

**Depression and Sleep Alterations Associated in the Older Adult Breast Cancer
Population**

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Abstract

Depression rates nearly double for geriatrics diagnosed with breast cancer. Depression is a serious problem which affects many aspects of life, including sleep. The symptoms of depression and sleep alteration should be managed as part of the breast cancer survivorship care plan. The purpose of this study is to describe the incidence and the relationship between depression and sleep alterations in older breast cancer patients. This prospective study included people aged 70 years and over with any stage of breast cancer receiving care at the James Cancer Center, Comprehensive Breast Center. Participants completed a Geriatric Depression Scale and a Pittsburgh Sleep Quality Index. Demographic characteristics were evaluated using descriptive statistics. To determine the relationship between depression and sleep alternations, correlations were used. The mean age (n=44) was 78 years (range 69-93). The mean score of the GDS was 2.02 and the PSQI was 5.42. The GDS and the PSQI were significantly correlated ($r=0.49$, $p=.001$). Nurses must remember that people who screen positive for depression should also be screened for sleep problems.

Chapter 1

Statement of the Problem

Introduction

Breast cancer in the United States is the most common cancer in women regardless of race or ethnicity (U.S. Cancer Statistics Working Group, 2016). In 2012, 224,147 women and 2,125 men were diagnosed with breast cancer while 41,150 women and 405 men in the United States died from breast cancer (U.S. Cancer Statistics Working Group, 2016). The risk of breast cancer increases with age, while the median age of diagnosis is 61 years (Howlader et al., 2016). Undergoing cancer diagnosis and treatment can result in physical and emotional symptoms. Rates of depression are often doubled in breast cancer survivors (Mitchell, Possel, Van Voorhees, & Eaton, 2016) and poor sleep quality and sleep disturbance are also common problematic symptoms (Carpenter et al., 2004). The purpose of this project is to describe the relationship between depression and sleep alterations in older breast cancer patients.

Background of the Problem

Five year survival for women diagnosed with breast cancer is 89.4% in the United States (Howlader et al., 2016). Many women undergo cancer treatment with options such as surgery, radiation therapy, chemotherapy and hormonal therapies which can cause problems with sleep and depression during and after chemotherapy (Carpenter et al., 2004; Mitchell et al., 2016). Breast cancer treatment can lead to a decrease in the ability to cope with the many stressors associated with diagnosis and

treatment which can inspire depression (Fann et al., 2008). Even years following a diagnosis and treatment for breast cancer, depression can be a concern for many women (Goo, Song, Shin, & Ko, 2016). Sleep alterations are associated with depression and can be evident in problems falling asleep, frequently awakenings, and non-restorative sleep (Medina, Lechuga, Escandon, & Moctezuma, 2014). Other symptoms such as nausea and vomiting associated with cancer treatment are associated with sleep alterations (Jung et al., 2016).

Significance of the Study

This study is significant in that sleep alterations and depression can be a symptom cluster that is difficult to manage (Jain, Boyd, Fiorentino, Khorsan, & Crawford, 2015) yet left untreated can reduce general quality of life (Jones et al., 2015). It is important for nurses to recognize that depression and sleep alterations are often seen in women diagnosed with breast cancer. This study is an important contribution to showing the prevalence and relationship of depression and sleep in a small set of older women diagnosed with breast cancer.

Conceptual Framework

The conceptual framework used for this study is the *Middle-Range Theory of Unpleasant Symptoms* (TOUS) (Lenz, Suppe, Gift, Pugh, & Milligan, 1995). The TOUS considers that some unpleasant symptoms interact and should be considered holistically instead of addressing a single symptom. Each symptom can have a different duration, intensity, quality and distress however certain symptoms can occur simultaneously, these symptoms can snowball and can even have a multiplicative effect. Breast cancer patients typically have a multitude of symptoms present that

overlap with one another referred to as a symptom cluster (Denieffe, Cowman, & Gooney, 2014). In newly diagnosed breast cancer patients, insomnia often occurs with other unpleasant symptoms such as pain, fatigue, and depression (Fiorentino, Rissling, Liu, & Ancoli-Israel, 2011). Other common unpleasant symptoms that are often referred to as clusters are depression, anxiety stress and physical symptoms such as fatigue, pain, sleep alterations and drowsiness (Reich et al., 2016).

Research Questions

1. Describe the demographic characteristics of the older women diagnosed with breast cancer who underwent depression and sleep alteration screening.
2. Describe the incidence of positive depression and sleep alteration screening using the Geriatric Depression Scale (GDS) (Yesavage et al., 1982a) and the Pittsburgh Sleep Quality Index (PSQI) (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989) and the in older breast cancer patients.
3. Determine the relationship between scores on the GDS and PSQI in older breast cancer patients.

Definition of Terms

Depression is the persistent sad, anxious, “empty” feelings that interfere with daily life.

These feelings can include hopelessness, a lack of interest, difficulty concentrating and is associated with sleep and eating disturbances (World Health Organization, 2016).

The Centers for Disease Control and Prevention define depression to be sadness, lack of interest fatigue and problems such as weight loss or gain (Centers for Disease Control and Prevention, 2016). According to the American Psychiatric Association, depression can present in many ways and can have coexisting issues such as

substance abuse and there are many types of treatment recommendations for management of depression (American Psychiatric Association, 2010).

Sleep alteration is a deprivation or deficiency that involves lack of sleep, insomnia, sleep hygiene, non-restorative sleep and the inability to initiate sleep and remain asleep (National Cancer Institute, 2016). The difference between insomnia and sleep alteration is that a sleep alteration is a board term and involves insomnias which are disorders of initiating and maintaining sleep, sleep-related breathing disorders, disorders of excessive somnolence, problems with sleep-wake cycle, dysfunctions in sleep stages or partial arousals (National Cancer Institute, 2016).

Chapter 2

Review of Literature

Depression

According to the CDC, 7.6% of Americans over age 11 have been diagnosed with depression and most are women (Pratt & Brody, 2014). According to the American Psychological Association, individuals with depression may experience a lack of interest and pleasure (American Psychological Association, 2016). This includes excessive sleeping, lack of energy, inability to concentrate, feelings of worthlessness or excessive guilt and recurrent thoughts of death and suicide (American Psychological Association, 2016). The Center for Disease Control defines depression as a sad mood, diminished interest in pleasurable activities, weight gain or loss, agitation or retardation, fatigue, inappropriate guilt, difficulty concentrating and recurrent thoughts of death (Centers for Disease Control and Prevention, 2016). No one definition of depression exists and there are many characteristics that make up the diagnosis. In both these definitions, similar characteristics are apparent such as the recurrent thoughts of death and suicide and a lack of interest and pleasure.

Along with these definitions The World Health Organization describes depression as a mental disorder with similar characteristics (World Health Organization, 2016). According to WHO, this mental disorder is characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration. It is more than just a “bad day”, as these symptoms must be present for at least two weeks continuously to be considered a diagnosis of depression (Centers for Disease Control and Prevention, 2016). These traits can be

long lasting or recurrent and can impact a person's ability to function at work or school, cope with daily life, and can interfere with interpersonal relationships (World Health Organization, 2016). Often depression starts as a young age and there is a higher risk for women than men and the unemployed population (World Health Organization, 2016). Frequently, poor sleep habits are associated with depression and is a factor explored in the diagnosis process (Carpenter et al., 2004). Depression is one of the most reported none cancer health complaints in women diagnosed with breast cancer (Hagen et al., 2016).

Sleep Alterations

Sleep alterations are associated with a number of chronic diseases and conditions including depression (Pratt & Brody, 2014). Sleep inconsistencies are multifactorial including components such as being able to fall asleep, sleeping continuously throughout the night, and ability to wake up in the morning. There is no definitive amount of sleep needed by an individual but the average for adults including the elderly is 7-9 hours per day (National Sleep Foundation, 2016).

Sleep alterations can be difficult to manage because there are so many factors that interrupt and promote somnolence. Sleep hygiene is a common term used to describe activities that help with sleep. Sleep hygiene interventions include consistent nightly bed time and awake times, the environment should be dark and relaxing, and refrain from electronics in the bed (Centers for Disease Control and Prevention, 2014).

The Relationship between Sleep and Depression and Age

Depression is the most common psychiatric disorder associated with insomnia and it has been estimated that 90% of patients with depression complain about sleep

quality (Tsuno, Besset, & Ritchie, 2005). These two characteristics are seen widely in breast cancer patients. A longitudinal study of postmenopausal women aged 45 to 70 years with breast cancer showed depression, fatigue, and sleep disturbances as a symptom cluster. There is a 0.44 correlation between depression and sleep disturbances and in general symptom correlations (Ho, Rohan, Parent, Tager, & McKinley, 2015).

In postmenopausal breast cancer survivors, there is an increased prevalence of depression which is associated with metabolic syndrome (Serra, Goldberg, & Ryan, 2016). Many postmenopausal survivors develop weight gain, diabetes, and depression following a diagnosis of cancer. Depression is also associated with cancer-related fatigue, reduced activity level and quality of life concerns in breast cancer survivors of all ages (Galiano-Castillo et al., 2014)

It is seen that there is a symptom cluster—including depression and sleep alterations—that develops with the diagnosis of breast cancer and one symptom can potentially predict the likelihood of the other to rise during the treatment of breast cancer. There is evidence for the reverse too, that depression is linked to the onset of breast cancer. Depression can negatively impact the immune function and allow the body to become susceptible to breast cancer (Mitchell et al., 2016). Also, both depression and an irregular sleep schedule can cause a dysregulation in release of cortisol leading to disruption of the diurnal cortisol rhythm (Mitchell et al., 2016). Instead of having a cycle, we will have a flattening of our levels which is seen with sleep alterations and can increase the risk of cancer.

Depression in women younger than 65 years tends to be rather high soon after a diagnosis of diagnosis. For older women, depression levels tend to remain stable over time following the diagnosis (Avis et al., 2013) and tend to be lower as compared to younger women (Avis, Levine, Case, Naftalis, & Van Zee, 2015). The association between age and depression is not significant at three to six months post diagnosis (Compas et al., 1999). Younger women tend to report more depression as compared to older women when only considering age (Avis et al., 2015). Depression generally presents at age 49 with 41% having a coexistent anxiety disorder (Comijs et al., 2015). Late life depression is generally associated with a younger age a diagnosis and presence of comorbidity and the depressive disorder is often evident at two years at the time of follow-up (Comijs et al., 2015).

The Effect of Cancer on Depression and Sleep

Breast cancer can greatly impact mental health especially during active cycles of chemotherapy treatment (Fann et al., 2008). Depression reduces perceived quality of life in many women (Shakeri et al., 2016) and can last approximately two years post treatment (Avis et al., 2015). In breast cancer survivors, chemotherapy can cause the onset of premature menopause leading to hot flashes and other menopausal symptoms arousing during treatment. Natural menopause is associated with gradual increases in symptoms, however chemotherapy leads to abrupt and intense symptoms that overwhelm coping abilities (Fann et al., 2008). This depressive state that comes from breast cancer can cause sexual dysfunction and affect immune function which can make the individual more likely to be depressed (Fann et al., 2008). This mental disorder causes a lack of acceptance and decreased compliance when it comes to the

women's health regarding her breast cancer. Not only does breast cancer highly effect the mental health of a women, rather it can worsen her cancerous condition.

According to the National Cancer Institute, sleep disorders are more common in people with cancer (National Cancer Institute, 2016). Side effects of drug treatments, stress, and the hospital environment can all cause an abnormal sleep-wake cycle. For patients with tumors the pressure from the tumor, pain, bladder problems, fever, cough, trouble breathing can all cause sleep alterations as well.

While it is seen that breast cancer and depression have a correlation, it is also noted that sleep alterations occur amongst patients with breast cancer. With cancer, many times number of symptoms are present during the treatment that are referred to as symptom clusters. These symptom clusters are defined as combinations of two or more co-occurring symptoms that are related to each other and that are independent of other symptoms or symptom clusters (Kwekkeboom, Cherwin, Lee, & Wanta, 2010). It is common for depression and sleep alterations to co-occur in cancer patients as a symptom cluster. It has been found that up to 72% of patients with cancer suffer from sleep alterations. While these symptoms occur together, they have a greater impact on the patient by affecting their physical function, emotional distress, and overall quality of life (Kwekkeboom et al., 2010).

Breast cancer has also shown to disrupt the mental health of the family and friends around the individual with breast cancer (Fann et al., 2008). There is evidence that untreated breast cancer can cause a higher rate of depression in family members and leads to caregiver stress and burden. It is also seen that children of depressed mothers are at a higher risk for developing adjustment problems (Fann et al., 2008).

These depressed mothers are also less available to their children and it can cause disruption to the normal routines in their household.

Summary

The physiological effect of this cancer is highly prevalent in geriatrics patients with breast cancer manifesting into symptoms such as depression and sleep alterations. Depression is characterized hopelessness, lack of interest or pleasure, fatigue and recurrent thoughts of death. Depression rates are nearly doubled in geriatrics with breast cancer and it is estimated 90% of depressed patients complain of sleep alterations (Fiorentino et al., 2011). These sleep alterations include difficulty falling asleep, frequent nighttime awakening, waking too early in the morning or excessive daytime sleeping. The manifestation of these symptoms are strongly correlated with a decrease in quality of life. In addition to effecting the patient, depression can impose itself on the caregivers and family members caring for the individual. Possible treatments include relaxation techniques such as yoga, meditation, and music therapy. Due to the large-scale impact of breast cancer, the psychological symptoms have been deeply explored in order to discover a relationship between depression and sleep alterations in geriatrics with breast cancer.

Chapter 3

Methods

Design

This study is a prospective, descriptive design.

Sample

Women diagnosed with invasive breast cancer, aged 69 years and older were invited to participate. Patients were diagnosed with any stage of cancer and type of treatment.

Participants were able to read and understand the consent form.

Setting

The Stefanie Spielman Comprehensive Breast Center at The Ohio State University (SSCBC) is an outpatient clinical and research facility. Prevention, detection, diagnostic, treatment and reconstructive strategies and management are some of the services offered to people diagnosed with breast cancer. The clinic targeted for this research was the Senior Adult Oncology Clinic which focuses on older women with breast cancer.

Procedures

Patients that present to the clinic and over the age of 70 years they will be invited to participate in the study. The Geriatric Nurse Practitioner (GNP) explained the study and obtained written consent from the patient and the designated caregiver. Health history, cancer diagnoses and treatment information were obtained from the medical record.

The GNP completed the instruments on each patient which they were in the examination room. Data were collected upon first encounter at the Senior Adult Oncology Program at the SSCBC. Data were entered into SPSS and analyzed.

Instrumentation

The Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989) is a commonly used instrument for the measure of quality of sleep. Scores on the measures range from 0 to 21 with increasing scores indicating worse sleep quality. A score > 5 indicates poor sleep. The instrument is a seven-item scale measuring quality of sleep, sleep latency, sleep duration, efficiency, disturbances, use of sleep medication and daytime sleep dysfunction. The instrument has a sensitivity of 0.89% and a specificity of 0.86%.

The Geriatric Depression Scale

The GDS is a 15 item “yes” and “no” scale that helps a clinician screen for depression (Yesavage et al., 1982b). More than “5” items scored as indicating depression are considered a positive screen and the patient should be referred for additional diagnostic assessment. A five-item short form, formulated from the GDS, is also available and is very quick to administer (Hjerl et al., 2003). Validation was shown by comparison with two well-known measures of depression, the Zung Self-Rating Scale for Depression and the Hamilton Rating Scale for Depression.

Analysis

To describe the demographic characteristics of the sample, descriptive statistics were used. To describe the incidence of positive depression and sleep alteration screenings using the GDS and the PSQI, the frequency of positive scores were calculated. To characterize the relationship between depression and sleep alteration, a Pearsons Product-moment correlation was calculated.

Summary

The sample consists of women diagnosed with breast cancer, aged 69 and older at any stage of cancer and type of treatment and takes place at The Stefanie Spielman Comprehensive Breast Center at The Ohio State University. Specifically, the research is conducted at the Senior Adult Oncology Clinic which offers various services to individuals diagnosed with breast focused on the older population. Health history, cancer diagnoses and treatment information will be obtained from individuals that volunteer to participate. The individuals that volunteered to participate took questionnaires' such as The Pittsburgh Sleep Quality Index and The Geriatric Depression Scale to measure the quality of sleep and to screen for depression. The data collected is used to describe the relationship behind positive depression and sleep alteration screenings among the geriatric population diagnosed with breast cancer.

Chapter 4

Results

To address aim 1, the study included 44 participants with a mean age of 78 years (ranging from 69-93). Most of the patients were diagnosed with infiltrating ductal carcinoma 25 (59.5%) and 11% were metastatic. Approximately 45% underwent lumpectomy. Many people (45%) reported their health to be better as compared to people their own age (Table 1). To address aim 2, the mean GDS score was 2.02 (SD 2.5). Any score of five and above suggests a positive screen for depression (Yesavage et al., 1982b). The mean score on the PSQI was 5.46 (SD 3.92) a score of five or greater indicates poor sleep (Buysse et al., 1989). To address aim 3, the PSQI and the GDS score are significantly correlated ($R=0.49$, $p= .001$).

Chapter 5

Discussion, Conclusion and Recommendations

Considering these results, the mean was positive for sleep problems however was not positive for depression. Many of these participants claimed their health to be better compared to people their own age. These findings show that the 45.2 percent of participants that claimed better health have a positive outlook on their lives rather than being depressed. Part of a cancer diagnosis is coping and recognizing emotions and feelings. Having a strong grasp on your mental health and your outlook leads to a better quality of life. Depression, anxiety, and fear are common traits among cancer patients, the use of therapy and talking through these feelings is therapeutic. In the case of this study, almost half of the participants in the study already had a positive outlook on their health condition normalizing the finding that the mean for depression was negative.

Although the participants in this study tested negative for depression, they did test positive for sleep problems as expected. Frequently cancer treatment can interrupt the diurnal cycle of cortisol which is responsible for regulating our sleep. When there is an imbalance this can result in insomnia, irregular sleeping schedules, and difficulty falling asleep. Typically, sleep alterations and depression appear as a symptom cluster among cancer patients. This symptom cluster was still present in the study, however the findings show sleep alterations triumph depression in this sample. This is related to the positive outlook the participants expressed when comparing their health as superior to other their own age.

Conclusion

A symptom cluster of depression and sleep alterations in geriatrics with breast cancer is important to recognize as a healthcare provider. Many times, these symptoms will go unnoted as they are not part of the primary diagnosis. It is vital to acknowledge the mental health of patients especially in the geriatric population. In patients who screen positive for depression, a sleep assessment should occur in order to help treat the whole problem of depression and sleep alteration.

It is necessary to recognize the signs of depression among patients and take into consideration any difficulties when it comes to sleep. Recognizing the symptom cluster early in the diagnosis can have a positive impact on the patient and the caregivers. While working with depressed patients, it is important to build a trusting relationship and work in a non-judgmental manner. Also, discussing treatment options while being hopeful and optimistic and educating the stages of depression can give the patient a new perspective on their treatment plan.

While caring for the patient, healthcare providers must interact with the caregivers to ensure they are properly educated and understand the condition of their loved one. Educating the family or caregivers by providing information not only about their primary diagnosis but the symptom cluster that goes along with it can be impactful. Patients going through breast cancer need a support group that understands their situation.

Recommendations

Health care providers must understand the symptom clusters that are associated with breast cancer patients among the geriatrics population. With early recognition of depression and sleep alterations, comes prevention and interventions. Frequent nighttime awakenings, daytime sleeping, and insomnia are all characteristics of sleep alterations. Cancer treatments can often cause these irregular sleeping patterns by interrupting the diurnal cycle. Health care providers should educate the patient on the importance of a regular sleeping schedule and creating an environment proper for sleep. Possible therapeutic treatments include yoga, meditation, and music therapy. Inclusion of these treatments can significantly decreased the presence of depression and sleep alterations in patients.

To understand the cause of depression and sleep alterations in breast cancer patients, a further analysis of the bio-psycho-social characteristics of women with breast cancer is needed to compare these characteristics of women who do not have a symptom cluster associated with their diagnosis and those that do (Fiorentino). Further studies need to account for background of these women with breast cancer to develop an understanding of the trajectories of sleep alterations and depression in the geriatric population. A cross-sectional survey across the United Kingdom, Germany, and Italy showed an active and social lifestyle are related to a sleep well. These findings may translate to the geriatrics breast cancer population and could be used to create support groups to promote activity and socialization to prevent depression and sleep alterations.

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