser payudara dan kesan perubahan fizikal. Sedangkan kes kanser payudara terus meningkat di kebanyakan negara-negara membangun seperti Malaysia,kanser payudara kurang mendapat perhatian. Faktor ini memberi sebab penyelidik untuk melakukan kajian ini. Tujuan kajian ini adalah untuk mengetahui hubungan di antara usia atau masa selepas diagnosis awal dengan tahap kemurungan, kecemasan dan stres pada wanita muda dengan kanser payudara . Ini merupakan kajian deskriptif terhadap wanita muda dengan kanser payudara yang menjalani terapi adjuvant di Hospital Universiti Sains Malaysia (HUSM). Pengambilan data dilakukan dengan soal-selidik sendiri-tapis. Sebanyak 21,6% (n= 11) wanita muda kanser payudara menjalani terapi adjuvan mendapat kemurungan, 51% (n= 25) mengalami kecemasan, dan 11.8% (n= 6) daripada mereka mengalami stres. Sebanyak 10% wanita muda dengan kanser payudara mengalami kemurungan, kecemasan dan stres. Keputusan ini menunjukkan bahawa wanita dewasa muda dibebani oleh masalah psikologi.

TABLE OF CONTENTS

Page

ABBREVIATIONS

AIs	Aromatase inhibitors
ASR	Age- standardized incidence rate
IARC	International Agency for Research and Cancer
BC	Breast Cancer
DASS	Depression, Anxiety, Stress Scale
EBC	Early breast cancer
ER	Estrogen receptor
ER+	Estrogen receptor positive
HUSM	Hospital Universiti Sains Malaysia
NHS	National Health Service
PR	Progesterone receptor
QoL	Quality of Life
SERDs	Selective estrogen receptor down-regulators
WHO	World Health Organization

DEFINITION OF KEY TERMS

Breast cancer - Breast cancer occurs when the cells in the lobules (milk producing glands) or the ducts become abnormal and divide uncontrollably (Wahid, 2004).

Adjuvant therapy - Adjuvant therapy for breast cancer is any treatment given after primary therapy to increase the chance of long-term disease-free survival. Adjuvant therapy are use to kill any cancer cells that may have spread, even if they cannot be detected by imaging or laboratory tests (Mosby, 1995).

Stress - Stress is defined as any emotional, physical, social, economic, or other factor that requires a response or change. Stress also may be applied therapeutically to promote change (Mosby, 1995)

Depression - Depression manifests as a combination of feelings of sadness, loneliness, irritability, worthlessness, hopelessness, agitation, and guilt, accompanied by an array of physical symptoms (American Psychiatric Association, 2000).

Anxiety - Anxiety can be described as an emotional state characterized by feelings of unpleasant anticipation and a sense of imminent danger. Anxiety has both physiological and psychological components. Autonomic hyper-arousal with acceleration of heart rate and respiration, tremor, sweating, muscle tension and gastrointestinal changes are common physiological experiences. Apprehension, feeling powerless, and fearing loss of control are psychological aspects (Ballantyne, et al., 2009).

Chemotherapy - Chemotherapy refers to the use of chemicals to destroy cancer cells on a selective basis, The cytotoxic agents used in cancer treatment generally function in the same manner as ionizing radiation; they do not kill the cell directly but instead impair their ability to replicate (Mosby, 1995).

Radiotherapy - The treatment of neoplastic disease by using x-rays or gamma rays, usually from a cobalt source, to deter the proliferation of malignant cells by decreasing the rate of mitosis or impairing DNA synthesis (Mosby, 1995).

Hormonal therapy - The treatment of disease with hormones obtained from endocrine glands or substances that simulated hormonal effects (Mosby, 1995).

1 INTRODUCTION

1.1 INTRODUCTION

This thesis outlines the background to this quantitative study into anxiety, depression and stress in young adult women with breast cancer undergoing adjuvant therapy. It also details the rationale for the study, aims, objectives, intended outcomes, and method and materials; including the outline of the thesis structure. Definitions of key terms used throughout the thesis in relation to anxiety, depression and stress in young adult breast cancer women undergoing adjuvant therapy are provided in the definition of key terms in this thesis.

1.2 BACKGROUND OF THE STUDY

In the GLOBOCAN series of International Agency for Research and Cancer (IARC) 2008, breast cancer comprises 22.9% of all cancer incidences among women, making it the most common type of non-skin cancer and the first most common cause of cancer death. The incidence rate was 1,383,523 (22.9%) and mortality rate was 458,367(13.7%) (International Agency for Research and Cancer, 2008). According to North American Association of Central Cancer Registry in 2009, approximately 40,170 women are expected to die from breast cancer. More than half of breast cancer cases are reported in the industrialized countries (American Cancer Society). Statistically, 361,000 cases are found in Europe and 230,000 in North America (American Cancer Society, 2010; Parkin, Bray, Ferlay, & Pisani, 2002). An estimated 207,090 new cases of invasive breast cancer are expected to occur among women in US during 2010 (American Cancer Society, 2010). As for mortality estimation, an estimated 40,230 breast cancer deaths (39,840 women, 390 men) are expected in 2010 (American Cancer

Society, 2010). Table 1.1 below shows the incidence of the young population breast cancer in Asian countries which were increasing with age.

Table1.1: Number of new breast cancer patient diagnosed per 100,000 of young population in Asian countries. (Agarwal, Pradeep, Aggarwal, Yip, & Cheung, 2007)

Age	10-14 years	15-19years	20-24years	25-29years	30-34years
Pakistan(1995-1997)	-	1.2	6.3	14.0	48.4
Isreal (Jew)	0.1	0.2	2.1	9.7	33.3
Singapore	-	-	-	6.3	29.9
Egypt	-	0	1.4	8.5	29.9
Bahrain	-	0	0	0	27.7
China (Beijing 1993- 1997)		0.7	3	11	26.9
Kuwait	-	0	0	2.9	22.7
Philippines (Manila)	0.1	0.5	1.9	8.2	22.1
Jordan	-	0	0.8	6.5	21.7
Mali	0.5	1.9	2.9	8.5	21.7
Oman	-	1.9	2.9	8.5	21.7
Korea (Seoul)	-	0.3	1.5	6.1	17.3
Japan (Nagasaki)	-	0.4	1.8	3.1	16
Thailand	-	0.4	1.2	4.8	15.2
Vietnam	-	0.9	7.6	11.5	13.8

Breast cancer is a serious illness that affects large number of women in Malaysia where a majority were those beyond the age of menopause. As defined by World Health Organization Regional Office for the Western Pacific, young adult women are those from 15 to 49 of age. The most common cancers were cancers of the breast, cervix, ovary, uterus, thyroid gland and leukaemia (World Health Organization Regional Office for The Western Pacific, 2005-2010). In 2003, there were 3738 female cancer cases that were reported in Malaysia. It accounted for 31.0% of newly diagnosed female cases with breast cancer being the most common cancer in all ethnic groups and in all age groups in females from the age of 15 (Lim & Yahaya, 2003). The overall age-standardised incidence rate (ASR) was 46.2 per 100,000. In 2003, the peak age specific incidence rate at 50-59 age group in Malay and Chinese; and the rates then declined in older age groups. As for Indian, the peak age specific incident rate was at 70 years old and above. Sixty four point one percent were in women between 40-60 years of age in the cases diagnosed in 2003 (Lim & Yahaya, 2003). According to Lim and Yahaya (2003), a woman in Malaysia has 1 in 20 chance of getting breast cancer in her life time. The accumulative life time risk of developing breast cancer for Chinese women, Indian women and Malay women were 1 in 16, 1 in 17 and 1 in 28 respectively. Although the number of new cases reported in 2003 has decreased by 14% from 2002 with 3738 new reported cases, the statistics provide an alarming rate for Malaysian women who may be at risk of having breast cancer (Lim & Yahaya, 2003). Thus, it is important to know the treatments, impact of breast cancer, and the level of psychological impact that breast cancer has on individuals who are diagnosed.

Treatment for breast cancer usually takes into account the tumour size, stage (Bergh, 2005), and other characteristics, as well as patient preference, treatment may involve

lumpectomy (surgical removal of the tumour with clear margins) or mastectomy (surgical removal of the breast). Removal of some of axilliary (underarm) lymph nodes is usually recommended to obtain accurate information on the stage of disease (BMJ Group, 2009). In the Cancer Facts and Figures 2010, treatment may also involve radiation therapy, chemotherapy (before or after surgery), hormone therapy (Tamoxifen Citrate, Aromatase inhibitors like Exemestane, Anastozole, Letrozole) or targeted therapy (American Cancer Society, 2010). After surgical treatment of breast cancer, women at relatively high risk of recurrence were given adjuvant therapy that encompasses various combinations namely chemotherapy, endocrine therapy and radiotherapy (Groenvold, 1997).

At the University of Malaya Medical Centre (UMCC) in Malaysia, of the 2,009 breast cancer patients managed, 152 were under the age of 35 years. In this group of young women, 69% were at Stages 1 and 2, while 31% were at Stages 3 and 4, which is marginally higher than the 27% of patients of all age groups with Stages 3 and 4 disease (Agarwal, et al., 2007). Because of the impact of breast cancer among women is tremendous, the illness affects the psychological condition of the women (Juon, Kim, Shankar, & Han, 2004). According to Karakoyun-Celik et al. (2009), women diagnosed with breast cancer may experience a sense of high depression and anxiety under follow-up for breast cancer and thus influence the coping with breast cancer and quality of life (Karakoyun-Celik, et al., 2009). According to Coyne, Palmer, Shapiro, Thompson, and DeMichele (2004), this condition may reach certain degrees of depression and anxiety even though the adapting process towards disease is different among patients (Coyne, Palmer, Shapiro, Thompson, & DeMichele, 2004).

In breast cancer women, the strength to cope with disease caused problems is related to various variables (Navari, Brenner, & Wilson, 2008). These may be evaluated by characteristic related to the women (such as age, education, personal characteristics, career, marriage, and children) (Navari, et al., 2008), treatment (stage of the cancer, prognosis, and the degree of decrease in quality of live), stage (Monti, Mago, & Kunkel, 2005), and environment (social support network, presence of an individual perceived emotionally supportive, economic power to afford the treatment) (Antoni, et al., 2006).

Meanwhile, post-treatment fear of cancer recurrence often present in breast cancer women. They may perceive symptoms which are caused by other reason to be related to cancer, and these symptoms can enhance the level of anxiety even further (Karakoyun-Celik, et al., 2009). In addition, the side effects of difficult treatments such as surgery, radiotherapy and chemotherapy act as part of the factors causing anxiety, depression and distress among breast cancer women (Karakoyun-Celik, et al., 2009). Breast cancer women have significantly psychological distress after being exposed to a number of life events (Peled, Carmil, Siboni-Samocha, & Shoham-Vardil, 2008). Young women, who were exposed to a number of life events, should be considered as a risk group for breast cancer and treated accordingly (Peled, et al., 2008).

Burgess et al. (2005) study on 222 women with early breast cancer in London, National Health Service (NHS) Breast Clinic, point out that those women in the first year after diagnosis had shown an increased level of depression in the five years after initial diagnosis. Forty-five per cent of women with recurrence of breast cancer experienced depression, anxiety, or both within three months of diagnosis. Their findings suggested that previous psychological treatment predicted depression, anxiety, or both in the period

around diagnosis (one month before diagnosis to four months after diagnosis). According to Burgess et al. (2005), long term depression and anxiety were associated with previous psychological treatment, such as lack of intimate confiding relationship, younger age, and severely stressful non-cancer life experiences (Burgess, et al., 2005).

Ganz, Rowland, Meyerowitz, Desmond (1998) stated breast cancer women on adjuvant therapy also experience impact of physical functioning difficulty. In the quality of life evaluations, women in all age groups experienced frequent hot flashes, night sweats, vaginal dryness, and dyspareunia, and these increased in frequency with age. Amenorrhea occurred frequently in women who were 40 years of age at diagnosis, and treatment-associated menopause was associated with poorer self-perceived health (Ganz, Rowland, Meyerowitz, & Desmond, 1998).

Jacobs and Bovasso (2000) stated that there are numerous scientific publications which documented the relationship between stressful life events, depression, anxiety and the development of the disease (Jacobs & Bovasso, 2000). Glaser and Kiecolt-Glaser (2005) reviewed of experimental in-vivo and in-vitro studies explained that psychological factors are associated with immune dysfunctions and the development of malignant cells. Evidence of the pathways through which psychological stress could contribute to the increase of cancer risk (Glaser & Kiecolt-Glaser, 2005).

Concurring to Glaser and Kiecolt-Glaser (2005) and Jacobs and Bovasso's (2000) studies, Khan et al. (2010) survey on the effect of breast cancer in women also indicate extreme stress in women. The extreme stress felt by breast cancer women can lead to various emotional disorders, such as anxiety, tension, depression, grief, anger,

hopeless, helplessness, and a high degree of passivity (Khan, Bahadur, Agarwal, Sehgal, & Das, 2010) .Therefore, health professionals and nurses are required to take into account the issue happening, the effect of negligence in psychological care and the burden of psychological distress, depression and anxiety developed by event in breast cancer patients (Monti, et al., 2005). According to Monti et al.'s (2005) study, the interactions between distress, cancer, and psychiatric illness need to be understood and addressed within the context of physical and psychosocial challenges inherent to the illness experience. Thus, the researcher in this study aims to highlight the level of depression, anxiety and stress among young adult breast cancer women on adjuvant therapy in Hospital Universiti Sains Malaysia (HUSM).

1.3 PROBLEM STATEMENT

Persistence of psychological suffering and of a maladaptive anxious response that interrupts the process returning to emotional equilibrium and worsens outcome of both somatic sensory and psychological components (Ballantyne, et al., 2009). An increase in the number of breast cancer in women and the user of adjuvant therapy has been seen in virtually all countries (Abdul Hadi, Hassali, Shafie, & Awaisu, 2010; Godina, et al., 2001; Hisham & Yip, 2003; Norsa'adah, Rusli, Imran, Naing, & Winn, 2005). Although the psychological effect of diagnosis and treatment is well documented, less is known about the level of depression, anxiety and stress after the initial diagnosis year. Overall, women who remain free of breast cancer seem to have levels of functioning and quality of life. A better understanding of clinically important about depression, anxiety and stress among women undergoing breast cancer therapy would inform appropriate service provision such as cognitive behavior stress management intervention, relaxation training and supportive psychotherapy (Miller, Ancoli-Israel, Bower, Capuron, & Irwin, 2008).

According to WHO, young adults in Malaysia are between ages of 15 to 49 years (World Health Organization Regional Office for The Western Pacific, 2005-2010). Meanwhile, the reason of the researcher is interested in studying younger women is because young age has been correlated as a negative prognostic factor (Mohd Taib, Yip, & Mohamed, 2008). In Indonesia, women less than 40 years were found to have poorer prognosis than women more than 60 years due to more aggressive phenotype, larger tumour size and more lymph node involvement (El Saghir, et al., 2006). Therefore, it can be argued that young age at presentation conferred a worse prognosis despite being more hormone sensitive and having more antracycline based chemotherapy and hormonal therapy (El Saghir, et al., 2006; Mohd Taib, et al., 2008).

Despite various studies on breast cancer patient in Malaysia (Mohd Taib, et al., 2008; Muhammad Hadi, Mohamed Hassali A. , Shafie Asrul, & Awaisu, 2010; Norsa'adah, et al., 2005), there is a dearth of psychological study about depression, anxiety and stress among young adult breast cancer women undergoing adjuvant therapy. Many studies researched in risk factor (Kamarudin, Shah, & Hidayah, 2006; Norsa'adah, et al., 2005), self-examination (Muhammad Hadi, et al., 2010), awareness (Muhammad Hadi, et al., 2010) and knowledge and perception (Abdul Hadi, et al., 2010). To the best of the researcher's knowledge, there are few researches in relation to depression, anxiety and stress, particularly, study among young adult breast cancer women undergoing adjuvant therapy in Malaysia. A detailed search of the MEDLINE, CINAHL, PsycINFO, EMBASE, Proquest databases was conducted for articles published between 1970 and 2009 (Abdul Hadi, et al., 2010). Search terms included the following keywords like adjuvant therapies, breast cancer, depression, anxiety, and stress. The search uncovered a

dearth of literature specifically from the Malaysian context. Therefore, this study is important in that it can yield some information about anxiety, depression and stress level of young adult breast cancer women undergoing adjuvant therapy. In addition, this study also could give important information for oncology nurses and community care nurses to the needs of nursing the psychological needs of young adult breast cancer women who are undergoing adjuvant therapy. This can also benefit the patient's family and community by highlighting the needs of family support and self awareness about breast cancer. The information from this study can also help the community nurse to voice out the psychological needs of supporting young adult breast cancer women undergoing adjuvant therapy (Abdul Hadi, et al., 2010).

Historically, clinicians have relied on biomedical markers such as the result of laboratory tests to determine whether a health intervention is necessary or has been successful (Quality Metric, 2010). However, clinical measures can miss the outcomes that matter most to patients namely, how people emotionally function and their experience perception towards the therapy referred to as their psychosocial. Depression, anxiety and stress are very subjective. Most of the components such as psychosocial functioning cannot be directly observed. Consequently, nurses frequently underestimate patient's psychosocial and emotional status (Addington-Hall & Kalra, 2000; McLachlan, et al., 2001).

According to Burgess et al. (2005), emotional depressive, anxiety and stress are common difficulty for women with breast cancer. About 50% breast cancer women with early diagnosis had depression, anxiety, or both in the year after diagnosis, 25% in the second, third and fourth years, and 15% in the fifth year. Point prevalence was 33% at

diagnosis, falling to 15% after one year. Forty-five per cent of those with recurrence experienced depression, anxiety or both within three months of the diagnosis (Burgess, et al., 2005).This variation is likely due to differences in study populations such as age range, socioeconomic status, stage of cancer, definitions of depression, and assessment instruments used which can all have an impact on prevalence estimates. Even though some recent studies made attempt to better define cohorts and diagnostic criteria (Burgess, et al., 2005) many studies of women with breast cancer measure distress in terms of quality of life which can yield an indirect assessment of depression and other psychological symptoms (Burgess, et al., 2005).

Breast cancer women usually suffer incredible stress while under active treatment. The stress from health, family, and interpersonal relationships were higher in malignant group (Yen, et al., 2006). The stress from health was the most significant predictor for quality of life among malignant breast cancer women (Yen, et al., 2006). In Yen et al.'s (2006) study presented that malignant group of breast cancer women under active treatment after being newly diagnosed or suffering from a recurrence had poorer life quality on physical and psychological dimensions. This shows that psychological difficulties might occur under treatment after diagnosis or recurrence, and would coped with better, 2 years later (Yen, et al., 2006). The level of depression, anxiety and stress need to be recognised and early diagnosed to enhance holistic nursing care and increase quality of life among breast cancer women. Furthermore, it is important to find out that the association between time after initial diagnosis with the level of stress, anxiety and depression.

In Mohd Taib, Yip and Mohamed's (2008) study, they found that women aged 40 years and below experienced poorer survival compared to women 41-59 years of age. Meanwhile, survival of women 60 years and above also experienced significantly poorer survival compared to women in the 41-59 years of age (Mohd Taib, et al., 2008). It is interesting to know the psychological levels of anxiety, depression, and stress that they experienced for further evaluation in future reason of poor survival. It is also important to identify breast cancer women's' experienced in psychological (anxiety, stress, depression) difficulty which might cause the poor survival. Thus, the researcher would like to determine the association between age and depression, anxiety and stress level among younger women undergoing adjuvant therapy. With this in mind, the researcher is determined to undertake this study.

The researcher would adopt the 'Stress-coping model' of Maes, Leventhal and De Ridder (1996) to explain the association of between independent variables (age, time after initial diagnosis) and dependent variable (score of anxiety, depression, stress). Reference to be viewed at section 2.5 provides more details and explanations regarding the 'Stress-coping model' of Maes et al. (1996).

1.4 PURPOSE OF THE STUDY

The purpose of this study is to enhance the evidence-based in oncology nursing care. Through this study, nurses and health care provider in oncology or community centre would gain a better understanding to nurse young adult breast cancer women undergoing adjuvant therapy. Thus, vis-à-vis this study, hence, can better guide the nurse in providing care and in drawing attention of the nurse towards supporting the psychological care of young adult breast cancer women. This study explore the

depression, anxiety and stress level among young adult breast cancer women undergoing adjuvant therapy in Hospital Universiti Sains Malaysia (HUSM). This study also details whether there are association to be determined between level of depression, anxiety and stress among young adult breast cancer women with age and time after initial diagnosis. This would help breast cancer centre in HUSM to plan and give optimum counseling session or group cognitive therapy to young adult women undergoing adjuvant therapy.

1.5 AIMS OF THE STUDY

1.6.1 General Objective:

To explore depression, anxiety and stress level among young adult women with breast cancer undergoing adjuvant therapy associate with age and time after initial diagnosis.

1.6.2 Specific Objectives:

a) To determine the level of depression, anxiety and stress level among young adult women with breast cancer undergoing adjuvant therapy in HUSM.

b) To determine the association between time after initial diagnosis and the level of depression, anxiety and stress in young adult women with breast cancer undergoing adjuvant therapy.

c) To determine the association between age and depression, anxiety and stress level among young adult women with breast cancer undergoing adjuvant therapy.

1.6 RESEARCH QUESTIONS

(a) What are the level of depression, anxiety and stress in young adult women with breast cancer undergoing adjuvant therapy?

(b) Are there association between time after initial diagnosis and the level of depression, anxiety and stress in young adult women with breast cancer undergoing adjuvant therapy?

(c) Are there association between age group and depression, anxiety and stress level in young adult women with breast cancer undergoing adjuvant therapy?

1.7 RESEARCH HYPOTHESIS

Null Hypothesis (H_0): There is no association between time after initial diagnosis and the level of depression, anxiety and stress in young adult women with breast cancer undergoing adjuvant therapy.

Alternative Hypothesis (H_A): There is association between time after initial diagnosis and the level of depression, anxiety and stress in young adult women with breast cancer undergoing adjuvant therapy.

Null Hypothesis (H_0): There is no association between age group and depression, anxiety and stress level among young adult women with breast cancer undergoing adjuvant therapy.

Alternative Hypothesis (H_A): There is an association between age group and depression, anxiety and stress level among young adult women with breast cancer undergoing adjuvant therapy.

1.8 JUSTIFICATION AND SIGNIFICANCE OF THE STUDY

In Malaysia, breast cancer (BC) is the most commonly diagnosed cancer among women with the incidence rate increasing every year (Lim & Yahaya, 2003). Adjuvant therapies such as chemotherapy and radiotherapy are commonly used after primary treatment to

inhibit metastasis and enhance long-term survival rates. The aggressiveness of the therapy increases treatment side-effects to BC patients (Coates, et al., 2007; Khan, et al., 2010). Because of the increase in BC amongst Malaysian women and a dearth of research into exploring into how BC patients' level of anxiety, depression and stress to adjuvant therapies, including far too little attention has been paid to describe these treatment side-effects experiences, led the researcher to undertake this study. Because such knowledge into BC patients can provide valuable input into assessing BC patient's experiences journey and the development of relevant educational programs to alleviate these experiences of BC patients in the future. In addition, the knowledge and information gain can also helps the health professionals and nurses to apply intervention which can yield better effect of psychological treatment such as cognitive behaviour stress management intervention, relaxation training and supportive psychotherapy (Miller, et al., 2008).

The incidence of breast cancer in Kelantan and in Malaysia is regarded as serious, with the Hospital Universiti Sains Malaysia Hospital (HUSM) recording about 10 new patients every month and five to six of them dying soon after. According to HUSM Breast Cancer Resource Centre coordinator, Dr Nik Munirah Nik Mahdi speaking to BERNAMA, every breast cancer women who undergone surgery to remove the breast lump and tissues would need to prevent recurrence via using adjuvant therapy (Bernama, 2010). Anxiety, depression, and stress are common occurrence among women with breast cancer; however, physicians recognize only 40% to 50% of depressive symptoms in their breast cancer patients (Coyne, et al., 2004; Fisch, et al., 2003). Breast cancer women used to suffer physical and psychological disturbances especially while undergoing adjuvant therapy. Psychological disturbance such as anxiety, depression and stress are varies

among different ages, treatment, time after initial diagnosis or other factors. Hence, there is still room for improvement in exploring the reality in level of anxiety, depression and stress among young adult women with breast cancer to improve quality of oncology care in HUSM.

Anxiety and depression are the most prevalent psychological symptoms perceived by breast cancer women (Takahashi, et al., 2008). This study therefore, would highlight the needs of attention towards psychosocial of breast cancer women. It is hope that information from this study can therefore help nurses to identify and establish appropriate nursing care plan and management for breast cancer patient holistically.

As to close the knowledge gap, hence, it is worthwhile to further research using larger homogenous samples to examine possible cases of anxiety, stress and depression during adjuvant therapy. This study can provide new insights into nursing practice, develop and improve holistic care of oncology nursing. Besides, the study of depression, anxiety and stress among young adult women with breast cancer undergoing adjuvant therapy would help in better understanding of the concepts central to nursing care. Meanwhile, the outcomes of the study would also indirectly help in developing new knowledge about practice and nursing process management.

2 LITERATURE REVIEW

2.1 INTRODUCTION

Before conducting a research study, it is common practice to conduct a review of the literature on the topic. The ultimate goal of research is to identify all studies that provide evidence of a particular intervention, to critique the quality of each study, and to synthesize all of the studies providing evidence of the effectiveness of a particular intervention. It is also important to locate and include previous evidenced-based papers that have examined the evidence of a particular intervention, because the conclusions of these authors are highly relevant (Burns & Grove, 2009).

As discussed in the introductory section, the aggressiveness of adjuvant therapy increases the exposure of BC patients to treatment side-effects (Coates, et al., 2007; Khan, et al., 2010). The purpose of this literature review is to explore the research on anxiety, depression and stress in young adult breast cancer women undergoing adjuvant therapy.The remaining sections of this literature review are presented under the major headings of breast cancer, adjuvant therapy and the related anxiety, depression and stress in young adult women with breast cancer undergoing adjuvant therapy.

2.2 BREAST CANCER

Breast cancer is defined as a malignant neoplastic disease of breast tissue, the most malignancy in women in the United States (Mosby, 1995). The incidence increases exponentially with age from the third to fifth decade and reaches a second peak at age 65, suggesting that breast cancer in premenopausal women may be related to ovarian hormonal function and in postmenopausal patients to adrenal function (Bernstein, 2002).

Based on the prevalence of breast cancer affluent countries, especially in high socioeconomic groups, it is thought that a high fat diet may be a causative factor (Kamarudin, et al., 2006) but the relationship is unproven and the origin is unknown. Risk factors include a family history of breast cancer, nulliparity, exposure to ionizing radiation (Hamdi, et al., 2010), early menarche, late menopause, obesity, diabetes, hypertension, chronic cystic disease of the breast and possibly, postmenopausal estrogen therapy (Norsa'adah, et al., 2005). Women who are over 30 years of age when they bear their first child and patients with malignancies in other body sited also have an increase risk of developing breast cancer (National Cancer Institute, 2009).

From the Record Unit, Hospital Universiti Sains Malaysia (HUSM), it was found that the incidence of BC fluctuated each year (Table 2.1). Number of women below fifty years old is almost 10 percent of the total number of BC patient each year. The incidence of young BC women diagnose with BC were increasingly high with 16 patients in 2006 while in 2010, the prevalent were 40 patients (Table 2.2).

Table 2.1: Incidence of Breast Cancer in HUSM(Record Unit: Hospital University Sains Malaysia, 2009)

Year	2005	2006	2007	2008	2009
Total BC	135	135	121	219	181 (not up to December)

Table 2.2: Number of incidence of breast cancer women below 50 years old in 5 years (Record Unit: Hospital University Sains Malaysia, 2010)

Year	2006	2007	2008	2009	2010	Total
Frequency	16	22	28	18	40	124
Percent (%)	12.9	17.7	22.6	14.5	32.3	100.0
Total death (n)	2	2	4	0	1	9
Total stage IV	3	7	6	7	7	30

Table 2.3: Percentage of young BC women in HUSM (Record Unit: Hospital University Sains Malaysia, 2010)

Year	2006	2007	2008
Number of young BC women <50 years old (person)	16	22	28
Total number of BC women (person)	135	121	219
Percent (%) of young BC women <50 years old	12%	18%	13%

2.3 ADJUVANT THERAPY

Adjuvant therapy for breast cancer is any treatment given after primary therapy to increase the chance of long term survival. Adjuvant therapy consists of chemotherapy, radiotherapy, hormonal therapy or surgery, all four of which can be used alone or in combination (So, et al., 2009). Estrogen receptor (ER) and progesterone receptor (PgR) are the primary measures available today to tailor adjuvant therapies. Patient age/menopausal status (ability to obtain treatment effects via ovarian function

suppression), measures of the metastatic potential of the tumor (such as number of positive axillary lymph nodes), and concurrent use of chemotherapy and Tamoxifen are other factors that modify the magnitude of relative effect associated with chemotherapy and endocrine therapies (Gelber, Bonetti, Castiglione-Gertsch, Coates, & Goldhirsch, 2003).

Adjuvant therapy is widely used to treat breast cancer to extend disease free survival as well as overall survival. As more women undergo adjuvant therapy, there has been growing interest in investigating its impact on psychological and prevalence of anxiety, depression and stress which are part of the disease derived. Although some studies suggest that women treated with adjuvant chemotherapy experience poor quality of life (QoL) than women treated with postoperative radiotherapy or hormonal therapy, (Ganz, et al., 1998) other studies do not (Ahles, et al., 2005; Lindley, Vasa, Sawyer, & Winer, 1998). Adjuvant therapy for breast cancer such as ovarian ablation reduces the relative risk of recurrence and death by at least one quarter in the absence of chemotherapy. Chemotherapy induced amenorrhea reduces the risk of recurrence and death when compared to patients with continuing menses (Aebi & Castiglione-Gertsch, 2003).

The acceptance of adjuvant treatment for early breast cancer is dependent on the information that women are given about available options, the likely therapeutic gains, side effect profiles, convenience of treatment as well as their prior knowledge, experience and expectations (Fallowfield, 2005). Hence, it is necessary for researcher to explore the level of anxiety, depression and stress among breast cancer women undergoing adjuvant therapy and chemotherapy experience.

2.3.1 *Implication of Chemotherapy on Breast Cancer*

Chemotherapy has been shown to improve the overall survival of breast cancer women and also report higher rates of depression in women undergoing chemotherapy (Colleoni, et al., 2000; So, et al., 2009). There are 75% of breast cancers diagnoses occur after menopause, which is associated with an oestrogen deficiency and ultimately, increased depression (Monti, et al., 2005). Although chemotherapy reduces the risks of recurrence and death irrespective of endocrine responsiveness of the tumor, in patients with estrogen receptor positive (ER+) tumors this might result in chemotherapy-induced menopause (Aebi, 2005). Chemotherapy induced amenorrhea reduces the risk of recurrence and death when compared to patients with continuing menses (Aebi & Castiglione-Gertsch, 2003).

Symptoms associated with cognitive dysfunction are difficulties with memory, concentration, and languages. These difficulties are frequent among breast cancer survivors after chemotherapy but the true incidence, functional significance, and causes of these symptoms remain unclear (Burstein, 2007). The true incidence, functional significance, and causes of these symptoms remain unclear (Burstein, 2007). Models of cognitive dysfunction suggest multiple possible contributors of cognitive dysfunction in breast cancer including changes in hormonal milieu, direct effects of chemotherapy, medications given as supportive care, psychiatric changes including depression and anxiety (Burstein, 2007).

2.3.2 *Implication of Radiotherapy on Breast Cancer*

Fractionation regimes for individual tumor sites have varied greatly across the UK for many years. This has been particularly true for breast cancer which accounts for up to

40% of a radiotherapy department's work load (Harnett, 2010). According to Kenny et al. (2000), 397 women eligible for the study, costing data were collected for 81% and quality of life data for 73%. The cost differences between treatment groups were mainly accounted for by adjuvant therapies while the more expensive being radiotherapy. When compared to women treated by mastectomy, those treated by breast conservation reported better body image but worse physical function. The negative impact of breast cancer and its treatment was greater for younger women across a number of dimensions of quality of life (regardless of treatment type). While it shows that breast conservation is more expensive than mastectomy, the QoL results reinforce the importance of patient participation in treatment decisions (Kenny, et al., 2000). The introduction of innovative radiotherapy approaches for early breast cancer patients is rapidly changing the radiation oncologists' attitude and their expectations to obtain a good local control while decreasing morbidity; and therefore improve patient's quality of life (Orecchia, Ivaldi, & Leonardi, 2009). Intraoperative radiotherapy is a treatment modality in the multidisciplinary approach to breast conservation as is testified by the rapidly growing number of patients accrued in numerous studies all over Europe since 2000. A major advantage of intraoperative radiotherapy in breast cancer treatment is the administration of a large dose of radiation directly to the tumour bed (Orecchia, et al., 2009). Accurate localization and precise definition of the tumour bed volume is essential to achieve maximal efficacy in terms of local control while minimizing unnecessary damage to the normal breast tissue. Intraoperative radiotherapy reduces radiation exposure of the skin, lung, heart and normal subcutaneous tissues thus contributing to the low incidence of side effects and the generally excellent cosmetic results (Orecchia, et al., 2009).

A large amount of clinical evidence has recently accumulated supporting the efficacy and safety of hypofractionated radiotherapy for post-operative breast cancer (Lievens, 2010). These schedules, typically delivering a lower total dose in fewer, but larger than 2 Gy fractions, are more convenient for the patients by limiting the number of treatment attendances. Moreover, the reduced resource use in terms of personnel and machine time is advantageous for radiotherapy departments and translates into lower treatment costs (Lievens, 2010). To validate this therapeutic approach from a societal perspective, cost-effectiveness evaluations weighing long-term outcome against the societal costs incurred until many years after treatment are needed (Lievens, 2010). Frick, Tyroller and Panzer (2007) indicates that nearly 75% of the patients do not suffer from clinically relevant anxiety or depression (Frick, Tyroller, & Panzer, 2007).

2.3.3 Implication of Hormonal Therapy on Breast Cancer

Approximately 180,000 women are diagnosed with breast cancer in the United States annually. The majorities of these women are postmenopausal and have endocrine-sensitive tumors (Freedman & Winer, 2009). Over the last four decades, multiple clinical trials have been conducted in efforts to establish and advance adjuvant endocrine therapies (Freedman & Winer, 2009). Endocrine therapy for breast cancer has been established in the adjuvant treatment for primary disease and in the treatment of advanced disease (Cheung, 2007). Antiestrogen treatments used to treat breast cancer may mimic the increase levels of depression seen in postmenopausal patients (Monti, et al., 2005). The efficacy of 5 years of adjuvant Tamoxifen in preventing disease recurrence in patients with breast cancer has been well established (Gelmon, 2007). However, patients have completed Tamoxifen therapy, recurrence risk remains but treatment options are limited (Gelmon, 2007). Aromatase inhibitors such as Letrozole

are emerging as potential alternatives to Tamoxifen therapy and as an option after Tamoxifen (Gelmon, 2007).

Hormonal manipulations have been used for more than 100 years for the treatment of metastatic breast cancer and after definition of the concept of micro-metastases also in the adjuvant setting. In the postmenopausal population, Tamoxifen played the most important role for almost four decades (Dellapasqua & Castiglione-Gertsch, 2005). Progestins or the first generation of aromatase inhibitors (AIs) were only marginally used in the adjuvant setting due to their prohibitive toxicity (Dellapasqua & Castiglione-Gertsch, 2005).

The new generation of anti-estrogen compounds, the selective estrogen receptor down-regulators (SERDs) like fulvestrant have a higher affinity for the estrogen receptor than Tamoxifen, but none of its agonist activities (Dellapasqua & Castiglione-Gertsch, 2005). It has shown promising clinical activity in the treatment of advanced breast cancer. The third generation of AIs investigated in six large trials has been reported to be superior to Tamoxifen in terms of disease-free survival, but not in terms of survival (Dellapasqua & Castiglione-Gertsch, 2005). In patients with primary disease, published studies suggest that endocrine therapies, such as Tamoxifen, significantly increase both gynaecological and vasomotor symptoms (Coster & Fallowfield, 2002). Tamoxifen used to be the most popular agent of choice and promising new agents include the pure anti-estrogens and the third generation selective aromatase inhibitors (Cheung, 2007). Acceptability in terms of adherence to treatment is then dependent on the actual burden experienced and the impact this has on quality of life (QoL) (Cheung, 2007). Studies show that >40% women do not adhere to Tamoxifen because of side effects affecting QoL. The burden of

adjuvant therapy may be underestimated by clinicians; thus, when options are discussed, treatments may appear more favorable and acceptable than they really are (Fallowfield, 2005).

2.3.4 Different Ages in Breast Cancer Women

Breast cancer is rare in women before age 40. Sixty to seventy percent of breast cancers in this age group express estrogen or progesterone receptors. All following considerations refer to endocrine responsive disease (Aebi & Castiglione-Gertsch, 2003). Young age is an independent negative prognosticator: age is a surrogate for biological mechanisms determining an aggressive cancer phenotype (Aebi, 2005). Avis (2005) points out that 26.4% of all new diagnosed breast cancer cases occur in young women less than 50 years old. Younger women are also heightened by studies showing that younger women have greater psychological morbidity and poorer quality of life (QoL) after breast cancer diagnosis than older (Avis, Crawford, & Manuel, 2005)

Chemotherapy is insufficient therapy for very young patients with hormone responsive disease, particularly if chemotherapy fails to induce amenorrhea. Tamoxifen is effective in young patients even in combination with chemotherapy (Aebi & Castiglione-Gertsch, 2003). A multivariate analysis of covariance, controlling for sex, age, education, stage of disease, and time since last treatment, revealed that survivors of breast cancer who had been treated with systemic chemotherapy scored significantly lower on overall QOL compared with survivors treated with local therapy only ($p = 0.04$) (Ahles, et al., 2005). According to the first audit in the United Kingdom looking at compliance to treatment guidelines in breast cancer in the setting of a cancer network, the age limit for adjuvant