UNIVERSITY OF SOUTHERN QUEENSLAND

DEPRESSION IN PATIENTS WITH CANCER RECEIVING ADJUVANT CHEMOTHERAPY

A Dissertation submitted by

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ABSTRACT

This simple quantitative research investigated whether patients with cancer developed depression whilst receiving adjuvant chemotherapy, and whether there was a particular time in the treatment cycle that it was likely to develop. A longitudinal survey method was chosen and the instrument of use was the Beck Depression Inventory II (BDI-II). The content of this survey include factors that reflect negative attitudes towards self, performance impairment and somatic disturbances as well as general factors of depression.

Twenty-six participants were given the BDI-II, and asked to report on side effects that they had experienced every two weeks whilst they were receiving chemotherapy. The study took place in two regional oncology clinics.

This report demonstrates that, patients can develop depression whilst receiving adjuvant chemotherapy. The study revealed that the 5th fortnight into a patient's chemotherapy treatment was a more vulnerable point in their treatment to develop depression.

Descriptive analysis illustrated that more females than males suffered depression and that those receiving treatment for breast cancer were more likely to develop depression.

Correlation statistics demonstrated a relationship between fatigue and depressive symptoms. There was no statistically significant correlation between the number of side effects experienced by participants and depression.

In summary, the findings suggest that patients were more vulnerable to developing depression around the 5th fortnight of their chemotherapy cycle. This research has demonstrated throughout that depression does occur in patients receiving adjuvant chemotherapy and that female patients are more likely to develop depression than males.

Due to the small sample size though, the results were not statistically significant. The findings from this research could provide direction for more thorough studies in the future.

The style of reporting used throughout this thesis has been the Harvard referencing style to ensure compliance with the university requirements and to maintain consistency.

Certification of Dissertation

I certify that the ideas, research, results and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award.

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CHAPTER 1: INTRODUCTION

This thesis reports on an investigation of whether there is a key point when patients receiving adjuvant chemotherapy are more likely to develop depression within their treatment cycle. The study was based on a simple survey method using the Beck Depression Inventory. The first chapter of the thesis presents the background to the study, identifies the research problem and describes its significance. The chapter concludes by noting the limitations of the study and some key assumptions.

Research Background

Although cancer treatment has undergone an evolution of treatment modalities, the emotional impact on sufferers remains high. The developments in surgery, chemotherapy and radiotherapy mean that the survival rate of people diagnosed with cancer has increased (Bottomley, 1997; Paraska, & Bender, 2003). Adjuvant chemotherapy is chemotherapy that is given after surgical removal of the primary tumour where there is known to be a high risk of future tumour recurrence arising from micro metastases (Varricchio, 1997). The common side effects of adjuvant chemotherapy are nausea and vomiting, impaired bowel function (including diarrhoea or constipation), mucositis, alopecia, thrombocytopenia, anaemia, neutropenia, anorexia and peripheral neuropathy (Varricchio, 1997). There has been a lot of research on the debilitating physical and psychological effects that coincide with a diagnosis of cancer. Patients with psychological issues can have more severe physical side effects; they could be less compliant with the course of the treatment, and cause a greater strain on the health care system (Pascoe, Endelman, & Kidman, 2000).

A study conducted by Macmillan Cancer Support between December 2005 and February 2006 reported that the emotional aspects of a cancer diagnosis are the most difficult effects to deal with. The authors reported that 58% of participants agreed with the statement that “your emotional needs are not looked after as much as your physical needs” (Cardy et al 2006 p 11). Unfortunately, there is also little support for the reported emotional aspects related to a cancer diagnosis. For example, 60% of patients who experienced depression did not receive any information, advice, support or treatment (Cardy et al 2006). In this same study, depression remained an important factor related to cancer and its treatment yet research showed it is still misdiagnosed, inadequately treated or not treated at all (Cardy et al 2006). Depression describes “a spectrum of mood disturbances ranging from mild to severe and from transient to persistent” (Peveler, Carson, Rodin, 2002 p 149). The diagnosis depends on the presence of two cardinal symptoms including, a) persistent and pervasive low mood and b) loss of interest or pleasure in usual activities (Peveler et al 2002).

A focal issue in the research surrounding depression and chemotherapy has been the impact that the oncology nurse has on a patient's treatment outcome. Oncology nurses work as part of a team with other cancer care providers and allied health staff. Their daily activities include caring for patients diagnosed with cancer, offering education and support to patients and their families, administering chemotherapy or other treatments, managing chemotherapy side effects and assessing their patients ongoing needs and educational deficits. Oncology nurses often have an intimate role in assisting patients psychologically, physically and emotionally. Nurses in oncology recognise the potential for discovering and giving. It is evident that, in providing for the unique needs of cancer patients and their family, a broad variety of experiences and feelings can be encountered ranging from extremely stressful to extremely rewarding and from extremely sad to extremely fulfilling. The people who choose to work in this field are usually passionate about their work. The oncology nurse is challenged by the fact that every patient is different, every cancer is different and the course of every illness is different from every other. Now, more than ever, with all the changes in cancer care, compassion, competence and conscientious nursing care is a basic right of cancer patients and their families. It is evident that professionals working with cancer patients will need the necessary knowledge and skills to acknowledge and explore patient's feeling if they want to be able to give them the reassurance and care they need (Rooyen, Roux, Kotze 2008).

A number of researchers (McDonald et al 1999 and Zhao et al 2003) suggested a need for nurses to understand and implement interventions for patients experiencing psychological effects during chemotherapy treatment. McDonald et al (1999) reported that nurses' assessment of their patient's psychological state underestimated the level of depression they were actually experiencing. Their conclusion was to improve the nurse's assessment by placing a greater emphasis on using screening tools and incorporating them into nursing practice, as an alternative to relying on the nurse's judgement alone.

Research Objectives

The aim of this study was to identify a time frame in which patients are more vulnerable to developing depression. The research questions are:
1) Is there a particular point within the chemotherapy treatment cycle that patients are vulnerable to developing depression?
2) Is there a relationship between the number of side effects experienced by patients receiving adjuvant chemotherapy and depression?
3) What is the relationship between depressive symptoms, patient characteristics and side effects?

Justification

This research is of national significance due to the high incidence of cancer and depression. There are more than 85,000 new cases of cancer diagnosed in Australia each year (Cancer Council Australia 2003). Depression also represents a common diagnosis with one million Australian adults and 100,000 young people living with depression each year. On average, one in five people will experience depression in their lives; one in four females and one in six males (Beyond Blue: The National Depression Initiative 2005). In a pilot study by Strong, Sharpe, Cull, Maguire, House & Ramirez, (2003) and another study by Love, Grabsch, Clarke, Bloch, Kissane, (2004), the prevalence of depression in cancer patients was up to 50%. Pascoe et al (2000) also reported that there were a substantial proportion of patients who were diagnosed with cancer that experienced anxiety and depression, but they have not provided figures for this.

Anecdotal evidence has revealed that depression does occur in patients who receive adjuvant chemotherapy yet there is little published literature based on the investigation of whether there is a point in the treatment process when they are most vulnerable. This study addressed the issue of time being an important factor in a patient's cycle of chemotherapy. The purpose of this study was also to produce research that could later be expanded on to further address this issue.

The final rationale for this study was to produce research which could be used to educate oncology nurses to create an awareness of psychological side effects in chemotherapy patients.

Limitations

Limitations of the study included a small sample size and potential biases due to self-selection of the candidates and their self-evaluation of their experiences. The limitation of self-selection bias is intrinsic in any study that uses volunteers. Patients that volunteered to participate in this study were provided with an information sheet which outlined the benefits of the study and consent was obtained. The patients were particularly vulnerable as they were facing a traumatic life event of being diagnosed with cancer and undergoing chemotherapy. This vulnerability could mean that they were less likely to participate in any outside projects.

The sample size of the study limits the ability to produce statistically significant results. Despite this lack of statistical significance, this study is important as an indication of the presence and timing of depression in this sample of people, suggesting that it is an important area for further research. Information bias should also be considered in this study as a limitation, as the study relied upon the patients reporting their experiences honestly.

CHAPTER 2: LITERATURE REVIEW

The following literature review is structured into a format using subheadings to indicate the themes found in the literature search. The structure of the literature review is as follows:

1. Literature Search Strategies
2. Initial Overview: A general discussion on depression
3. Depression and Cancer
4. Depression and Breast Cancer
5. Depression and Adjuvant Chemotherapy
6. Depression and Oncology Nurses
7. Depression Assessment Tools used in Cancer Research

This format has been used to best direct discussion regarding each issue. The search strategies used for the literature review are outlined. The main central theme, depression, is then discussed in the initial overview to provide the reader with background information on the illness that is being monitored in the study. What follows is an outline of each variable presented as a discussion in relation to depression. The variables are broken down to provide the reader with an overview of each issue and then constructed to highlight the variances or similarities in the literature found. The section on depression and cancer illustrates the prevalence of psychological issues that come with the diagnosis of cancer alone without the impact of any treatments. Depression and breast cancer is a chapter on its own due to the fact that there was so much more literature found on this topic than any other cancer. Depression and adjuvant chemotherapy highlighted the studies already performed looking specifically at these two variables and provides the researcher with a basis on which to compare and contrast. Literature on depression and oncology nurses was included as one of the purposes behind the study was to increase awareness of oncology nurses that their patients do suffer from depression so it was significant to see what the current studies are saying that nurses are experiencing. Finally, depression and assessment tools used in cancer research were also investigated to provide the researcher with the knowledge to determine which would be the most appropriate to use in this research.

Literature Search Strategies

The search for literature on the topic of depression in patients with cancer receiving adjuvant chemotherapy began in 2003. It started by exploring all databases available that contained nursing and psychological journals. These databases included CINAHL with full text; Wiley InterScience; PsychINFO and PsychARTICLES; ProQuest; Blackwell Synergy; Aus Stats. The literature search was then extended to look more intricately at research surrounding the topic, for example, oncology nurses and the side effects of adjuvant chemotherapy. The following databases were later explored while still searching the previous

databases; EBSCOhost MegaFile Premier; CINAHL with full text on the EBSCOhost Platform; Johanna Briggs Institute. The search terms used included, depression, adjuvant and chemotherapy, cancer, oncology nurses.

INITIAL OVERVIEW: Depression

Depression has proved to be costly both in terms of morbidity and in terms of financial expense. The Beyond Blue (2007) web site reports that depression "costs the Australian community $600 million dollars each year". Peveler et al (2002), discussed depression as a major health problem. In their paper, The World Health Organisation is cited as predicting that depression will be "one of the two most prominent causes of disability in the world by 2020" (Peveler et al 2002 p149). A 'Google' search in 2007 on depression, revealed 88 800 000 sites thus evidence of its growing importance in the world community.

Depression is generally a mood state characterized by feelings of emptiness, of not being your usual self; having low self esteem and no self confidence (Mondimore 2006). Signs of a depressed mood include; low self esteem or self worth; change in sleep patterns; changes to appetite or weight; a reduced capacity to experience pleasure; reduced ability to control emotions; difficulty in being affectionate; poor concentration or memory; reduced motivation; lowered energy levels; tearfulness and crying; avoiding social contact and generalized negativity and pessimism (Mondimore 2006).

Diagnosing depression in people who are medically ill can be complicated. The standard way of assessing depression includes the use of screening tools that explore behavioural, cognitive and physical aspects; such as loss of interest and fatigue. The physical aspects of depression are also common symptoms of a medical illness. Peveler, Carson and Rodin, (2002) like many other authors, such as Strong et al. (2003) and Love et al (2004) agree that depression is not detected or adequately treated, particularly when it coexists with a medical illness. Alternatively, the Black Dog Institute (2007) have stated that there is a risk of non-depressed people being falsely diagnosed with depression because of the physical aspects that are associated with it.

Depression and Cancer

The relationship between cancer and depression is complex and for the purposes of this study the focus will be on the medical framework when looking at the link between depression and cancer. A diagnosis of cancer is one of life's most disturbing and dispiriting events bringing with it psychological distress, physical suffering and the possibility of a foreshortened future. Society's fear of cancer promotes the assumption that depression is understandable and a normal reaction to the disease.

Diagnosing depression in the context of cancer is complicated by the overlap of depressive and sickness symptoms, as well as by the question of whether

depression should be viewed as a categoric disorder or a spectrum condition (Raison and Miller 2003). Historically, the research surrounding depression and cancer has been along two paths, cause (depression is a risk factor for cancer and cancer progression) and consequence (depression as an effect of cancer diagnosis and treatment) (Croyle and Rowland 2003) More recently there has been research developments in the potential that behavioural alterations in cancer patients may be a result from the activation of the inflammatory cytokine network (Raison et al 2003). This research into cytokines provides tentative evidence that cancer cells in our bodies might trigger changes in our brains. It might turn out that feeling depressed about a diagnosis of cancer or dreading the next round of chemotherapy isn't one's own fault or weakness, but a treatable medical condition caused by the cancer cells releasing chemicals into your body (Raison et al 2003).

The National Cancer Institute (2008) reports more recent figures of 15-25% of cancer patients are affected by depression. Some of the important issues that people are faced with when diagnosed with depression include, fear of death, interruption in life plans, changes in body image or self esteem, changes in social role and lifestyle, money and legal concerns. People who are diagnosed with depression will react to these things in different ways and may not experience serious depression and anxiety. There are many misconceptions about cancer and how people cope with it such as, all people with cancer are depressed and this is normal, treatment does not help their depression and everyone with cancer faces a painful death (National Cancer Institute 2008). Cancer related depression is not substantially different from depression in other illnesses but treatments may need to be adapted or refined for cancer patients. Depression is under diagnosed in the general population, not just cancer patients. For example, a cancer patient might be experiencing depression at a level which would equate to diagnostic criteria for a depressive episode. This episode might be considered mild or a subclinical level of depression in someone in the general population (National Cancer Institute 2008).

Maguire (1994) investigated symptoms experienced by women with breast cancer who require a medical intervention to prevent clinical depression or anxiety. This study revealed that nearly 30% of women with breast cancer may experience anxiety or depression within a year of diagnosis, and that psychiatric morbidity increases further when the patient receives radiotherapy or chemotherapy.

Bottomley et al (1997) performed a literature review on the psychological problems of cancer patients. The degrees of psychological problems were attributed to a number of things including the type of surgery the patient had undergone. Bottomley et al (1997) reported that patients receiving a mastectomy had more problems with sexual issues, body image, low self esteem, anxiety and depression than someone having a melanoma removed. There was also an association between the type of chemotherapy the patient received, such as alkaline and vinca alkaloids (vincristine) and depression. The author found that

cognitive assessment was important and that 54% of the most serious side effects on women with breast cancer when undergoing chemotherapy were psychologically manifested (Bottomley et al 1997). Scott, (1991) as cited in Bottomley et al (1997) found the use of corticosteroids, such as Dexamethasone, can also lead to mood disorders of increased depression. In the Bottomley et al (1997) literature review it was concluded that depression was common with a cancer diagnosis. Other factors that were associated with the risk of depression were; history of depression (Bottomley et al 1997 and Peveler et al 2002) marital status, education, stage of disease at diagnosis, and treatment (Molassiotis et al 1996 and Maguire et al 1994). Depression can also occur at various levels depending on the type of cancer the patient has. For example, the level of depression in breast cancer patients is anywhere from 5-48% according to Derogatis, Morrow and Fetting (1983), or 20-30% according to Silberfarb, Philbert & Levine (1987). More recent data by Burgess et al (2005) stated that nearly 50% of women with early breast cancer had depression or anxiety. Lung cancer patients also demonstrate varying levels of depression which could be linked to the physical difficulties that they experience, for example shortness of breath and limited physical exertion (Anderson, Lamb 1992 as cited in Bottomley et al 1997). Early in 2006, the Macmillan Cancer Support published a report presenting the findings of a major quantitative survey conducted in the United Kingdom. The study explored the impact of a cancer diagnosis on the people affected by cancer, both those who received the diagnosis and their families and friends (Cardy et al 2006). The aim of the research was to establish any differences between the views and experiences of people affected by cancer and those who had never been affected by the disease (Cardy et al 2006). A total of 1,751 people took part in the survey, conducted between December 2005 and February 2006. The results showed that 49% of respondents experienced depression as a result of their cancer diagnosis and 60% said that they did not receive information, advice, support or treatment for this (Cardy et al 2006).

Raison et al (2003) suggests that depression predisposes toward a worsened clinical outcome once cancer has developed. Stommel (2002) as cited in Raison et al (2003) has reported that patients with a history of depressive symptoms are at 2.6 times increased risk of dying from their cancer within the first 19 months after diagnosis. Raison et al includes other factors that a diagnosis of depression will impact on. These include compliance with treatment, length of hospital stays, diminished quality of life and ability to care for oneself. Cancer Research UK (2009) support the findings that depressive symptomology was the most consistent psychological predictor of shortened survival time.

After reviewing the literature for this study which has covered research from at least 1990 to 2009, all papers report to some degree, that depression occurs in cancer patients. Despite the international recognition of depression in people with cancer over the last 17 years, the Macmillan study still reported staggering statistics like those mentioned above.

This demonstrates the need for improved interventions by health care professionals to address psychological issues in cancer care. Bottomley et al 1997 stated that nurses need to undertake a more specialist role to improve the level of care for common psychological problems in cancer sufferers. This idea was supported by other researchers such as McDonald et al (1999) and Strong et al (2003).

Depression and Breast Cancer

Within the literature exploring depression and cancer, research designed specifically for patients with breast cancer was the most prevalent. Spagnola et al (2003 p463) explored the issues involved with a diagnosis of breast cancer and stated that it "continues to generate fear and turmoil". Their study highlighted that quality of life can be negatively affected by inadequate information, complex decisions and adverse events related to cancer treatment. In a study involving 153 breast cancer patients from two oncology outpatient departments, one of the instruments used was the Satisfaction with Life Domains Scale for Breast Cancer (SLDA-BC). This tool was used to assess the patient's quality of life throughout the various phases of care. The Functional Assessment of Cancer Therapy (FACT-B) was also used as it is specific for breast cancer to measure quality of life, and the Brief Symptom Inventory (BSI) was used to measure psychological distress. The disease continuum began at diagnosis followed by treatment phase, remission for less than one year, remission for greater than one year and finally, recurrent or terminal care. Spagnola et al (2003) found that quality of life declined from point of diagnosis into treatment then improved after treatment when patients were in short term and long term remissions. Spagnola and colleagues' findings illustrated that there was a significant benefit for earlier psychosocial screening of the patients. Another significant finding was that the majority of patients were willing to discuss quality of life issues, but would wait to be asked, and therefore the onus was on health care professionals to initiate these discussions (Spagnola et al 2003).

Kissane et al (2004) researched the psychosocial morbidity in women with breast cancer and compared early stage breast cancer patients with patients with advanced disease. Interviews and self reporting tools were used and the results found that 9.6% of patients with early stage breast cancer were experiencing major depression and 27.1% were experiencing minor depression. In patients with metastatic disease, 6.5% had major depression and 24.5% minor depression (Kissane et al 2004). Kissane and colleagues (2004) also found an association with cognitive attitudes and depression and that depression after diagnosis was higher with early stage breast cancer patients. Sægrov, Halding, (2004) also found that the period after diagnosis was stressful for breast cancer patients, although this qualitative study showed that the period between suspicion of cancer and diagnosis, was a greater period of stress. The results from the twelve interviews also found that there was no follow up of patients regarding their need to talk to someone, nor was their any kind of

program to care for psychosocial needs (Sægrov et al 2004). The authors found that during the rehabilitation phase patients felt they were left to their own resources. The threat of new cancer cells was always with the patient and attending checkups was considered stressful (Sægrov et al 2004). This study highlighted the value of psychological and social support.

Fukui et al (2003) also found the value of psychological support for breast cancer patients. Their aim was to examine the effects of a psychosocial group intervention on loneliness and social support in Japanese women with breast cancer. Fifty women aged less than 65 years old were involved in this study. It was conducted using a six week group intervention consisting of health education, coping skills training, stress management, and psychological support. The Loneliness Scale and a social support scale were used at baseline, six weeks and six months. The experimental group reported significantly lower scores than the control group, for loneliness, and significantly higher scores for number of confidants, satisfaction with confidants and satisfaction with mutual aid over the six month period (Fukui et al 2003). This study illustrated that the use of a psychological group intervention is beneficial, and that such a program was an effective way to address cancer patients' psychosocial concerns.
In contrast to the value of psychosocial support, Newell et al (1999) did a cross-sectional study of the prevalence and predictors of physical symptoms, anxiety, depression and perceived needs. One hundred and ninety-five patients were assessed on their level of anxiety and depression using the Hospital and Anxiety Depression Scale (HADS) and by rating their perceived needs on a cancer needs questionnaire. Their results showed that 25% of participants had borderline or clinical levels of anxiety and depression and that the levels of anxiety and depression were interrelated with physical symptoms and perceived needs. Participants reporting four or more physical symptoms were much more likely to have elevated anxiety and depression compared to those with less than three physical symptoms. The results also showed that having lots of support at home was a predictor of patients having elevated levels of depression. The author felt that this may be due to the patients' perception of dependency and lack of autonomy.

A further study by Montazeri et al (2000) differed from the previous ones in the correlation with anxiety and depression. The study measured anxiety and depression in Iranian breast cancer patients before and after diagnosis using the (HADS). One hundred and sixty-eight patients participated in the study and 48% had severe symptoms of anxiety at both baseline and follow-up. Twenty percent of participants had borderline levels of depression pre treatment and this decreased by 6% at follow up. Eighteen percent of participants had symptoms of severe depression at first visit to the clinic and this decreased by 4% at follow up (Montazeri et al 2000). The researchers described these findings as 'challenging' because most studies had found that breast cancer patients that had experienced severe levels of anxiety, also experienced high levels of depression. Their results also showed that progressive disease and a lower performance status were predictive factors of anxiety and depression. The

authors described how the low level of depression compared to anxiety levels, could be attributed to Iranian women having strong family ties, support, and religion that plays an important role in the patient's life (Montazeri et al 2000). These factors were not measured in this study but the author proposed the relevance of these. Other factors that could have contributed to the results were timing of interview, disease status, demographic characteristics, and the instrument of use.

Depression and adjuvant chemotherapy

The relationships between depression and adjuvant chemotherapy have been well researched. The side effects experienced by patients receiving chemotherapy, have been closely related to psychological issues. Tish Knobf (1990) and Byar et al (2006) have reported a specific time when depression is at its highest with breast cancer patients. Beyond these studies there is little evidence to identify that there is a particular time period within a patient's treatment cycle of adjuvant chemotherapy to develop depression.

One study identified differences in fatigue, other physical symptoms, psychological symptoms and their relationship to quality of life during chemotherapy (Byar et al 2006). The study was a longitudinal descriptive survey of 25 patients using the Piper Fatigue Scale, Hospital and Anxiety Depression Scale (HADS), Symptom Experience Scale and Medical Outcomes Study Short Form General Health Survey, which was administered 30, 60 and 90 days after the last treatment and one year after their first treatment. The surveys were also administered during treatment, which was for two baseline days at the beginning of treatment, and then the first seven days after each of the patient's four chemotherapy treatments. Fatigue was rated moderately intense during treatment and then decreased with time. Sleep disturbances and pain were the most frequent, intense and distressing physical symptoms. Anxiety was rated as highest at the beginning of the participant's treatment and depression was highest during the fourth chemotherapy treatment. Fatigue correlated with other physical and psychological symptoms at times during and after treatment. Higher fatigue correlated with a lower quality of life. By using the HADS, the study found that depression was lower at baseline, peaked at treatment four then returned to normal after treatment ended. Anxiety was reported more frequently than depression. This study supports a link between depression and fatigue which were highest at the fourth treatment of chemotherapy. The findings also illustrate the need for routine screening and ongoing assessments. The results regarding the point in which depression was highest is consistent with Badger et al's (2001) findings which looked at depression burden within the more narrow parameters of a diagnosis of breast cancer.

Tish Knobf (1990) has written a review of literature surrounding the needs of patients with breast cancer to illustrate that knowledge of predictable psychological responses through the various phases of treatment is a critical element of the rehabilitation phase. The importance of health care providers

anticipating problems so that they can prepare the patient and incorporate early interventions to minimize symptoms has been highlighted. The paper related breast cancer physical and psychological symptoms and discussed these relationships at diagnosis as well as during surgery, the rehabilitation phase from surgery, radiotherapy, and adjuvant chemotherapy. The author reported fatigue to be common with breast cancer therapies, and that ratings of distress and difficulty increased with the number of chemotherapy cycles. Mild to moderate levels of psychological distress were predictable during and after primary treatment, and this continued longer than a year after mastectomy (Tish Knobf 1990).

One hundred and sixty-nine participants reported on their level of depression, the severity of side effects and the number of side effects in a study conducted by Badger et al (2001). Self help interventions were used repeatedly during the course of treatment in women with breast cancer. The self help interventions were shown to significantly reduce fatigue, pain and nausea in the participants. The researchers' commentary included the need for identification and treatment of depressive symptoms early in adjuvant chemotherapy. As with pain and nausea, the researchers were of the opinion that there is a need to capture the frequency and intensity of a depressive experience (Badger et al 2001).
Another study examined the quality of life of patients with a history of breast cancer who had received previous treatment with adjuvant chemotherapy (Broeckel et al 2000). The sample was 61 women with a history of breast cancer but who were currently disease free, and who had received adjuvant chemotherapy 3-36 months prior. The authors used a comparison group of 59 women who had no history of breast cancer. The results were consistent with Broeckel et al's (2000) prediction that the post chemotherapy group scored lower on quality of life issues using the Centre for Epidemiologic Studies Depression Scale (CES – D) and the Medical Outcomes Study Short Form 36 (SF – 36). Younger, unmarried women scored higher in regard to poor mental well-being and greater depressive symptoms. This is consistent with a literature search by Bottomley et al (1997) who reported that young women were at greater risk of developing depression. Time was also significant as the time passed since the participant received chemotherapy resulted in greater depressive symptoms. None of the demographic or medical variables were significant. Broeckel et al (2000) concluded that breast cancer patients experience problems in multiple quality of life domains following adjuvant chemotherapy and there is a need for interventions to improve the quality of life in these patients.

Miranda et al (2002) used the Beck Depression Inventory (BDI) both before and after neoadjuvant chemotherapy, to verify if depression influenced treatment outcome for patients with advanced uterine cancer or breast cancer. Twenty-two patients with advanced uterine cancer and 20 breast cancer patients had three courses of neoadjuvant chemotherapy. There were no significant differences in the number of depressed patients before and after treatment and levels of depression were not significantly different for either type of cancer. After

treatment, the number of breast cancer patients that had depression increased, while the number of uterine cancer patients with depression decreased. Patients that responded to treatment were less depressed than those who showed increases in tumour activity (Miranda et al 2002). The author reported on tracing the course of patients' depression and its manifestation yet the BDI was only administered at two separate intervals during the course of the patient's treatment which may not fully represent the course of depression.

Cowley et al (2000) investigated how women receiving adjuvant chemotherapy cope with their treatment. The qualitative study looked at patients' preconceptions about adjuvant chemotherapy, their information needs and the impact of treatment. Cowley et al (2000) reported that a cancer diagnosis causes disruption to a patient's self-identity, body image and time experience. Although the responses varied, the participants responded to these changes by seeking social support, developing coping mechanisms and striving to re-establish normality. The paper discussed the rollercoaster effect that patients experience through the course of a chemotherapy cycle. In this research, the patients were having 6 cycles of chemotherapy every 3 weeks and Cowley et al (2000) illustrated the psychological ups and downs that patients experience while going through this cycle of chemotherapy. They reported that patients' energy levels diminished over the course of the 6 cycles and this also had an accumulative mental and physical effect on the patients' morale and motivation.

Colleoni et al (2000) performed research on depression and the degree of acceptance of adjuvant cytotoxic drugs. This study investigated the interaction between psychological attitude and outcome in early stage breast cancer (Colleoni et al 2000) and related it to a tendency of depressed patients to be less proactive in obtaining health care. The authors assessed the link between depression and degree of acceptance of adjuvant chemotherapy in a group of patients who required psychological support after surgery, compared with a control group of patients who underwent surgery for similar stage breast cancer and were offered similar treatment. The study illustrated that depression represents a crucial factor for acceptance of adjuvant chemotherapy, and suggested that psychological support and treatment of depression might increase acceptance of chemotherapy and possibly improve prognosis of patients (Colleoni et al 2000).

Carter et al (1997) performed a study to determine whether receiving six cycles of chemotherapy adversely affected the quality of life of patients with gynaecological cancers. The sample was 60 patients diagnosed with a variety of gynaecological cancers with the consistent factor that all had received six cycles of chemotherapy each. The FACT – G quality of life form was modified and used by participants. Quality of life responses for patients with cervical cancers were not significantly different to patients with ovarian, uterine and vulvar tumours. An improvement in physical well-being from cycles 2-5 was significant and emotional well-being and functional well-being improved from cycle 1-6 although results were not significant. A decline in social well-being

and relationship with the doctor was noted. The authors concluded that treatment with six cycles of chemotherapy for patients with gynaecological cancers resulted in an overall improvement in quality of life from the time of their first treatment, yet the changes were not statistically significant (Carter et al, 1997).

Depression and oncology nurses

The physical and psychological aspects associated with a patient's treatment are an integral part of providing holistic care. Just as oncology nurses are trained in the assessment of patients and provision of treatment for cancer such as chemotherapy or radiotherapy, it is an important issue for oncology nurses to be aware of the psychological implications that cancer and the treatment for cancer has on the patient. Nurses could be trained to assess for depression and refer patients if the patients are experiencing psychological difficulties (Maguire et al 1994). Strong et al (2003) and McDonald et al (1999) researched the concept of using specially trained nurses to help with the assessment and diagnosis of depression. Strong et al (2003) concluded that a multidisciplinary psycho-oncology team approach is still needed to effectively treat patients. The study suggested that a specially trained nurse can deliver depression management in a cost effective manner with benefits to the patient. McDonald et al's (1999) research found that there was a tendency, by the nurses, to underestimate the level of depressive symptoms in those patients that were more severely depressed. Badger et al (2001) commented that it is critical that clinicians enquire about side effects of treatment, because patients may not initiate conversations about depression experiences because of societal attitudes and beliefs about depression. They also stated that there was a need to document well the effectiveness of any treatments provided (Badger et al, 2001).

In support of nurses assessing for psychological issues, Paraska (2003) has researched the presence of depression that may confound disturbances in cognitive dysfunction. This prospective study indicated that breast cancer nurses should report any manifestations of depression that persist for two weeks or more. They should be assessing their patients for a depressed mood; diminished interest or pleasure; weight loss; sleep changes; diminished ability to think or concentrate; feelings of worthlessness and suicidal ideation (Paraska et al 2003).

In addition to the studies above, there has been further study into the nurses' ability to assess their patients for depression. Zhao et al's (2003) research explored the discrepancy between patients and nurses' assessments of patients' conditions when undergoing adjuvant chemotherapy. The scores between nurses and patients were compared for variables on the European Organisation for Research and Treatment of Cancer – Quality of Life Questionnaire (EORTC-QLQ – C30). Zhao et al (2003) reported significant differences between nurses and patients scores on cognitive function, fatigue, constipation and financial impact. Moderate differences were recorded on physical functioning, nausea and vomiting, diarrhoea and financial impact. Overall, the authors reported a poor correlation between the patients' and nurses' scores. This study highlights

a need for education and specialist oncology nurses to avoid such discrepancies in nurses' assessments. It is important to recognize patients who are at risk of factors that will affect their quality of life and to implement early interventions to manage these. Zhao et al (2003) have highlighted the importance of a thorough assessment of the patient to help overcome this. Padilla and Grant as cited in Zhao et al (2003) have stated that a patient's quality of life was influenced by how well nurses were able to help patients adjust to their changes of physical functions or symptoms that were induced by the cancer or its treatment. Quality of life is an important element of holistic nursing practice.

Depression Assessment Tools used in Cancer Research

Depression may go undetected and thereby untreated in oncology practice. The importance of appropriate assessment and screening tools has been emphasized. There are many instruments currently in use for assessing depression in cancer patients. Widely used assessment instruments for screening are the Beck Depression Inventory, the Hospital Anxiety and Depression Scale, the Structured Clinical Interview according to the Statistical Manual of Mental Disorders (Wedding et al 2007). Researchers can select from a variety of instruments based on weighing the ease of use for the study population. Some assessments, like the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (SCID), may be useful in research studies, but they are too time consuming for a clinical setting. Shorter, self-report assessments may be easier to implement and are good guidelines for further screening (Agency for Healthcare Research and Quality 2002). Wedding et al (2007) reports the Beck Depression Inventory as the most widely used instrument to screen for depression and to measure its intensity.

A number of researchers have used depression assessment tools in cancer research. Pascoe et al (2000) incorporated the use of the Hospital and Anxiety Depression Scale (HADS) when researching anxiety and depression. Their aim was to estimate the prevalence of anxiety and depression within a cross section of cancer patients in the Sydney region, and to assess the use of and degree of satisfaction with available support services. Five hundred and four participants were required to complete the HADS, and a questionnaire to determine the use of support services, as well as clinical and demographic information (Pascoe et al 2000). The prevalence of depression was 7.1%, and anxiety rated 11.5%. Of the patients that were experiencing clinically significant anxiety and depression, 75% had not received any counselling or psychological treatment. Predictors of depression were restricted activity levels, advanced disease, non-English speaking background and being female (Pascoe et al 2000). Although the number of patients with significant anxiety and depression was low, the number of patients accessing treatment or counselling was also low. Pascoe et al (2000) agree with McDonald et al (1999) that screening of patients might enable immediate identification of a depressive illness and therefore enable referral for further testing and treatment.

Love et al (2004) wanted to compare the HADS with another self-reporting questionnaire, the Beck Depression Inventory (BDI). The aim of the study was to compare the two self reporting questionnaires for identifying possible depression in women with metastatic breast cancer (Love et al 2004). Structured psychiatric interviews were performed and the BDI-Short Form and the HADS were administered to 227 women with metastatic breast cancer. The accuracy for identifying DSM-IV-defined major depression and minor depression was examined. Almost thirty-three percent of patients were found to satisfy the criteria for a depressive disorder. Overall, the two scales performed similarly in identifying major depression, while the BDI-SF was more useful in screening for DSM-IV major or minor depression categories (Love et al 2004).

A team from the University of Liverpool has created a method of testing for depression so clinicians can introduce additional treatment to enable patients to cope with cancer more effectively. The Brief Edinburgh Depression Scale (BEDS) was originally developed from sufferers of post natal depression. The BEDS has been trialled on 246 patients with advanced cancer. A quarter of those were shown to have depression that was not previously diagnosed. The tool was developed due to the difficulty of determining the difference between the symptoms patients were experiencing were due to disease or depression (University of Liverpool 2007). A member of the research team that created this new screening tool stated that “it is vital that depression during cancer is identified so clinicians can implement appropriate treatment and intervention in the form of drugs or therapy, so the patient receives the optimum care possible” (University of Liverpool 2007 p1).

Conclusion

The literature demonstrates depression remains an important factor related to cancer. Studies within this literature review demonstrated that psychological support for people with cancer was vital to the patient's recovery. A number of researchers have also recognized the need for earlier and more advanced and accurate screening of psychological issues for patients with cancer.

Studies in this literature review supported the need for oncology nurses, who are already specially trained in the delivery of cancer treatment, to also be trained and capable of assessing and screening for psychological problems in their patients. The benefit and necessity of having specialist oncology nurses able to assess a patient’s psychological needs was highlighted. A means to assist the nurses in this development would be to increase the nurses’ awareness of patient’s susceptibility to developing depression. It would be beneficial to nurses to be aware of patients’ susceptibility to depression and a potential time frame during the adjuvant chemotherapy cycle where patients are more likely to develop depression. Researchers have not been able to quantify when depression occurs and its intensity across a variety of cancers and chemotherapies. Side effects of chemotherapy, both physical and psychological, had an accumulative effect and symptoms became worse as the treatment progressed. For women with breast cancer receiving adjuvant

chemotherapy, the fourth treatment cycle was when depression was at its highest. The literature on depression in cancer therapy, and particularly the timing of depression is scant. Further investigation needs to occur across a broader range of cancers and treatment to identify the onset of depression. Such research would ensure that health care professionals are aware of the importance of screening, assessment and early intervention of psychological issues.

CHAPTER 3: METHODOLOGY

Ethical Considerations

This study followed appropriate processes for ethical considerations. The research ethics committees of the University of Southern Queensland and the Toowoomba Health Service District approved the study (Appendix A). All participants gave written informed consent. Human rights were protected by respecting self-determination by informing the participants about the research, voluntary participation and the right to withdraw. The researcher was responsible for ensuring that the research project had a low probability for causing harm. The researcher was prepared to deal with any risks, inconveniences and discomforts that might have arisen. If a participant's response to the survey indicated a level of depression, the researcher advised the participant to seek appropriate attention by a trained professional and withdrew the participant from the study. The oncology clinic Nurse Unit Manager in charge of the unit where the participant was receiving treatment was also notified to ensure follow-up. The participants were informed (Appendix B) that participation was entirely voluntary and that they were able to withdraw from the study at any time themselves with no consequences.

The rights of privacy and confidentiality were preserved. Only the principal researcher knew the identity of the participants. Complete anonymity was not possible due to the need for correspondence with the participants. The list of participants was stored away from participants' responses. The data was treated confidentially. All data was stored as a hard copy in a locked filing cabinet. It was also stored electronically under password protected data files on a password protected computer. The data is not identifiable to anyone as a coding system has been used and only the Principal Researcher has access to it.

Research Question

The research questions were:

1) Is there a particular point within the chemotherapy treatment cycle when patients are vulnerable to developing depression;
2) Is there a relationship between the number of side effects experienced by patients receiving adjuvant chemotherapy and depression;
3) What is the relationship between depressive symptoms, patient characteristics and side effects?

Research Design

The research design for this study included a prospective, longitudinal, descriptive method. The objective of a longitudinal design is to see whether a phenomenon changes over time (Roberts & Taylor 2002). In this study, the

phenomenon was the patient's mood. The simple descriptive method allows the researcher to use an inexpensive and relatively short survey to assist in best answering the research question. The variables are known and there are no comparison groups. In choosing this design the researcher considered the question that they were asking, the group of people that they wanted to ask and the identifying aspects of the group. The question being asked regarding depression can be a sensitive topic for some people and the question was being asked of a vulnerable group of people going through a stressful period in their lives. Therefore, it was important to select the method of least inconvenience to the participant but which could still best answer the question. The survey was chosen as it was an existing tool for measuring depression that has been tested for reliability and validity and would be also, less imposing to the participant than a questionnaire or interview.

Data was collected using a survey method and entered into the statistical program SPSS 15 for Windows.

Data was analysed using descriptive analysis to answer question one, and inferential and correlation analysis to answer questions two and three. There was also unexpected qualitative material that was provided by the participants which has been included in this thesis. It has not been analysed as it does not directly answer the research questions, but gives valuable qualitative insight into what the patients were experiencing (See Appendix E).

Study Region and Setting

The Nurse Unit Managers of two oncology clinics in the city of Toowoomba, Queensland, Australia were asked to participate in the study. Toowoomba is the Garden City of Queensland with the population of over 90,000 and is a 90 minute drive from Brisbane, Queensland's capital city. It is serviced by 3 major hospitals, (2 private) and has a comprehensive range of health services including a stand alone day surgery unit and a radiotherapy unit. In Toowoomba there are over 200 medical practitioners covering various specialties. There are also a number of educational facilities such as 12 pre-schools, 11 private primary school, 16 state primary schools, 5 secondary state schools, 10 private secondary schools, 7 boarding schools and 3 tertiary institutions. The city is renowned for its natural environment, world class gardens, attractive parks and tree lined streets. The city has a number of attractions and offers residents a wide variety of lifestyle opportunities (Toowoomba.org 2008).

For logistical reasons, two out of three oncology clinics within the city were included in the study, one state run and the other private. The logistical reasons included: a) financial reasons in that this study is for an unfunded two year master thesis and b) to have a regional focus due to the issue surfacing whilst the researcher was working in a regional oncology clinic.

The oncology clinics that were chosen to be included in the study were St.Andrew's Hospital Cancer Care Unit and the chemotherapy unit of the Toowoomba Health Service. St.Andrew's Hospital is a 137 bed, acute care private hospital. It services Toowoomba and its surrounding towns i.e. Tenterfield, Goondiwindi, St.George, Roma, Kingaroy, Gatton and the Lockyer Valley. The John Steadman Unit is the Chemotherapy unit at St.Andrew's. Chemotherapy is given by trained Registered Nurses under the direction of the patient's General Practitioner or Specialist Consultant. A clinical haematologist and oncologist visit the unit on a weekly basis (St.Andrews Hospital 2008).

The Toowoomba Health Service services the state electorates of Callide, Lockyer, Toowoomba North and Toowoomba South, Nanango, Cunningham, Darling Downs, Southern Downs and Warrego. The chemotherapy unit recorded 1,264 episodes of care for the 2005/2006 period. The unit is staffed with registered nurses, social worker, psychologist, pharmacist, registrars, palliative care consultant and clinical oncologists (Queensland Government 2008).

The data collection was completed over a twelve month period. The total number of patients that received adjuvant chemotherapy between the two oncology units was 78 patients.

Research participants and sample

The target population was patients that had been diagnosed with cancer that required adjuvant chemotherapy. The sample was drawn from patients diagnosed with cancer requiring adjuvant chemotherapy at the chosen oncology units.

Inclusion Criteria: Participants included were

a. between the ages of 18 – 80 years old (due to the fact that chemotherapy is not usually offered or advantageous to patients over the age of 80, and younger patients requiring chemotherapy are generally transferred to Brisbane for their treatment)

b. able to speak and write the English language or have access to an interpreter

c. Mentally competent.

Exclusion Criteria: If a patient failed to return a survey after two reminder letters then they were excluded from the study.

Participants that were scored as depressed using the Beck Depression Inventory – II were withdrawn from the study at the time that the survey with a positive result for depression was received. The total number of participants withdrawn from the study was ten. The time points at which they were withdrawn varied. Two participants were withdrawn after fortnight three into their chemotherapy cycle. Two were also withdrawn after fortnight four. Three participants were withdrawn from the study after fortnight five and then three again after fortnight seven.

Research procedures

To conduct this study, the participants were required to complete three different forms. Firstly, at the beginning of their treatment (this was either on the first day of their treatment or at a pre treatment meeting which are generally held a few days prior to the first treatment) they were asked to complete a few short questions to obtain demographic information. This provided essential information such as which cancer they had, what type of chemotherapy they were receiving and if they had suffered from depression in the past. Secondly they received a questionnaire called the Beck Depression Inventory – II (BDI-II) to identify if they were suffering from depression. They were asked to complete it at fortnightly intervals, from the beginning to the end of their treatment. The number of surveys that they received was dependant on the type of chemotherapy that they were having. Different chemotherapy treatments are given over different periods of time dependant on the type of cancer being treated and the types of chemotherapy being used in the treatment.

Thirdly they received a short form to identify any side effects that they may have been experiencing. The researcher had designed their own questionnaire on side effects as they only wanted information specific to side effects of chemotherapy. The symptoms listed in this form are that which are commonly found to be symptoms of chemotherapy (Otto, 2001). This form was to be completed with the fortnightly BDI-II. The data gained from the side effects form was to highlight any side effects that were particularly frequent and common to patients that also suffered from depression.

The Nurse Managers of the oncology clinics were notified if patients scored a mild to severe rating on the Beck Depression Inventory-II. They were able to use this information to initiate supportive psychological care for the patients. The patient was then informed that they no longer were required to complete the surveys as their result had answered the question of a specific time within the treatment cycle when patients were more vulnerable to developing depression.

Recruitment of Participants

Contact with the sample group at St.Andrew's Hospital was initiated by the Clinical Nurse in charge of the oncology unit. The researcher provided flyers and education to the clinical nurse and staff on the issues of the study and the use and importance of the paperwork. The flyers were included in the education packages that oncology nursing staff gave to their patients prior to them commencing their treatment. The clinical nurse discussed participation in the study with the patient and allowed the patient to take the forms home and forward them to the researcher by mail in self addressed envelopes.

The data collection process was extended due to low numbers of participants. After discussion with associates, the decision was made to extend the site of the study to a larger institution with greater numbers of patients and therefore

greater exposure to the study. The data collection process was again extended due to the slow process of ethical clearance. To enhance the participation rate at the new site, the researcher gained permission from the Nurse Unit Manager, to initiate the study personally. This was more convenient for the oncology unit due to the work demands of the oncology nurses and the extra time needed if they were to perform this extra duty. Education was provided to the oncology nurses and the documents and relevance of the study explained.

CHAPTER 4: DATA COLLECTION

Collection Tools

A longitudinal survey method was chosen to reflect significant changes throughout the course of a patient's treatment, and to best answer the research question. The instrument of use was the Beck Depression Inventory (BDI-II) (See Appendix C), which was originally introduced by Beck, Ward, Mendelson, Mock, Erbaugh, in 1961 as the BDI. It was revised in 1996 to become the BDI-II, and in doing so, became more congruent with the diagnostic criteria for depression listed in the DSM-IV (Groth-Marnat 2003). The content of the survey included factors that reflect negative attitudes towards self, performance impairment and somatic disturbances as well as general factors of depression. The survey evaluates 21 symptoms of depression, 15 of which cover emotions, 4 cover behavioural changes and 6 cover somatic changes. Each symptom is rated on a four point intensity scale and scores are added to give a total ranging from 0 – 63. The higher the score, the more severe the depression (Beck, Steer, Garbin 1998). The BDI-II was given to the participants to complete on a fortnightly basis from the beginning of their treatment, usually at the time of their first treatment, until they finished their treatment.

Evaluation of the BDI-II has found that internal consistency ranges from 0.73 – 0.92. At first test-retest reliability was not recommended by Beck as he suggested that scores could be inflated due to memory factors. After further reviewing of test-retest reliability, Beck found that regardless of whether the 2 tests were administered at 2 or 6 week intervals, the scores in the BDI did reflect changes in the clinical depth of depression. Test-retest reliability ranges from 0.48-0.86 depending on the interval between re-testing and the type of population. Evaluation of content, concurrent and discriminant validity, as well as factor analysis were also favourable. Content of the BDI-II items were derived from clinicians regarding symptoms of depressed patients. Moderate correlations have been seen with Hamilton Psychiatric Rating Scale for Depression (.71), Beck Hopelessness Scale (.68) and the Depression Anxiety Stress Scale (.88) (Groth-Marnat 2003). The BDI-II has also been used to discriminate between anxiety and depression, loneliness and stress.

Demographic information was collected in the initial stages. The information required included gender, date of birth, type of cancer, type of chemotherapy, whether the patient had been diagnosed with depression before, and if so, what type of treatment did they receive, and how long ago were they diagnosed. This information was to ascertain the important variables that may or may not affect a patient and whether they experience depression with this treatment. The data collected from the demographic information are also used to answer questions two and three of the research questions:

2) Is there a relationship between the number of side effects experienced by patients receiving adjuvant chemotherapy and depression; and,

3) Is there a relationship between these characteristics, the side effects of chemotherapy and depression.

The final information obtained from the patients was a questionnaire on any side effects that they had experienced in the previous two weeks. This information was also used to evaluate questions two and three of the research questions. This was investigating the possibility of a relationship between the patients who demonstrated depression and concomitant side effects of the chemotherapy or particular characteristics these patients may have.

Collection Procedures

Initial contact with patients at St.Andrews Hospital was made by the Nurse Unit Manager. After receiving the first completed survey in the mail, the researcher then mailed the participant another BDI-II and a side effects form each fortnight. The participants were asked to complete it at fortnightly intervals, from the beginning to the end of their treatment.

The data collection process was extended due to low numbers of participants, especially in the early months of the study. After initiating the study at the Toowoomba Health Service and agreeing on reasonable contact between the researcher and patients, the Nurse Unit Manager notified the researcher of new patients and when they would be starting their treatment via electronic mail or phone. The nursing staff at the oncology unit then provided an introduction of the researcher to the patient. After initial contact with the participants, the researcher then continued contact via mail with the participants as with the other sample group. The participants had the subsequent appropriate forms mailed to them at regular fortnightly intervals. To help encourage participation and compliance, the researcher included a note, thanking the participant for their support in the study and to remind them of the date that the survey was due to be completed. A self addressed stamped envelope was also included as a matter of convenience for the participant. Overall the number of participants that responded from St. Andrews Hospital was 57% with the remaining 43% respondents from the Toowoomba Health Service.

The researcher maintained a diary of all outgoing and incoming mail and its contents. This provided a tracking tool for the researcher of what had been distributed and received, and therefore was able to easily identify if any responses were still outstanding. If a response had not been received from a participant within two weeks, a reminder was mailed or emailed to the participant. If no response was then received within a week, another reminder was mailed or emailed. If there was still no response, the participant was excluded from the study. There were no participants excluded from the study on the grounds of failing to respond, as they all responded after a reminder letter until they completed their treatment or if they recorded a level of depression and they were excluded for this fact.

Storage of Data

As survey responses arrived in the mail, the data for each patient were categorised into the fortnightly period in which the survey was completed to correlate where they were in their treatment cycle. Each patient was given a code so that subsequent questionnaires could be compared. Data was then entered into the SPSS database which included the patient's code, gender, age, type of chemotherapy, type of cancer, their score from the survey and any side effects they reported. The data was also stored in hard copy in a locked filing cabinet.

CHAPTER 5: STATISTICAL ANALYSIS

Prior to the implementation of the data collection tools, it was decided to enter all data into the SPSS program. The student version 14.0 was initially used but the program was not big enough to enter all the variables required to load the data over the period of 9 fortnights for some patients. The SPSS program was upgraded to SPSS 15.0 for Windows as it would support the data.

All data was entered manually into the SPSS program and once all data had been entered, it was analysed. The plan for the data analysis to best answer the research questions came from the question and design of the study. Therefore the data was analysed in three separate sections in relation to the research questions. Initially, all data was entered into one output of SPSS. To make the analysis easier, the data was then segregated into depressed patient's data, and the third data set was BDI-II scores.

For question 1, descriptive and inferential methods were used to analyse the data. Firstly, descriptive analysis began by reporting on patient characteristics such as age, gender, type of cancer, type of chemotherapy and history of depression of the sample group. The participant's age was represented on an interval scale. The remaining characteristics were analysed using frequency distributions. Mean scores were calculated for age and depression scores.

Quantitative data analysis of the BDI-II questionnaire began by first totalling the patient's scores on the survey. Each question in the survey was added as a variable into the SPSS program and each response to the questions was entered thus illustrating how each participant answered to get the score that they did. This allowed the depressed participants to be easily identified and a new data set was created to view the data of the depressed participants on their own, and assist the analysis.

Missing Data

Missing data was managed in the data set of depressed participants. This was done using the SPSS 15.0 program. The SPSS 15.0 program has a missing value analysis procedure which may help find any patterns to the missing data. The missing data was completely random in this study and for participants that were excluded due to scoring a level of depression, the missing data was analysed using the exclude pair wise option which excludes the person only if they are missing the data required for the specific analysis. They are still included in the analysis for which they did have data. The time point in which there was missing data and this analysis method was used was at fortnight three, four, five and seven.

Assumption Testing

Assumption testing was performed prior to evaluation and testing the significance of the data. To meet the criteria of assumption testing, the scale of measurement used was interval. The sample of the population was non-probability purposive. The tests of normality are illustrated using histograms or normal probability plots and significance is tested using Kolmogorov-Smirnov and Lilliefors significance level and Shapiro- Wilk statistics as the population was less than 100. If the significance level was greater than 0.05 then normality was assumed. When skewness and kurtosis were extreme, transformation was used. The method of transformation was computing as it was available with the SPSS program and it was able to provide a composite score.

The levels of significance of the participant's scores on the BDI-II were then analysed. Paired T-tests were performed to illustrate the significance of the scores.

The depressed participant's data set was also used to answer the remaining questions of the research problem. In relation to the second and third research questions, inferential statistics of correlation analyses were appropriate. Multiple regression analysis was not possible due to the low sample number.

To answer question 2, it was necessary to look at the numerical relationship between participant's depression scores and the number of side effects they experienced. The frequencies of side effects were initially identified and the highest rated side effects, i.e. side effects that were reported by five or more depressed participants, were then used in the correlation analysis with depression scores. Correlation analysis is used to describe the strength and direction of the linear relationship between two variables (Pallant 2005). To inspect the correlation between the depressed participant's scores and the number of side effects they experienced, cross tabulations were utilized. The Pearson R correlation coefficient and Spearman Rank were applied to determine the value of the correlation. Pearson correlation is designed for continuous variables and can be used if there is one continuous variable (scores of a measure of depression) and one dichotomous variable (male/female). Pearson correlations take on a value of -1 to +1. The sign at the front indicates whether there is a positive correlation or a negative one. The size of the value indicates the strength of the relationship. On the other hand, a correlation of zero indicates no relationship between the variables (Pallant 2005). The Spearman's Rank correlation is also used to determine the strength of a relationship between two continuous variables and has been used as an alternative to the Pearson correlation. The output from the Spearman Rank correlation can be interpreted in the same way as the Pearson correlation (Pallant 2005).

The same procedure was used to illustrate the relationship between the symptoms of depression they reported, patient characteristics and the number of

side effects that they experienced. Again, the Pearson and Spearman Rank correlations were used to best describe any relationship and the strength of the relationship between the variables.

Frequency distribution tables were used to highlight the frequency with which questions from the BDI-II were most commonly rated higher. The questions in the BDI-II that were scored at one or more and were recorded by six or more participants were used in the correlation analysis. Cross tabulations illustrated any correlations between questions from the BDI-II and patient characteristics and then questions from the BDI-II and side effects. Again the significance was illustrated using the Pearson R and Spearman Rank coefficients.

CHAPTER 6: RESULTS

Limitations

The limitations of this study are significant and important to understand to fully appreciate the results. Limitations of the study included a small sample size and potential biases due to self-selection of the candidates and their self-evaluation of their experiences.

The sample size of the study limits the ability to produce statistically significant results. The small sample size is a reflection of the population as the study was conducted at a regional centre. The study may have produced larger numbers if it were conducted at a metropolitan centre that services a larger population. In an attempt to overcome the small numbers the researcher used an additional oncology clinic half way through the data collection period.

Self-selection bias is possible whenever the group of people being studied has any form of control over whether to participate. A participant's decision to participate may be correlated with traits that affect the study, making the participants a non-representative sample. For example, people who have strong opinions or substantial knowledge may be more willing to spend time answering a survey than those who do not. In the general case, selection biases cannot be overcome with statistical analysis of existing data alone and an informal assessment of the degree of selection bias can be made by examining correlations between exogenous background variables and a treatment indicator (Roberts et al, 2002). The researcher has addressed this issue by examining the side effects participants were also experiencing at the time of reporting on the survey.

Self reporting bias must also be considered as a limitation in this study. Self reports are affected by the accessibility and organisation of self relevant knowledge in memory, a number of expectations and cues associated with specific contexts, situations and cultures and by a variety of individual and developmental differences (Brinthaupt & Lipka, 1997). A method to overcome the self reporting bias is to include behavioural observation as an additional tool for measurement. This method of measurement was not available to the researcher due to the nature for which the study was conducted, the budget restraints of the study and the logistics of having a behavioural observationist available whenever a participant wished to complete the survey. The researcher did attempt to reduce the self reporting bias though by using a developed survey which has had reliability and validity tested and which results can be reviewed in Chapter 4.

Descriptive Statistics of the total sample

The total sample size for this research was 26 participants. From the sample group, the descriptive analysis reveals that the average age of participants receiving adjuvant chemotherapy was 54.8 years and the range of ages was from 35 to 77 years of age (Table 6.1).

Overall, the descriptive data has shown that of the sample group, 80.8% were female (Table 6.2) and 64.5% were receiving treatment for breast cancer (Figure 6.1). The more common chemotherapy combinations were those used for women with breast cancer, such as, FEC (fluorouracil, epirubicin and cyclophosphamide) 23.1% and Adriamycin, taxotere and cyclophosphamide 19.2% (Figure 6.2).

Age of Total Sample Group

Mean	54.8077
Range	42.00
Minimum	35.00
Maximum	77.00

Table 6.1

Gender of Total Sample Group

		Frequency	Percent
Valid	Male	5	19.2
	female	21	80.8
	Total	26	100.0

Table 6.2

Type of Cancer of Total Sample Group

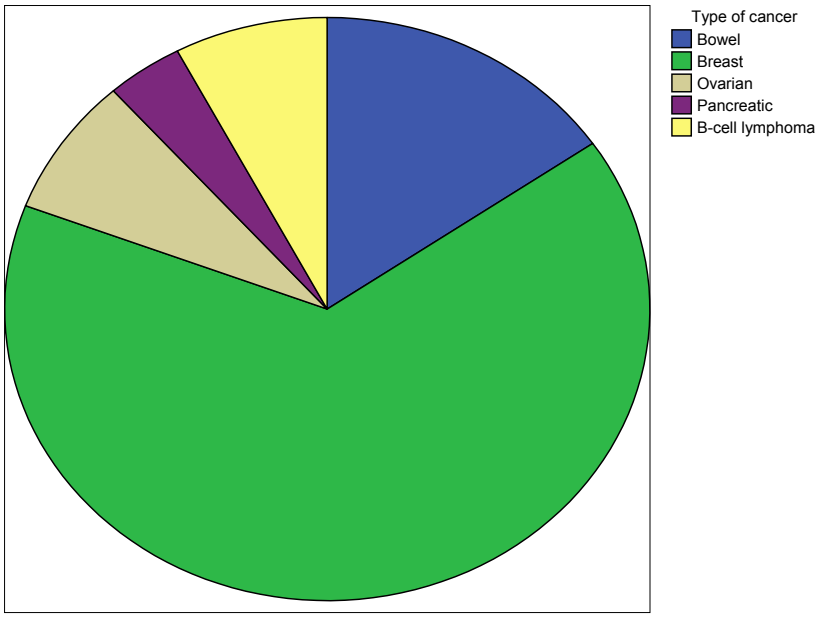

Figure 6.1

Type of Chemotherapy for Total Sample Group

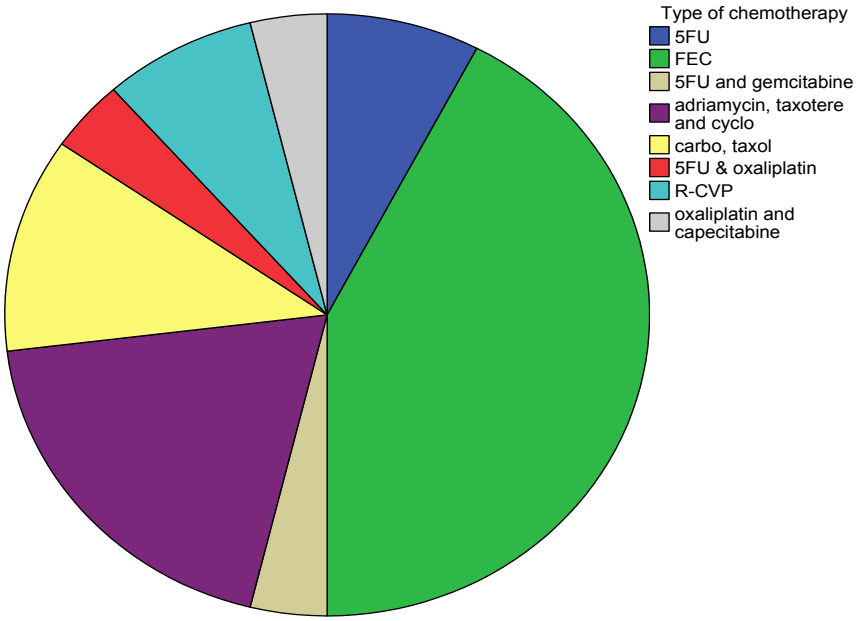

Fig 6.2

The descriptive data also identified that 19.2% of the participants had a previous diagnosis of depression (Table 6.3) and of those, 60% had received treatment with antidepressants (Table 6.4). One of the 19.2% of participants who had been diagnosed with depression had been diagnosed less than a month before starting treatment (Table 6.5). This result could imply that this

participant developed depression around the time of their diagnosis of cancer although a more specific question would need to be asked to confirm this.

Previous diagnosis for depression

		Frequency	Percent	Valid Percent
Valid	yes	5	19.2	19.2
	no	21	80.8	80.8
	Total	26	100.0	100.0

Table 6.3

Previous Treatment for Depression

	Frequency	Percent	Valid Percent
Valid	21	80.8	80.8
anti-depressant and counselling	1	3.8	3.8
anti-depressant medication	3	11.5	11.5
counselling	1	3.8	3.8
Total	26	100.0	100.0

Table 6.4

Time Diagnosed with Depression

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 month	1	3.8	20.0	20.0
	greater than 1 year	4	15.4	80.0	100.0
	Total	5	19.2	100.0	
Missing	System	21	80.8		
Total		26	100.0		

Table 6.5

Depression Results

There were 10 participants out of the sample of 26 that recorded some level of depression on the BDI-II. The frequency analysis revealed that fortnight 5 and 7 of the participants' treatment cycle (Table 6.6) was the period of time when patients were more likely to develop depression. To assist in confirmation of this data, the BDI-II scores for the depressed participants only were separated from the other data and the mean scores for each fortnight were calculated (Table 6.7). The results reveal a slight difference, but the main fortnight concerned (fortnight 5) remains the same. The mean score for fortnight 5 was 9.11 and the frequency of participants recording depression in that time was 30% (Table 6.7).

Episode of Depression

	N	Frequency	Percent	Valid Percent	Cumulative Percent
Valid					
fortnight 1	26	2	11.8	20.0	20.0
fortnight 2	26	0	0.00	0.00	20.0
fortnight 3	26	2	11.8	20.0	40.0
fortnight 4	24	0	0.00	0.00	40.0
fortnight 5	22	3	17.6	30.0	70.0
fortnight 6	19	0	0.00	0.00	70.0
fortnight 7	19	3	17.6	30.0	100.0
fortnight 8	16	0	0.00	0.00	100.00
fortnight 9	16	0	0.00	0.00	100.00
Total		10	58.8	100.0	
Total			100.0		

Table 6.6

Mean Beck Depression Inventory Scores

fortnight	FN 1	FN 2	FN 3	FN 4	FN 5	FN 6	FN 7	FN 8	FN 9
N	26	26	26	24	22	19	19	16	16
Mean	6.23	6.15	7.15	8.58	9.11	7.19	8.11	5.0	5.96
Standard deviation	1.45	2.14	3.68	5.24	4.58	1.6	2.48	0	1.31
Range	7.00	8.00	16.00	27.00	18.00	7.00	10.00	.00	9.00

Table 6.7

Descriptive Statistics for Depressed Participants

The frequency tables proceeding illustrate the results from the descriptive analysis of the demographic information for the participants that recorded a level of depression only. The number of depressed participants was 10 (Table 6.8). There were a greater number of female participants that recorded a level of depression than male. This result is consistent with the previous research in this area.

Gender of Depressed Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	1	5.9	10.0	10.0
	female	9	52.9	90.0	100.0
	Total	10	58.8	100.0	
Total		10	100.0		

Table 6.8

As a result of there being more females then males that were depressed, it was a likely result to see that more of the depressed patients were receiving treatment for breast cancer (Table 6.9)

Type of cancer for Depressed Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	breast	8	47.1	80.0	80.0
	ovarian	1	5.9	10.0	90.0
	B-cell lymphoma	1	5.9	10.0	100.0
	Total	10	58.8	100.0	
Total		10	100.0		

Table 6.9

Another of the significant demographic results was the frequency of whether the participants had a previous diagnosis of depression. Thirty percent of participants stated they had received a previous diagnosis of depression (Table 6.10). The descriptive analysis demonstrated that depression during treatment was not necessarily predetermined by a previous history of depression. In patients with a history of depression, 3 out of 5 went on to experience depression during treatment.

Previous Diagnosis for Depression in Depressed Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	3	17.6	30.0	30.0
	no	7	41.2	70.0	100.0
	Total	10	58.8	100.0	
Total		10	100.0		

Table 6.10

From the sample group that did confirm a depression score, the results were analysed to see the frequency and validity of location. Thirty percent of the sample group were from the Toowoomba local area. Twenty percent were from Oakey with the remaining regions equally represented (Table 6.11).

Postcode

		Frequency	Percent
Valid	4344	1	10.0
	4350	3	30.0
	4355	1	10.0
	4380	1	10.0
	4401	2	20.0
	4370	1	10.0
	2372	1	10.0
	Total	10	
Total			100.0

Table 6.11

Assumption Testing

Assumption testing was performed before the level of significance could be analysed. The scale of measurement used for the BDI-II scores was interval. The sample of the population was non-probability purposive. The tests of normality are illustrated using Histograms and Normal Q-Q Plots and significance was tested using Kolmogorov-Smirnov and Lilliefors significance level and Shapiro- Wilk statistics as the population was less than 100. If the significance level was greater than 0.05 then normality was assumed. When skewness and kurtosis were extreme, transformation was used. Power transform is from a family of functions that are appllied to create a rank-preserving transformation of data using power functions. This is a useful data (pre)processing technique used to stabilize variance, make the data more normal distribution-like, improve the correlation between variables and for other data stabilization procedures (Pallant 2005). Power transformations were used

to improve interpretability and make them easier to visualise. The transformation of data in this analysis was not extensive and should not alter the interpretation of data greatly. Transformation was applied in two instances and of which one did not make any improvements. Transformation was applied to the mean score of fortnight four and fortnight nine. The kurtosis for fortnight four was 11.010 and fortnight nine 11.9.

Examples of the distributions have been illustrated in Figures 6.3 and 6.4 for fortnights two and three.

Transformations were applied to fortnights four and nine. Fortnight four had a skewness of 2.876 and kurtosis 11.010 and significance was 0.00. Fortnight nine had skewness 1.2 and kurtosis 11.9 and significance 0.00 therefore normality could not be assumed. After the transformations, the distribution for fortnight four appeared normal and the significance statistics support this. The distribution and significance for fortnight nine did not improve. The normal distributions for fortnight four are seen in Figure 6.5 and level of significance in Figure 6.6.

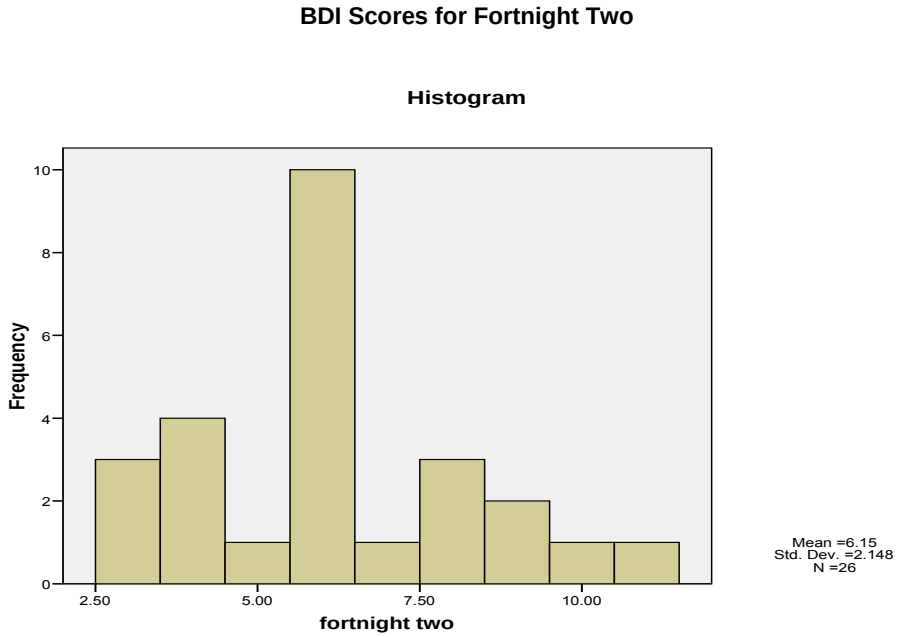

Figure 6.3

Normal Q-Q Plot of Fortnight Three

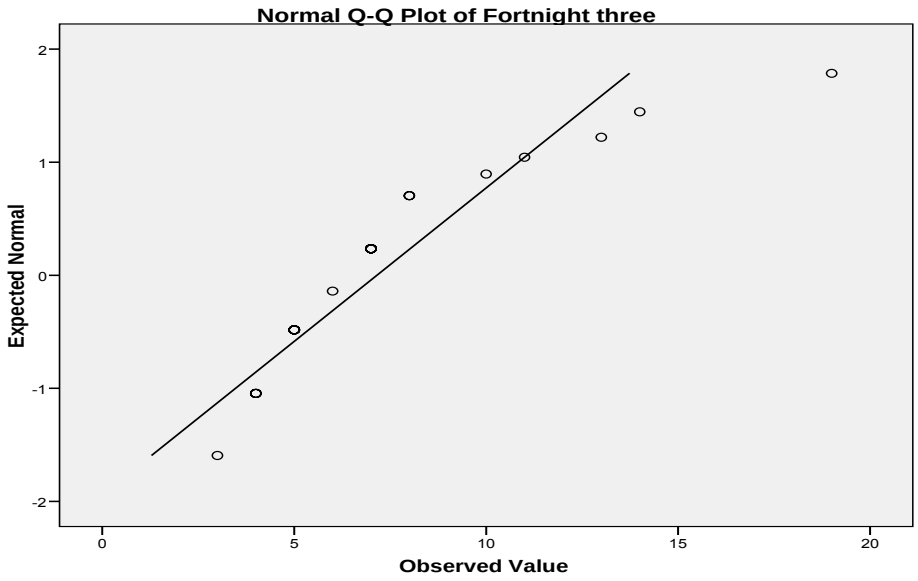

Figure 6.4

Transformed BDI Scores for Fortnight Four

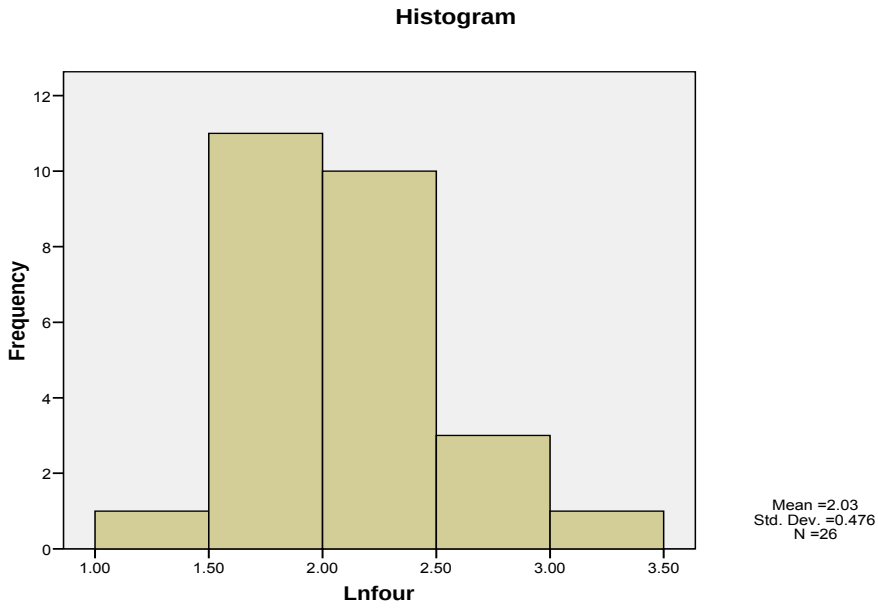

Figure 6.5

Significance of Normality Distribution for Fortnight Four

Kolmogorov-Smirnov(a)			Shapiro-Wilk		
Statistic	df	Sig.	Statistic	df	Sig.
.178	26	.033	.902	26	.018

a Lilliefors Significance Correction

Table 6.12

Question Two and Three – Correlation Analysis

To view the correlation between depression and the number of side effects that patients experienced, a correlation analysis was performed by viewing a cross tabulation of the two variables and assessing its significance using the Pearson R correlation coefficient and the Spearman rank correlation coefficient. Results revealed that a greater number of side effects experienced on the day that the participants recorded a level of depression did not act as a predictor of a level of depression. The significance of these results as determined by the Pearson R and Spearman Rank coefficients reflects this (Table 6.14).

The participant that experienced the greatest number of side effects rated only a mild level of depression. The patient that rated a high level of depression i.e. severe only recorded having experienced one side effect. (Table 6.13)

Correlation of depression Score and Number of Side Effects of depressed participants

	Number of side effects						Total
Depression score	1	3	4	5	6	7	
14-19 Mild	0	1	2	1	1	1	6
20-28 Moderate	0	0	0	0	2	0	2
29-63 Severe	1	0	1	0	0	0	2
Total	1	1	3	1	3	1	10

Table 6.13

Significance of correlation between depression scores and number of side effects of depressed participants

		Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Interval by Interval	Pearson's R	-.415	.268	-1.292	.233(c)
Ordinal by Ordinal	Spearman Correlation	-.226	.334	-.655	.531(c)
N of Valid Cases		10			

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 6.14

When the entire sample group was analysed for the same correlation between BDI-II score and number of side effects, the same pattern was revealed (Table 6.15). The total figure in Table 6.15 represents the total number of responses for those participants that rated in each category. The participants recorded the number of side effects they were experiencing on a fortnightly basis along with the BDI-II therefore the numbers are higher. The number of side effects experienced by the patients did not predict a score for depression. This is again reinforced by the Pearson R and Spearman Rank correlation analysis as shown below (Fig 6.16).

Depression score and number of side effects for entire sample

Depression score	Number of side effects								Total
	0	1	2	3	4	5	6	7	0
0-13 normal	4	4	17	17	19	13	17	7	98
14-19 Mild	0	0	1	1	2	1	1	1	7
20-28 Moderate	0	0	0	0	0	0	2	0	2
29-63 Severe	0	1	0	0	1	0	0	0	2
Total	4	5	18	18	22	14	20	8	109

Table 6.15

Significance of correlation of depression score and number of side effects of entire sample

		Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Interval by Interval	Pearson's R	.029	.106	.304	.762(c)
Ordinal by Ordinal	Spearman Correlation	.077	.096	.798	.427(c)
N of Valid Cases		109			

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 6.16

The highest recorded side effects that participants recorded were nausea, fatigue, alopecia and other (see Appendix D for descriptions of "other"). These side effects were individually correlated with depression scores and again there was no statistically significant correlation between the variables.

Question three (3) of the research topic was to see if there was a relationship between depressive symptoms, side effects and participant characteristics. Firstly, the frequency of depressive symptoms was demonstrated so that the researcher could identify the most frequently scored questions on the BDI-II and use these in the analysis (See Appendix C for BDI questions). From the frequency distributions it was shown that there were 11 out of 21 questions that six or more participants recorded a score of one or more on. The questions included pessimism, loss of pleasure, guilty feelings, self-dislike, crying, agitation, loss of interest, indecisiveness, lack of energy, sleep, irritability, appetite, concentration, fatigue and sex. They were used in the correlation analysis with firstly, the patient characteristics, and then the side effects.
Results illustrated that the variables of pessimism, self-dislike, guilty feelings, and loss of interest, indecisiveness and fatigue did rate significant results using the Pearson R and Spearman Rank coefficients.

There was a correlation between the type of chemotherapy participants received and the variable of pessimism. Pessimism achieved a score of one by six participants on the day that they recorded a level of depression. These associations showed that participants having Adriamycin, Taxotere and Cyclophosphamide (breast cancer) and those that were having Taxol and Carboplatin (ovarian) were equally likely to be pessimistic. Another example is the relationship between loss if interest and a previous diagnosis of depression (Table 6.17). Of the 3 participants of depressed people that reported a history of depression also reported a loss of interest.

Correlation of Loss of Interest and Previous Diagnosis for Depression

		Previous diagnosis for depression		Total
		yes	no	yes
loss of interest	I have not lost interest in other people or activities	0	3	3
	I am less interested in other people or things than before	1	4	5
	I have lost most of my interest in other people or things	1	0	1
	Its hard to get interested in anything	1	0	1
Total		3	7	10

Table 6.17

Significance of correlation between loss of interest and previous diagnosis of depression

		Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Interval by Interval	Pearson's R	-.732	.125	-3.038	.016(c)
Ordinal by Ordinal	Spearman Correlation	-.699	.139	-2.761	.025(c)
N of Valid Cases		10			

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 6.18

Other significant results were the correlations between the following:

1. Guilty feelings and age. The respondent that reported that they felt guilt most of the time was the youngest participant aged 35. The older participants aged 60 and 69, did not report any feelings of guilt.
2. Self dislike and a previous history of depression. Again, the 3 participants that recorded a history of depression, also reported self-dislike. One participant recorded that they had lost confidence in themselves and the other 2 reported that they did not like themselves.

3. Indecisiveness and type of cancer. Six of the eight breast cancer patients found it more difficult than usual to make decisions than usual.
4.. Fatigue and type of cancer. All of the eight depressed participants with breast cancer were more likely to be fatigued yet the participant with ovarian cancer rated their fatigued at the highest level and the other participants didn't.
5. Fatigue and type of chemotherapy. As the type of cancer reflects which type of chemotherapy you receive, these results are identical to those above. The person with ovarian cancer rated fatigue at its worst, yet participants with breast cancer rated this more frequently.

There were also results with a level of significance during the correlation analysis of depressive symptoms and side effects. The results showed a relationship between the following:

1. Fatigue and lack of concentration. Nine of the ten depressed participants recorded some changes to their level of concentration whilst also being fatigued as a side effect of the chemotherapy.
2. Fatigue and loss of pleasure. Of the participants that recorded fatigue as a side effect, eight reported that they did not enjoy things as much as they used to and one participant said that they get very little pleasure from things they used to enjoy.
3. Fatigue and other side effects. There were a variety of other side effects recorded by participants (Appendix D) yet the correlation analysis found that half of these recorded some level of fatigue also.

Overall, age and a previous diagnosis of depression were the characteristics that had a relationship with the patients' depressive state. Still significant but less so, were type of cancer and type of chemotherapy. Fatigue was the primary side effect that participants experienced on the day that they recorded a level of depression.

CHAPTER 7: DISCUSSION

This report demonstrates that people receiving adjuvant treatment for cancer do experience depression and it is more likely to occur in the 5th fortnight of their cycle. This assessment was associated with two results in the analysis, looking at a frequency distribution and also by calculating the mean score for each fortnight. Depression was more likely in females then males and depression was more common in patients receiving treatment for breast cancer.

These findings corroborate and extend previous investigations such as, Byar et al's (2006) study on physical and psychological symptoms and their relationship to quality of life during chemotherapy. Byar et al (2006) found that patients rated a higher degree of depression in the 4th cycle of chemotherapy. This would correlate with the 5th fortnight of treatment in the present study and would be dependant on whether the patients were receiving the same type of treatment. This study, extends Byar et al's (2006) investigation in that it looked beyond breast cancer patients and found that patients rated a more frequent rate of depression in the 5th fortnight in other cancer patients also. Another study suggestive of a decline in a patient's psychological status through the course of their chemotherapy treatment was by Spagnola et al (2003). This study found that quality of life declined from point of diagnosis into treatment then improved after treatment into short term and long term remissions.

Bottomley et al (1997) established through a literature search that women were at greater risk of developing depression which has also been evidenced in this current research. This is difficult to validate though as the percentage of men and women in the study was not equal.

Initially, the number of side effects that patients experienced was thought to have a relationship with depression. Although limited by a relatively small sample size, the results from this report indicate that the number of side effects experienced by the patients did not necessarily predict depression. In contrast to this, the study by Newell et al (1999) did find that the number of reported physical symptoms were predictors of elevated levels of anxiety and depression. Their findings were that patients that reported four or more physical symptoms were more likely to have anxiety or depression than those with less than three physical symptoms. In this Masters study, the most frequently rated side effects were fatigue and nausea and fatigue was rated highest amongst the depressed patients. These findings are consistent with results from other studies such as Byar et al (2006) and Tish Knobf et al (1990) which also found that fatigue was rated more frequently than any other side effect. Tish Knobf (1990) reported fatigue to be common with breast cancer therapies, and that ratings of distress and difficulty increased with the

number of chemotherapy cycles. Cowley et al (2000) also reported that patients' fatigue levels increased over the course of the six cycles and this also had an accumulative mental and physical effect on the patients' morale and motivation. Byar et al (2006) states in her study, fatigue correlated with other physical and psychological symptoms at times during and after treatment. Fatigue was significantly predicted by depression, anxiety, pain, current tamoxifen use and mastectomy. Higher fatigue was correlated with a lower quality of life. The results from this present study illustrated fatigue as a significant side effect during their treatment and highlighted a correlation between fatigue and some psychological symptoms, more specifically, loss of pleasure and lack of concentration.

Other significant results from this study extend from the correlation analysis between depressive symptoms and patient characteristics. Age and a previous diagnosis of depression were patient characteristics that denoted a relationship with depressive symptoms. Peveler et al 2002 reported that history of depression, marital status, education, stage of disease at diagnosis, and type of treatment were patient characteristics that were associated with a risk of depression. Molassiotis et al 1996 and Maguire et al 1994 found that the type of chemotherapy, such as alkaline and vinca alkaloids (vincristine) was influential on a diagnosis of depression. These studies have all found a relationship between patient characteristics and depression. The common characteristics found between the studies and this present study were a previous diagnosis of depression and type of treatment.

The results presented in this study confirm that patients receiving treatment for cancer do develop depression and it was also evident that there is a relationship between some participant demographic characteristics and depressive symptoms.

The conclusive results demonstrate to oncology nurses that depression does occur in their patients and that there is a vulnerable point within the treatment cycle where it occurs. The vulnerable point can be defined further in terms of specific chemotherapies.

If a patient was receiving treatment for breast cancer and they were receiving the chemotherapy cycle Fluorouracil, Epirubicin, Cyclophosphamide (FEC), the vulnerable point in this treatment cycle would be between cycle 3 and 4. This is because the chemotherapy is received every three weeks for a total of 6 cycles. This is consistent with findings by Byar. From the data, if a patient was receiving treatment for breast cancer and receiving Adriamycin, taxotere and cyclophosphamide, they would also be more vulnerable at the point of cycle 3 and 4 as this regime is given in the same fashion as FEC, every 3 weeks for 6 cycles.

The patient receiving treatment for ovarian cancer received a combination of carboplatin and paclitaxel, which is given every 3 weeks for 4 to 6 cycles. The

treatment for lymphoma that was received by the patient in this study was Rituximab, cyclophosphamide, vincrisine and prednisone (R-CVP) which is also given every 21 days for a total of 6-8 cycles. Therefore the vulnerable point within the treatment cycle would be the same for all of the different types of treatment as they were all given every three weeks.

During the data collection period, the participants were required to complete the surveys and return to the researcher as requested. What was unexpected was the amount of qualitative data that the participants returned. A number of participants wrote letters to the researcher which provided an insight into how they were feeling. One participant wrote regularly and the decline in their psychological status throughout the course of their treatment was obvious and well articulated. The data (Appendix E) demonstrates the challenges the participants faced in undergoing chemotherapy and alludes to the vulnerability for depression. This information has been included to neither distract nor enhance the study but to simply provide the reader with tangible evidence that patients with cancer are experiencing depression during treatment.

CHAPTER 8: CONCLUSION

Although the prevalence of clinically significant depression as identified by the BDI-II in this study is relatively low, this investigation demonstrates that patients receiving adjuvant chemotherapy are more likely to develop depression between cycle 3 and 4. Ten out of twenty-six participants reported some level of depression. Of the depressed patients within the research sample, 90% were female and 80% of these females were receiving treatment for breast cancer. The experience of depression has a negative impact on well being and quality of life. Being affected by depression can consequentially affect the course of treatment for cancer. Research has revealed that patients with psychological morbidity experience a greater number and more intense physical symptoms associated with treatment. They also have poorer treatment compliance and place a greater strain on the health care system. Early identification and treatment of psychological problems has the potential to impact on psychological and health outcomes. Early identification and intervention will be easier if nurses are able to predict a more vulnerable point within the treatment cycle for their patient to develop depression.

The strength of this study is that it is relevant to the health care industry. From the research reviewed in relation to this study, there is still a need to initiate psychological screening at an international level. Studies from the United Kingdom, United States, China, Australia and Norway, have all indicated a need for psychological screening to be undertaken primarily by oncology nurses. The Toowoomba oncology clinics used in this research have demonstrated limited assessment of the psychological impact of chemotherapy on their patients. Knowledge of this research could encourage staff in oncology clinics to incorporate a screening technique for assessment of depression in their patients. Feedback from one of the oncology clinics involved in the study is that they have already implemented a psychological screening tool for their patient assessments, and have incorporated the services of a psychologist into their service.

The expected outcomes for this project have both patient and health professional implications. The results did identify that patients that receive adjuvant chemotherapy are experiencing depression within a particular time period in their treatment cycle, and this should impact on the nursing care that patients receive. Oncology nurses can now be more aware of this vulnerable point in the treatment cycle and ensure that they are using assessment techniques that will further identify that the patient is experiencing depression. Once depression has been identified, professional advice and treatment can be organized. This should enhance the patient's progress through the treatment, and also recovery after the treatment.

The limitations of the research are the sample number, self selection bias, self reporting bias and missing data. To address the problem of the sample size, the

researcher has considered a larger study which would be able to use the data from this study to guide future research. Part of this consideration would be to have a funded research assistant who would be able to spend more time at the oncology clinics to assist the nursing staff to screen potential participants. They would also be available to discuss the study at length with the patients and ensure their participation. Another consideration for future studies would be to incorporate more oncology clinics if using a regional area, or larger oncology clinics if using a metropolitan area.

Another limitation of the study is the missing data due to some of the surveys being returned late. To obtain more conclusive and statistically significant results the missing data was aided by the transformation used in the SPSS program. To avoid this as a problem in the future, the concept of a funded research assistant could help to eliminate this by being at the oncology clinics and providing reminders to participants on a personal level and having them complete the surveys whilst they are there.

An evaluation for the potential use of psychological screening in oncology clinics is imperative. This assessment could be incorporated using a standard screening test that can be achieved efficiently and incorporated into the assessment which already occurs but is limited to physical assessment.
Oncology nurses experience unique challenging and rewarding relationships in a dynamic and multidimensional way. Due to the multifactorial effects of cancer and their impact on the psychological wellbeing of patients, the implications for oncology nurses to deliver holistic care is imperative. Oncology nurses assess and monitor their patients physical conditions, administer medications which are toxic to their patients bodies and formulate symptom management strategies to overcome the side effects the patients experience from the treatments. These caring nurses often witness suffering and death, but survive on the deep and ongoing relationships they develop with patients (Rooyen et al 2008). Despite the passion and dedication that oncology nurses have to care for their patients, from the literature surrounding this topic it became clear that there was still a lack of assessment or recognition of psychological issues for these patients. Perhaps the need and intention of the oncology nurses to look after their patients holistically is there yet they lack the support or tools to be able to manage it.

This study, by demonstrating the presence of depression in patients receiving adjuvant chemotherapy must foster awareness for the potential psychological side effects of treatment. Emotional support, appropriate management of chemotherapy side effects, ongoing assessment of individual needs and open communication is imperative to enhancing continuity and quality of care delivered to cancer patients.

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APPENDIX A

St Andrew's HOSPITAL - TOOWOOMBA

Appendix 2.

COPY

Mrs Kate Beyer
6 Shamrock Court
Toowoomba 4350

May 10th 2006

Dear Kate,

Re: Research "Depression in patients with cancer who are receiving adjuvant chemotherapy"

St Andrew's Toowoomba Hospital would be pleased to support you in your tertiary studi for your Masters of Health by way of accessing patients undergoing chemotherapy withi our facility.

Following the NHMRC guidelines we will need to have the research proposal approved an Ethics Committee prior to commencement. Once this process has been finalised plea let me know and we can make further arrangements.

The hospital does not have its own Ethics Committee but accesses the services of Toowoomba Area Health Service (Toowoomba Base Hospital) for this function.

You have already indicated that you are aware of the need for patient consent and confidentiality.

I wish you the very best for your studies and look forward to hearing from you in the nea future.

Yours sincerely,

Helen Norman

Helen Norman
Director of Operations.

Leading the way in health care

280 North Street Toowoomba Queensland PO Box 263 Toowoomba Queensland 4350
Telephone (07) 4631 4666 Facsimile (07) 4633 4059 www.sath.org.au
ABN 95 820 855 300

Queensland Government

Queensland Health

Enquiries to: Coordinator HREC & RS
Telephone: (61 7) 4616 6190
Facsimile: (61 7) 4616 6669
Our Ref: TDDHSD HREC 2007/010
E-mail: TWB_Research_and_Ethics@health.qld.gov.au

Ms K Beyer
6 Shamrock Court
TOOWOOMBA QLD 4350

Dear Ms Beyer

Re: TDDHSD HREC 2007/010
Depression in patients with cancer receiving adjuvant chemotherapy

At a meeting of the Toowoomba Health Service District Human Research Ethics Committee held on 19th April 2007, the Committee reviewed the above Protocol. The Toowoomba Health Service District Human Research Ethics Committee is duly constituted, and operates and complies with the National Health and Medical Research Council's 'National Statement on Ethical Conduct in Research Involving Humans and Supplementary Notes, 1999'.

The Chair of the HREC reviewed your further correspondence on the 12th of June 2007 and has forwarded on your request for approval to the District Manager.

It is advised that on the recommendation of the Human Research Ethics Committee, the District Manager, Toowoomba Health Services District has approved your request for ethical approval of the following:

- Local Requirements Form for Multi-Centre Research Version 1 March 2005
- Resume: K Beyer
- Core application and checklist –Version 2 Dated 30/03/2007
- Research Proposal Version 2 30/3/2007
- The Beck Depression Inventory
- Survey of Oncology Patients
- USQ Ethics Clearance Dated 16 June 2006
- Participant Information Sheet Version 2 Dated 30/03/2007
- Consent Form Version 2 Dated 30/03/2007
- Approval Letter –St Andrews Hospital Dated 31October 2006

Office
Queensland Health
Toowoomba& Darling Downs
Health Service District
Perkey Street
Toowoomba 4350

Postal
Private Mail Bag 2
Toowoomba 4350

Phone
(61 7) 4616 6000

Fax
(61 7) 4616 6170

During the conduct of the study you are required to adhere to the following conditions:

- In the first instance please sign, date and return a copy of the back page of this letter, and also complete the enclosed Commencement Form (yellow) and return to this office when the study commences.
- All investigations must be carried out according to the "Declaration of Helsinki 2000" as subsequently modified and the latest statement by the National Health and Medical Research Council on Human Experiments and on Scientific Practice. Should a copy of the 'Declaration of Helsinki 2000' as subsequently modified be required, please request a copy from the Coordinator, Human Research Ethics Committee.
- Attachment I is a letter listing some matters specified by the National Health and Medical Research Council to which you as the research worker must adhere.
- Attachment II gives the Committee composition with specialty and affiliation with hospital.
- You are required to provide a report on any pilot study and the outcome of the study at the completion of the trial or annually if the trial continues for more than 12 months.
- If any subsequent change/amendment is made to the protocol it will be necessary for you to obtain approval from the Human Research Ethics Committee. The amended documents must be accompanied by a letter, signed by the Principal investigator, providing a brief description of the changes, the rationale for them and their implications for the ongoing conduct of the study. All amended documents must contain revised version numbers, version dates and page numbers. Changes must be highlighted using Microsoft Word "Track Changes" or similar. Please contact the HREC Coordinator if assistance is required.
- Serious Adverse Events must be notified to the Committee as soon as possible. In addition the Investigator must provide a summary of the adverse events, in the specified format, including a comment as to suspected causality and whether changes are required to the Patient Information and Consent Form. In the case of Serious Adverse Events occurring at the local site, a full report is required from the Principal Investigator, including duration of treatment and outcome of event.
- If the results of your protocol are to be published, an appropriate acknowledgment of the Hospital should be contained in the article. Copies of all publications resulting from the study should be submitted to the Human Research Ethics Committee.
- Please ensure that a copy of any publication that results from this protocol is also forwarded to the Hospital Medical Library for future reference.
- The Hospital administration and the Human Research Ethics Committee may inquire into the conduct of any research or purported research, whether approved or not and regardless of the source of funding, being conducted on hospital premises or claiming any association with the Hospital; or which the Committee has approved if conducted outside Toowoomba Health Service District. This may include consultation with the Principal Investigator and/or a visit to the research site by a member of the HREC and/or Coordinator of the HREC.

Should you have any problems, please liaise directly with the Chairman of the Human Research Ethics Committee early in your program.

We wish you every success in undertaking this research.

Yours faithfully

Ms Michelle Cameron
Chair, Human Research Ethics Committee
3/5/2007

for **District Manager**
Toowoomba Health Service District

APPENDIX B

DEPRESSION IN PATIENTS WITH CANCER RECEIVING ADJUVANT CHEMOTHERAPY

Participant Information Sheet

Principal Researcher: Kate Beyer
Registered Nurse
Bachelor of Nursing (CQU)
Enrolled Masters of Health (USQ)
Phone: (07) 46362146

This information sheet is 3 pages long. Please make sure that you have all the pages.

1. Your Consent

This participant information sheet contains detailed information about the research project. Its purpose is to explain to you as openly and clearly as possible, all the procedures involved in this project before you decide whether or not you wish to participate.

Please read the information carefully. Feel free to ask any questions about any information in the document. You may also wish to discuss this project with a relative, friend or health care provider. Feel free to do this.

Once you understand what the project is about and if you agree to take part in it, you will be asked to sign a Consent Form. By signing the Consent Form, you indicate that you understand the information and that you agree to participate in the project.

You will be given a copy of the Participant Information Sheet and the Consent Form to keep as a record.

2. Purpose and Background

The purpose of this project is to establish the incidence of depression in patients receiving adjuvant chemotherapy and establish if there is a vulnerable point in the chemotherapy treatment cycle in which patients develop depression.

Previous experience has revealed that depression does occur in patients that receive adjuvant chemotherapy, yet there is little evidence if there is a point in the treatment process when patients are most vulnerable.

A total of 30-40 people will participate in the project.

You are being invited to participate in this project because the research is being conducted in conjunction with Toowoomba Health Service District and St. Andrews Hospital, and you meet the criteria to be included in the study.

3. Procedure

Participation in this project will involve completing a self-rating questionnaire, called the Beck Depression Inventory. The questionnaire contains 21 questions and should take approximately 10 minutes to complete. You will be asked to complete this questionnaire at two weekly intervals during the course of your treatment. You will be provided with copies of the questionnaire at the beginning of your participation, and asked to mail them to the Principal Researcher in stamped, self addressed envelopes. If the form is not received, the principal researcher will phone or email you as a friendly reminder. You will also be asked to complete a form that requires providing some demographic information for the researcher, and to complete a tick sheet regarding side effects of chemotherapy that you may experience.

4. Possible Benefits

Possible benefits to yourself may include a self realisation of how you are feeling during your treatment and therefore, if you are feeling depressed you may seek advice when normally you wouldn't have. Other benefits of the study will be for future patients with cancer. By identifying a vulnerable point in a patient's treatment cycle of chemotherapy will be helpful to the nursing staff and other health care providers to be more aware of and diagnose and address any adverse feelings a patient may be experiencing. We cannot guarantee or promise that you will receive any benefit from taking part in this project.

5. Possible risks

Possible risks, side effects and discomforts from completing the questionnaire are minimal.
There may be additional unforseen or unknown risks. The principal researcher does wish to advise you though, that participation can be ended or suspended at any time for any reason during the study.

6. Privacy, confidentiality and disclosure of information

The responses that I receive from you, the participant, is known as data and will be stored as a hard copy in a locked filing cabinet. It will also be stored electronically under password protected data files on a password protected computer. The data is not identifiable to anyone and only the principal researcher will have access to it. The data will be stored for a period of 7 years and at the end of this term be disposed of as confidential waste.

7. New information arising during the project

During the research project, new information about the risks and benefits of the project may become known to researchers. If this occurs, you will be told about this new information. This new information may mean that you can no longer participate in this research. If this occurs, the principal researcher will stop your participation. In all cases, you will be offered all available care to suit your needs and medical condition.

8. Further Information or any problems

If you require any further information or if you have any problems concerning this project, please contact the principal researcher, Kate Beyer, on (07) 46362146 or 0409875300.

9. Other Issues

This project will be carried out according to the *National Statement on Ethical Conduct in Research Involving Humans* (June 1999) produced by the National Health and Medical Research Council of Australia. The ethical aspects of this research have been approved by the Toowoomba Health Service District Human Research Ethics Committee and University of Southern Queensland Ethics Committee.
If you have any complaints or concerns about the conduct of this research, please contact the Chair-Human Ethics Committee, Toowoomba Health District on (07) 46166190. If you have concerns about your participation in this research conflicting with aspects of your cultural practice or belief system, in the first instance please inform the Principal Researcher, Kate Beyer on (07) 46362146 or 0409875300.

10. Participation is voluntary

Participation in any research project is voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage.

11. Reimbursement for costs

You will not be reimbursed for your participation in this project.

APPENDIX C

The Beck Depression Inventory

Read each question carefully, and circle the one statement in each that best describes the way you have been feeling during the past two weeks, including today.

1. Sadness
0 I do not feel sad.
1 I feel sad much of the time
2 I am sad all of the time.
3 I am so sad or unhappy that I can't stand it.

2. Pessimism
0 I am not discouraged about my future.
1 I feel more discouraged about my future than I used to be.
2 I do not expect things to work out for me.
3 I feel my fortune is hopeless and will get only worse.

3. Past Failure
0 I do not feel like a failure.
1 I have failed more than I should have.
2 As I look back I see a lot of failures.
3 I feel I am a total failure as a person.

4. Loss of Pleasure
0 I get as much pleasure as I ever did from the things I enjoy.
1 I don't enjoy things as much as I used to.
2 I get very little pleasure from the things I used to enjoy.
3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
0 I don't feel particularly guilty.
1 I feel guilty over many things I have done or should have done.
2 I feel quite guilty most of the time.
3 I feel guilty most of the time.

6. Punishment Feelings
0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect tot be punished.
3 I feel I am being punished.

7. Self-Dislike
0 I feel the same about myself as ever.
1 I have lost confidence in myself.
2 I am disappointed in myself.
3 I dislike myself.

8. Self-Criticisms
0 I don't criticize or blame myself more than usual.
1 I am more critical of myself than I used to be.
2 I criticize myself for all of my faults.
3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes
0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

10. Crying
0 I don't cry anymore than I used to.
1 I cry more than I used to.
2 I cry over every little thing.
3 I feel like crying, but I can't.

11. Agitation
0 I am no more restless or wound up man usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless that I have to keep moving or doing something.

12. Loss of Interest
0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13. Indecisiveness
0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than usual.
3 I have trouble making any decisions.

14. Worthlessness
0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy
0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern
0 I have not experienced any change in my sleeping pattern.
1 I sleep somewhat more/less than usual,
2 I sleep a lot more/less than usual.
3 I sleep most of the day.
I wake up 1-2 hours early and can't get back to sleep.

17. Irritability
0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite
0 I have not experienced any change in my appetite.
1 My appetite is somewhat greater/lesser than usual.
2 My appetite is much greater/lesser than usual.
3 I crave food all the time or I have no appetite at all.

19. Concentration Difficulty
0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue
0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Scoring

0-13 Normal
14-19 Mild
20-28 Moderate
29-63 Severe

APPENDIX D

Samples of "other" side effects

Aching legs in feet
Aches in jaw
Headaches
Sore veins
Extremely sore veins and bruising from the cannulation

Sore joints for a few days
Sore gums for a few days
Dizziness (gradually wears off after a week or so)
Dizziness – loss of balance
Gums sore at times

Painful veins in forearm from chemo
Night sweats, hot flushes and changes sleep patterns
A pounding headache that lasted about 15 hours
Night sweats – almost hourly throughout the night for 7-10days after chemo, some hot flushes through day
No period
Temp 38.2 – admitted to hospital
Infection in PICC line
UTI
Thrombosis in left upper and lower arm due to Portacath

Some swelling of fingers on day of chemo until next day
Heaviness in limbs for a couple of days
Heaviness in limbs and swelling in fingers and ankles for the first 2 days after chemo

Head cold for a few weeks and cough and runny nose making me tired and getting less sleep. I pulled a muscle in rib cage from coughing which is painful.
Aching in legs
Developed URTI – on antibiotics

Foul taste in mouth
Awful taste in mouth, everything is very salty. It used to be metallic taste but changed to salty. I found the more treatments I had the awful taste was worse and lasted longer.

Terrible metallic taste in my mouth
Terrible taste in my mouth all the time for one week after my first treatment

Dizziness and off balance from anti-depressants

Red and burning face after chemo
Pain up arm (right) this is the arm I have chemo in

I have a blood clot in right leg caused by high dosage of chemo. I am having ½ strength chemo at present
I am still having injections for my blood clot but my leg is improving
Swollen legs with fluid and pain in joints

APPENDIX E

FNS

Name: [redacted] Date: 24/10/07

The Beck Depression Inventory

Read each question carefully, and circle the one statement in each that best describes the way you have been feeling during the past two weeks, including today.

1. Sadness
0 I do not feel sad.
1 I feel sad much of the time
2 I am sad all of the time.
3 I am so sad or unhappy that I can't stand it.

2. Pessimism
0 I am not discouraged about my future.
1 I feel more discouraged about my future than I used to be.
2 I do not expect things to work out for me.
3 I feel my fortune is hopeless and will get only worse.

The ongoing nature of chemo is starting to get to me. I am just tired of the whole thing

3. Past Failure
0 I do not feel like a failure.
1 I have failed more than I should have.
2 As I look back I see a lot of failures.
3 I feel I am a total failure as a person.

4. Loss of Pleasure
0 I get as much pleasure as I ever did from the things I enjoy.
1 I don't enjoy things as much as I used to.
2 I get very little pleasure from the things I used to enjoy.
3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
0 I don't feel particularly guilty.
1 I feel guilty over many things I have done or should have done.
2 I feel quite guilty most of the time.
3 I feel guilty most of the time.

but I have a friend who helps me deal with this

6. Punishment Feelings
0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect tot be punished.
3 I feel I am being punished.

7. Self-Dislike
0 I feel the same about myself as ever.
1 I have lost confidence in myself.
2 I am disappointed in myself.
3 I dislike myself.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.
1 I sleep somewhat more/less than usual,
2 I sleep a lot more/less than usual.
3 I sleep most of the day.
I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.
1 My appetite is somewhat greater/lesser than usual.
2 My appetite is much greater/lesser than usual.
3 I crave food all the time or I have no appetite at all.

19. Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Scoring
0-13 Normal
14-19 Mild
20-28 Moderate 21
29-63 Severe

Note: I am much more irritated + depressed lately - would get out of having my 5th + 6th treatment if I could. Just the thought of it makes me feel ill. Mostly blue because not getting some of the things accomplished that I had thought I would by now. My house is untidy etc. which makes me feel incompetent, guilty + a failure to boot. Otherwise, all is fine. Thanks

28.05.07

Hi Kate!

Well, more than 3 weeks on from my LAST chemo session I am slowly getting a bit of strength back & ready for tomorrow's introduction to the next part of the adjuvant therapy. I did have two lots of radiation for breast cancer in 1975 and 1988, but this will be very different, I expect. Excuse the scratchy writing, but the pins & needles in my hands take away a lot of control, especially with a pen or a pair of scissors!! My husband has had to patronize the local hairdresser for the first time in about 40 yrs.

I do hope all the ticks I have made on your surveys are of some help to you, although they haven't changed much. The fact that the 4th treatment was actually the final one was a great relief, although the staff at St Andrews were wonderful, I hope I never have to see them again.

Regards

Hi Kate.

In the last 2 weeks I had one particular day I went shopping with a turban on and noticed people looking at me. Usually I wear a wig and no-one notices me, because I look like everyone else with hair that day it suddenly hit me that I had cancer and that it was serious. It was as if I had not realised it before. I wondered if I had been living in denial because I had not had any major emotional episodes since being diagnosed, apart from a bit of shock & disbelief & numbness right at the beginning. ~~what~~ How is a person supposed to feel or react?? What is normal? I imagine each persons experience is as unique as they are.

I know I am susceptible to depression, but I also know I have a lot of love & support & that makes a lot of difference in how I cope.

I may not have taken the cancer diagnosis as seriously as I should have. I may not be in touch with my true feelings. I share my personal feelings with a select few & some stuff only with God. I see my treatment & cancer as an inconvenience rather than a major issue. In times past I had considered suicide* but the reality that I

*(some years ago when I had ~~deep~~ deep depression)

could die makes me want to live. Or at least enjoy a quality of life I took for granted before.

Exercise definitely helps my mood to be more positive. I have never been overly exuberant or the life of the party. Sometimes I choose not to be around other people, there are times when I don't want to get out of bed. There are times when I am disappointed with myself for the way I think feel or act. but I seem to function reasonably well compared to others going through cancer & chemo. I am not devastated by my diagnosis and my life has not changed significantly since May when the process began.

I have chosen to do more things that I wouldn't normally have done eg taken holidays visited family, taken more time out from work. So my priorities have changed somewhat.

I find questionaries very vague, hence my mini story. Kind Regards

[redacted]

FN4.

Name: [redacted] Date: 10/10/07

The Beck Depression Inventory

Read each question carefully, and circle the one statement in each that best describes the way you have been feeling during the past two weeks, including today.

1. Sadness
0 I do not feel sad.
1 I feel sad much of the time
2 I am sad all of the time.
3 I am so sad or unhappy that I can't stand it.

I feel sad sometimes, but not much of the time

2. Pessimism
(0) I am not discouraged about my future.
1 I feel more discouraged about my future than I used to be.
2 I do not expect things to work out for me.
3 I feel my fortune is hopeless and will get only worse.

3. Past Failure
(0) I do not feel like a failure.
1 I have failed more than I should have.
2 As I look back I see a lot of failures.
3 I feel I am a total failure as a person.

4. Loss of Pleasure
(0) I get as much pleasure as I ever did from the things I enjoy.
1 I don't enjoy things as much as I used to.
2 I get very little pleasure from the things I used to enjoy.
3 I can't get any pleasure from the things I used to enjoy.

but I have always struggled with lack of enjoyment when I am low

5. Guilty Feelings
(0) I don't feel particularly guilty.
1 I feel guilty over many things I have done or should have done.
2 I feel quite guilty most of the time.
3 I feel guilty most of the time.

6. Punishment Feelings
(0) I don't feel I am being punished.
1 I feel I may be punished.
2 I expect tot be punished.
3 I feel I am being punished.

7. Self-Dislike
(0) I feel the same about myself as ever.
1 I have lost confidence in myself.
2 I am disappointed in myself.
3 I dislike myself.

I have struggled with self imagine all my life. having cancer has not increased or decreased that struggle.

Version 2, Dated 30.03.07 1 Toowoomba Health Service District
Page 1 of 3

Name: _____ *Date:* 6/9/07

SIDE EFFECTS

What side effects have you experienced in the last two weeks? Please tick as many boxes as required, and return this form with your latest completed copy of the Beck Depression Inventory.

Nausea	☐
Vomiting	☐
Fatigue	☐
Constipation	☐
Diarrhoea	☐
Mouth Ulcers	☑
Low white cell count (Your Oncology nurse will tell you when your white cell count is low)	☐
Hair loss	☑
Bruising or prolonged bleeding (Your Oncology nurse can tell you if your platelets are low)	☐
Low haemoglobin count (Your Oncology nurse will tell you when your haemoglobin is low)	☐
Pins and needles in fingers or toes	☐
Other (please list):_____ _____	☐

Because I have not had any severe reactions to chemo I have not had a big upset in my life. I am sure it would be different if I was continually battling symptoms. Also I have an excellent support group and a wonderful husband. I am extremely Blessed.

Thank you for this information.

18-8-07

Monday.

Hi Kate,

I had treatment on 9-8-07. I also had 2 bags of blood. My blood count was 98. I was paid when it is boarder line at 100. We felt the blood would help boost my system. It did help, I was still quite fatigued for 6-7 days but I felt I recovered quicker. I find it hard to eat because of the awful taste in my mouth. I eat something every 2-3 hrs & try to drink as much water as I can as I find this helps, but it is hard when food all taste terrible. I loose 4-5 kg each after treatment, but I do gain some weight then in the next 2 weeks. All up I have lost 4kg from my 1st weigh in of treatment to my last weigh in of treatment. Regards

Mremoranza

ONLY 1 MORE TO GO!!!!

03. 01.08

Dear Kate,

Thank you for all your kind wishes.

Today is my last chemo HA! I handle the last 15 weeks quiet well I keeped my spirits up there I think it has a lot to do with age I am 64 years old I have two daughters who a very close and supportive I belong to a quilting group at [redacted] I was very open with them and found out that one of the ladies had breast cancer 7 year ago she has been my rock helped me a lot, I know they all went home and checked there breast which was a good thing between my daughters and craft they have been my support team I am very lucky, it must be very hard for the young ones in there 20 and 30 with or with out children my heart goes out to them.

On the 5th Feal I start Radiation at St Andrews ~~Hosp~~ Hospital it goes for 6 weeks.

Kate I want to wish you a very happy 2008.

Your Truly

[redacted]

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.
1 I sleep somewhat more/less than usual,
2 I sleep a lot more/less than usual.
3 I sleep most of the day.
I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.
1 My appetite is somewhat greater/lesser than usual.
2 My appetite is much greater/lesser than usual.
3 I crave food all the time or I have no appetite at all.

19. Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

5

Scoring
0-13 Normal
14-19 Mild
20-28 Moderate
29-63 Severe

I have at times been diagnosed with depression - your questions, mainly the first one seeks to find out what is 'normal' That is: whether treatment has made any change to mental health. I am not severly depressed and the cancer treatment has not added significantly to my ~~the~~ 'normal' level of depression - but it is something I am aware of and manage

Version 1, Dated 18.05.06

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DEAR KATE,

I HAVE MY LAST CHEMO ON 24th JAN. YOU WILL PROBABLY RECEIVE THIS AFTER I HAVE MY CHEMO. I'm DOING OKAY. WILL BE SO PLEASED WHEN MY CHEMO IS FINISHED. MY DAUGHTER KATIE IS GETTING MARRIED ON 9th FEB, SO im LOOKING FORWARD TO THAT.

REGARDS

Friday 7/9/07

Hi Kate,

I had my last chemo treatment on 30/8/07. So happy to be able to say that. I felt such like I normally do. One of the hardest things I found was frustration, to deal with, not being able to do my normal daily activities. It was taking a day longer each time, before I would start to improve.

Regards

through His Holy Spirit, given me His joy, love, peace, hope etc. which are not dependant upon my circumstances, but upon my relationship with God.

As a Christian, I am not kept from all the bad/sad/tragic things in life, but I have a loving Saviour who has promised to be with me at all times ('Never will I leave you or forsake you') + walk with me through those circumstances. He is in control of all things + is working them out for my ultimate good.

Without this relationship, I would probably be answering your inventory differently. If you want to ask me any questions, please feel free to make contact.

Take care - + all the best with your studies.

Yours,

Waitemata
29-05

Kate,

As I've filled in the Depression Inventory over the past few times, I've felt more + more that I'd like to communicate a bit more to you as to why I believe I can answer as I do. I hope this makes sense.

I became a Christian, ie a follower of Jesus Christ, when I was about 18. In doing that I acknowledged my sins (ie my rebellion against God, my determination to live my own selfish ways etc.), asked God to forgive me + I put my trust in Him. Having been forgiven by God, failure, guilt etc is dealt with + I had a new start. God's love is so great that I can never fully comprehend it - but I know Jesus died in my place, for my sins, so all my baggage, my sin has been dealt with. This doesn't mean that I don't fail, but I do know that I am at all times loved + accepted by my heavenly Father.

There have been many tough things in our lives, including the death of our two sons, in their twenties, from an inherited degenerative disease, but throughout this, God has,

"Give thanks to the Lord for he is good, his love endures forever. 1 Chr 16:34

FN 2

Name: [redacted] **Date:** 6/9/07

The Beck Depression Inventory

Read each question carefully, and circle the one statement in each that best describes the way you have been feeling during the past two weeks, including today.

1. Sadness
(0) I do not feel sad.
1 I feel sad much of the time
2 I am sad all of the time.
3 I am so sad or unhappy that I can't stand it.

2. Pessimism
(0) I am not discouraged about my future.
1 I feel more discouraged about my future than I used to be.
2 I do not expect things to work out for me.
3 I feel my fortune is hopeless and will get only worse.

3. Past Failure
0 I do not feel like a failure.
1 I have failed more than I should have.
2 As I look back I see a lot of failures.
3 I feel I am a total failure as a person.

Sometimes I feel like a failure but to fail in one thing does not make me a failure in all things

4. Loss of Pleasure
(0) I get as much pleasure as I ever did from the things I enjoy.
1 I don't enjoy things as much as I used to.
2 I get very little pleasure from the things I used to enjoy.
3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
(0) I don't feel particularly guilty. I have worked through most of my guilt
1 I feel guilty over many things I have done or should have done.
2 I feel quite guilty most of the time.
3 I feel guilty most of the time.

6. Punishment Feelings
(0) I don't feel I am being punished.
1 I feel I may be punished.
2 I expect tot be punished.
3 I feel I am being punished.

7. Self-Dislike
0 I feel the same about myself as ever.
1 I have lost confidence in myself.
2 I am disappointed in myself.
3 I dislike myself.

Different days I have different feelings I feel better about myself now than previously because I have worked through much of what caused my depression years ago.

Friday 15.6.07

Hello Kate,

I thought I would add a short note for you. I had my 2nd Chemo treatment on ~~the~~ 7th June '07. I found it was the same the first time, the effects from Chemo start to effect me on the 3rd day after treatment and then for 5 days I am very crook mainly fatigue & my hips & legs ache a lot. I have a lot of nausea. I have a terrible metalic taste in my mouth, so I have to force myself to eat. After 7 days, I start to feel a bit better each day.

I find it very difficult, mentally handling the treatment & how it effects me. I work very hard ~~at~~ at staying positive. regards.

Hi Kate.

I have been going steadily downhill. I am just tired of the whole treatment and not being able to function properly and wondering if I will ever function properly again.

My oncologist prescribed some anti depressants for me (AVANZA) they make me dizzy + uncoordinated. I wonder if the side effects are worth ~~if~~ the help they are supposed to give. I will perservere until I finish the ones I have now. If the symptoms persist I will try something else. I have booked a counselling session for next week, with a friend but will consider professional help - but as you can imagine sometimes I couldn't be bothered making the effort.

One of the side effects of (AVANZA) (→ initially written on sheet inside the box) is increased "thoughts of harming yourself or committing suicide" I have told my husband + daughter because in times past those thoughts have overtaken me as if there was someone else doing my thinking I have only been taking them for 5 days - but I have to say I have not had much success with anti depressants in the past.

Thank you for making the effort to look at Depression and the way it affects Cancer patients.

I wish you well

8. Self-Criticisms

0 I don't criticize or blame myself more than usual.
1 I am more critical of myself than I used to be.
2 I criticize myself for all of my faults.
3 I blame myself for everything bad that happens.

As before I have worked through these feelings

9. Suicidal Thoughts or Wishes

0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

I used to have but again worked through

10. Crying

0 I don't cry anymore than I used to.
1 I cry more than I used to.
2 I cry over every little thing.
3 I feel like crying, but I can't.

11. Agitation

0 I am no more restless or wound up man usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless that I have to keep moving or doing something.

I get a bit agitated after Treatment but it passes

12. Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

I have tended to be self centred most of my life but I have gained a new perspective since being diagnosed.

13. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than usual.
3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.