Journal of Health, Medicine and Nursing
ISSN 2422-8419 An International Peer-reviewed Journal
Vol.26, 2016

Assessment of Emotional Distress in Cancer Patients Receiving Chemotherapy: A Case Study at the National Centre for Radiotherapy and Nuclear Medicine, Korle-Bu

Naomi Oyoe Ohene-Oti[1*], Ernestina A. Addy[2], Charles Agyemang[3], Verna Vanderpuye[1]

[1]National Centre for Radiotherapy Korle-Bu Teaching Hospital, Korle-Bu

[2]School of Public Health, Kwame Nkrumah University of Science and Technology, Kumasi

[3]Academic Medical Centre, University of Amsterdam Department of Public Health, Amsterdam, The Netherlands

Abstract

Emotional distress is a common symptom experienced by most cancer patients which is difficult to detect and if detected, only a small percentage receives treatment. It becomes worse over the course of treatment and after the end of therapy which negatively impact on the quality of life of the patients. This study looked at the prevalence of emotional distress of cancer patients undergoing chemotherapy and the factors that affects emotional distress. A cross-sectional study was done with 150 participants receiving chemotherapy at the National Centre for Radiotherapy, Korle-Bu. Data were collected using structured self-rated questionnaires. Emotional distress was assessed using the Hospital anxiety and depression scale (HADS) and linked with their clinical characteristics from their medical records. Chi-square was used to examine the factors that affect emotional distress. Out of 150 participants, 89(59.3%) were distressed. More females were more distressed than men. Analysis indicated that the younger the age, low income level, being employed and low educational status affects distress level. Common side effects of chemotherapy experienced by the patients were also related to high levels of distress. Emotional distress is relatively high in cancer patients receiving chemotherapy and it is affected by younger age, low income level, being employed and low educational status. Early detection and intervention of distress during chemotherapy will be easier if health professionals especially the oncology nurse screen patients before and during chemotherapy so as to know those who are vulnerable and need psychological care.

Keywords: cancer, emotional distress, chemotherapy, hospital anxiety and depression scale, tumours

1.0 INTRODUCTION

Distress has been defined as multifactorial unpleasant emotional experience of a psychological (cognitive, behavioural, emotional), social and/or spiritual nature that interferes with the ability to cope with cancer and its treatments. It extends along a continuum, from common normal feelings of vulnerability, sadness, and fears, to problems that are disabling, such as true depression, anxiety, panic, and feeling isolated or in a spiritual crisis (NCCN, 2009). Emotional distress, the sixth vital sign is usually a normal reaction from diagnosis of cancer and /or its treatments. It could start from a feeling of sadness, fear and could be disabling to anxiety and depression (Zainel, et al 2007). Globally, cancer incidence is increasing, and is a major cause of morbidity and mortality. Much of the burden of cancer incidence, morbidity, and mortality will occur in the developing world and cancer is a leading cause of death worldwide and a public health problem. The disease accounted for 7.4 million deaths (or around 13% of all deaths worldwide) in 2004. More than 70% of all cancer deaths occurred in low- and middle-income countries (WHO, 2009).

In Africa the cancer situation is worsening in several countries and many patients remain unscreened, undiagnosed and inadequately treated. According to the World Cancer Report 2008, new cancer cases are expected to rise from 13 million to nearly 27 million annually by 2030. By then, cancer will be killing some 17 million people every year. In the African Region, there were an estimated 667,000 new cases of cancer in 2008 affecting 314,000 males and 353,000 females and causing 518,000 deaths involving 252,000 males and 266,000 females. WHO estimates that without appropriate intervention, 84 million people will die of cancer between 2005 and 2015. In men, the commonest cancer, and the primary cause of cancer-related deaths, is Kaposi Sarcoma, followed by liver and prostate cancers. In women, cervical and breast cancers are the most common forms of cancer and related deaths. Accurate figures are not available as many cancer cases and deaths go unreported. The cancer burden is not just a burden of pain, suffering and grief. It undermines society's prospects for growth, prosperity and hope (Sambo, 2010).

Anecdoctically, data from the cancer registry the Korle-Bu teaching hospital indicates that cancer incidence is on the increase. With a population of more than 20 million, Ghana expects up to 20,000 new cases of cancer therapy each year (Program of Action for Cancer Therapy, PACT- 2006). Most people with the disease, see cancer diagnosis as devastating, making the discovery more stressful than any other disease process (Sawyer, 2000). Therefore, there is a possibility of an increase in the number of cancer patients suffering from emotional distress. Holland (2002) noted that no disease has sustained as strong negative stigma as cancer and that cancer diagnosis leads to a complex set of issues including dealing with physical symptoms from disease and treatments. Developments in surgery, chemotherapy and radiotherapy mean that the survival rate of people diagnosed with cancer has increased (Bottomley, 1997; Paraska, & Bender, 2003). Irrespective of the evolution in the treatments, emotional impact is high. Psychosocial issue affect patients in all stages of cancer and that the increase of cancer incidence means that psychological morbidity will also increase (Holland, 2002).

Current literature suggests that much has been achieved in determining psychological distress in cancer patients (Grassi et al, 2004; Jacobsen et al, 2005; Gil et al, 2005). The prevalence of long-term psychological distress in cancer patients ranges from 20 to 66 % (Brietbat, 2005; Ricker et al, 1989). Anxiety is common at crisis points such as the start of a new treatment or the diagnosis of recurrence or illness progression (Noyes et al, 1998). Investigators have found that 44% of patients with cancer reported some anxiety and 23% reported significant anxiety (Stark et al, 2002 and Schag et al, 1989). Depression has been given much attention in cancer patients as its symptoms can be a normal reaction, a psychiatric disorder or a somatic consequence of cancer or its treatment. The rate of depression in cancer patients is higher than in the general population and at least as high as the rate associated with other serious medical illnesses (Massie, 2004). More than half of all people diagnosed with cancer receive chemotherapy. For millions of people, chemotherapy helps treat their cancer effectively, enabling them to enjoy full, productive lives (Ignoffo and Rosenbaum, 2008*).*

Chemotherapy is a general term for treatments that use chemical agents (drugs) to kill cancer cells. In most solid tumours chemotherapy is used either as adjuvant (giving chemotherapy after a local treatment be it radiotherapy or surgery aiming at cure), neoadjuvant (giving chemotherapy to before surgery or radiotherapy aiming at controlling the cancer) and palliative chemotherapy is given without curative intent, but simply to decrease tumour load and increase life expectancy. In all the three ways the patients' experiences side effects be it mild or severe. Pandey et al (2006) emphasized that chemotherapy is an intense and cyclic treatment and unlike surgery has many side-effects like hair loss, nausea, vomiting, and diarrhoea. Long periods of treatment, repeated hospitalizations and side-effects of chemotherapy beside the knowledge of having cancer can all affect the psyche of these patients. Chemotherapy is considered a systemic treatment and due to this it results in a lot of side effects which may be temporary and uncomfortable including nausea and vomiting, alopecia, diarrhoea, anorexia, stomatitis fatigue, immunosuppression and others which usually may resolve once treatment is complete. These side effect irrespective they can be controlled brings about a lot of psychological effects such as anxiety and depression. Research in this area in Africa for that matter sub-Saharan Africa is limited thus a need for this study to contribute knowledge on the psychological effects on cancer patients for the treatment of cancer. The objective is to assess emotional distress in cancer patients undergoing chemotherapy and to identify factors that affect the level of distress in chemotherapy patients.

2. MATERIALS AND METHODS

2.1 Study Area and Design

The study was carried out in the National Centre for Radiotherapy and Nuclear Medicine of Korle-Bu Teaching Hospital Accra, Ghana. Korle-Bu Teaching Hospital is the largest tertiary health care facility in Ghana situated in the Ablekuma South sub-metro district of the Greater Accra Region. The National Centre for Radiotherapy and Nuclear Medicine was established on 26th of May, 1998. It came into being through a collaborative effort between the Government of Ghana (acting through the Ministry of Health) and the International Atomic Energy Agency (acting through the Ghana Atomic Energy Commission). The centre mainly receives cancer patients from all over the country and from neighbouring countries. The main treatments offered are radiotherapy and chemotherapy mostly to solid tumours. Chemotherapy is mainly on outpatient basis. This setting was chosen because of accessibility, and the assumption that since this centre is the first radiotherapy centre, it would have more patients visiting it under a well organised health team.

2.2 Data collection technique and Tools

Data were collected using structured questionnaires. Emotional distress was assessed using the Hospital Anxiety and Depression Scale (HADS). This scale is selected over others because it is widely used, easy for patients to answer and had being used in both cancer and non-cancer patients. The HADS is a self-rated 14-item questionnaire specifically designed for patients with medical illness. It has depression and anxiety subscales with seven items each. These two subscales correlate highly and HADS scores are frequently analysed as a single scale (Bjelland et al, 2002). Individual items are rated on a four-point scale (0–3), resulting in maximum scores of 21 on each subscale and a total maximum score of 42. The English version of the tool was used (Zigmond and Snaith, 1983). Clinically significant emotional distress is defined as a total HADS score of 15 or above. This cut off score was reported by Ibbotson et al (1994) to be the best for identifying patients likely to have an interview based diagnosis of depressive or anxiety disorder. The reliability, validity and factor structure of the HADS has been established in a variety of clinical populations (Mooreyet al, 1991; Johnston et al, 2000; Mykletun et al, 2001; Smith et al, 2002). The data collection was done by interview with a structured questionnaire having demographic, clinical characteristics and the HADS. Also a separate sheet with a list of common side effects was given to patients to assess their side effects they were experiencing.

The study was carried out from July to December 2011.

2.3 Study Population and Sampling Method

The study population involved patients that had been diagnosed with cancer and were receiving chemotherapy at the oncology department. Inclusion criteria: participants were included if they meet the following pre-defined criteria: 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 paediatric oncology unit for their treatment); able to speak and write the English language or have access to an interpreter (which will be researcher or assistants); have solid tumours; mentally competent. The exclusion criteria were those who were critically ill and found it difficult to communicate.

Data were collected on One Hundred and Fifty (150) patients using structured questionnaires. They were purposively selected from the patients who were undergoing chemotherapy from the National Centre for Radiotherapy. Data from the unit indicated that within a week between 30 to 40 patients received chemotherapy.

2.6 Pre –testing and Data Handling

Two (2) field assistants, recruited for the data collection exercise, underwent a 3-day training program on data collection and handling. Since the interview was largely conducted in the local languages, an agreed translation of the various questions, concepts and common terminology in the local languages was arrived at to ensure uniformity. In order to ensure that questions in the structured questionnaire are meaningful and easily understand by respondents, pre-testing was conducted at the Haematology department of the Korle-Bu Teaching Hospital and necessary amendments were made to improve the reliability and validity of the questionnaire. Filled questionnaires was numbered and checked for completeness, clarity and consistency at the end of each interview before storage. After data entry, backups were made on external hard drives and compact discs (CD).

2.7 Ethical consideration and Quality Control

An Institutional Review Board (IRB), the Committee for Human Research, Publications and Ethics (CHRPE) of the KNUST/ KATH, provided ethical clearance for the study. Permission was also sought from the relevant authorities at the hospital in which the study was carried out. Verbal and written informed consent for the study was obtained from the patients. The consent form was translated into the local language for those who could not read in English. The potential risks and benefits of the survey were explained to the participants and they were given the option to leave anytime they did not feel like being part of the study.

2.8 Data analysis

Data were analysed using Statistical Package for Social Scientist (SPSS) version 16.0. Descriptive statistics were used to summarise data into frequencies tables, figures, cross tabulations, and percentages. Non-parametric tests (Pearson's chi-square) were performed to enable inferences to be drawn and to test the significance of some of the variables.

3. RESULTS AND DISCUSSION

3.1 Background/Clinical characteristics

Table 1 shows the background/clinical characteristics of the respondents. Participants were mostly women, making an 83% of the total population. The age ranged from 25 to 85 years with 43% falling in the middle age class (46-65). More than half of the participants were married, 11% were divorced, 18% were single and 9% were widowed. About 66% of the participants had had some sort of education up to the secondary level while 29% had tertiary education and so the researcher was very convinced that they truly understood the processes that the treatment was taking them through and could easily express their feelings. 63% of the participants were employed while 20% and 17% were unemployed and retired respectively. Some 57% of the participants earned below GH C 500 with just 19% earning above GHC 1000. Most of the participants were in the third stage of the disease (52%), 24% and 23% were in the second and forth stages respectively with just 1% of the population in the first stage of the disease. 75% of the participants were in the curative stage of the disease while 25% were in the palliative stage. 63% of the participants had breast cancer; cervix, ovary, prostrate and H&N (Head and Neck) cancers accounted for the remaining 37%, implying that cancers of the breast are more prevalent.

3.2 Total HADS scores

Table 2 shows the total HADS scores (distress) with anxiety and depression sub scores of participants. According to the scale, over half of the study participants (59%) were distressed. 38% of the participants had no anxiety, 25% of the participants were on the borderline and 37% had anxiety. With the depression, 24% of the participants were depressed and 29% were on the borderline of being depressed. Fig. 1 also shows a pictorial view of the total HADS scores. There have been a lot of studies on emotional distress and cancer. Some comparisons can be made with some studies. In almost all the studies conducted in various regions and hospitals, no matter the instrument used, found patients to be suffering from distress. Zainal et al (2007) in a study used the HADS and found out that the comparing prevalence rates for distress was 51% and 32% were either anxious or depressed. Zabora et al, (2001) in a study from the USA using the Brief Symptom Inventory, found the prevalence of distress as 35%, 24% for anxiety and 19% for depression. A survey done at four Sydney Hospitals in Australia on oncology patients using the HADS, found out that 31% were distress, 12% had anxiety and 7% had depression (Pascoe et al, 2000).Carlson et al, 2004 in their study using a Brief Symptom Inventory-18 (BSI-18) and a common problems checklist found out that almost 40% of the patients were distressed, with 36% and 30% having depression and anxiety respectively. In South Africa, Berard et al, (1998) in their research using the depression scale in HADS found out that the prevalence of depression was 14%.

Norton et al (2004) looking at ovarian cancers undergoing chemotherapy, came out that approximately one –fifth of the patients were moderately or severely distressed. Strong et al (2007) in a study in Edinburgh, UK using HADS found out that the prevalence of distress was 22% and also Senf et al (2010) in their study of acute cancer patients found that 56.3% were distressed.

Persons with cancer will find that their feelings of distress increase or decrease at different times. A patient may become more anxious or depressed as cancer spreads or treatment becomes more intense. The level of anxiety or depression experienced by one person with cancer may differ from that experienced by another person. Most patients are able to reduce their distress by learning more about their cancer and the treatment they can expect to receive. For some patients, particularly those who have experienced episodes of intense distress before their cancer diagnosis, feelings of anxiety/depression may become overwhelming and interfere with cancer treatment (NCI, 2009). Investigators have found that 44% of patients with cancer reported some anxiety; 23% reported significant anxiety (Stark et al, 2002 and Schag et al, 1989). The rate of depression in cancer patients is higher than in the general population and at least as high as the rate associated with other serious medical illnesses (Massie, 2004). Newell et al (1999) in a study of cancer patients, used the HADS which showed that 25% of participants had clinical levels of anxiety and depression. Bottomley et al (1997) in their systematic review concluded that depression was common with a cancer diagnosis.

At the Korle bu Teaching hospital and in our community, there are no or little support groups and patients disintegrate slowly as a result of the stigma attached to cancer leading to an increase patient’s distress level. Holland (2002) noted that no disease has sustained as strong negative stigma as cancer and that cancer diagnosis leads to a complex set of issues including dealing with physical symptoms from disease and treatments.

Quite a number of cancer patients suffer distress, which builds into mental disorders and psychosocial crises. Zabora et al, (2001), found out in their study that early detection and subsequently intervention was very important when cancer is concerned to avoid psychosocial crises like this study suggests. According to Keller et al, (2004) there is a remarkable proportion of distressed patients who remained unrecognized by the medical staff, only systematic screening of patients upon admission allows timely support to those who are most in need. Pascoe et al, (2000) suggested in their study the importance of support services for distressed cancer patients. However, a majority of affected patients were not accessing counselling or psychological treatment in areas that offered them. However, in Ghana, these services are rare. A systematic screening of oncology patients at hospital entry might enable more immediate identification of clinically affected patients, who could then be referred for further testing or psychological treatment.

3.3 Side Effects of Chemotherapy and Emotional Distress

Side effects emerge as a result of the treatment (chemotherapy) that participants go through. There are quite a number of them. Table 6, 7 and 8 shows most of the side effects that participants go through. The table indicates that most of the participants did not experience the minor side effects that came with the treatment. Those who experienced any of the minor side effects were negligible. For instance only 4% had swollen legs with fluid and pain in the joints while 9% had pounding headaches that lasted 15 hours and hot flushes during the day. Looking at table 4.3.1, it shows the ten most common side effects experienced by the participants. Hair loss seem to be the most experienced physical effect of chemotherapy. 71% of participant loss their hair, 62% s had their skin colour changed, 60 % had constipation and 59% had nausea as a result of treatment. Fig. 2 also shows prevalence of the common side effects. Chemotherapy is considered a systemic treatment and due to this it results in a lot of side effects, which may be temporary and uncomfortable including nausea and vomiting, alopecia, diarrhoea, anorexia, stomatitis fatigue, immunosuppression and others which usually may resolve once treatment is complete. These side effects bring about a lot of psychological effects such as anxiety and depression. Pandey et al (2006) emphasized that chemotherapy is an intense and cyclic treatment and unlike surgery has many side-effects like hair loss, nausea, vomiting, and diarrhoea. Long periods of treatment, repeated hospitalizations and side-effects of chemotherapy beside the knowledge of having cancer can all affect the psyche of these patients.

In our study, the top ten side effects were considered with the level of distress among patients. It was noted that hair loss, change in skin colour, nausea, ,vomiting, lack of skin colour, night sweats/hot flushes, aches in jaw and diarrhoea were the ten most common experienced side effects. Most of them contributed significantly to high distress levels. Similarly there had been a lot of existing research that emphasizes the effect of chemotherapy physical effects on patients' distress level. Love et al (2006) in their study found out that nausea, hair loss, and tiredness were each experienced by more than 80% of patients. They also found out that the side effects of chemotherapy were a good predictor of emotional distress. Brinkley (1983) in a systematic review found out that those physical effects of the treatment: nausea, vomiting, diarrhoea, general debility, and alopecia; loss of taste, appetite, and sexual function all contribute to feelings of helplessness and lack of control. Another study found that the number of side effects experienced is positively correlated to emotional distress and that those who experienced nausea during treatment was reported to have higher distress levels. (Nerenz et al, 1982)

The results from this study revealed that cancer patients undergoing chemotherapy do experience distress and it showed that there is a relationship between emotional distress and side effects of chemotherapy.

3.4. Factors affecting emotional Distress

3.4.1 Background /clinical characteristics compared with HAD Scores

Table 7 and 8 show the relationship between demographic variables and the anxiety sub score. Sex of participants was used to determine if a particular sex experienced more anxiety than the other. In each of the categories, there were more females than males. The age of participants showed that persons in the 25-45 age bracket were more anxious than any of the other age groups though those in the 46-65 age group followed without any great differences. The table shows that those aged between 66 and 85 were less anxious in all the categories. Those that were married experienced anxiety than any of the other groups – single, divorced, separated and widow/widower. However, married people once again made a chunk of the borderline and abnormal group in anxiety sub scale. Looking at the marital status, the differences statistically was of a borderline significance. Participants who were employed were highly anxious. Besides the fact that 33% of participants were in the normal line, 38.5% persons were on the abnormal line, while 28.6% were on the borderline. Compared with those who are unemployed or retired, 46.4% persons were both on the normal and abnormal line while just 32% of people were anxious.

The income levels of participants significantly contributed to anxiety of participants (p-value=0.021). Those that earned less than 500 cedis tended to experience more anxiety that those that earned more than 500 cedis. Only a small number of those who earned more than GH1000 had experienced anxiety.

3.4.2 Depression

The low level of education (p-value=0.005) and low income levels (p-value=0.004) were significantly related to depression of participants. Married people were more depressed than those who were not married or widowed, with 26.7% and 27.7% being on the borderline and depression respectively. Those that were employed were highly depressed than those who were not, however the highest number (47.3%) of those that were normal were also in the employed group. With income levels those who were receiving an income below GH C500 were more depressed. With the educational status, those who had up to primary/elementary education were more depressed than those in the secondary and tertiary category. Table 9 shows the relationship between demographic variables and depression sub score.

3.4.3 Emotional distress status

Table 4.4.2 and Fig. 4.3.I & II shows the relationship between distress and demographic characteristics. A total score of both anxiety and depression sub scores were also looked at. A mark less than 15 indicated that the participant was not distressed and a mark greater than 15 showed that the participant was distressed. Those in the age 25-45 group were more distressed than the other age groups (p-value=0.05). In the employment category, those who were employed were more distressed than those who were not employed (p-value<0.026). Participants who earned less than GH500 were also seen to be more distressed than those who earn more than GH500 (p-value=0.003).With the educational category, those who never had education (71%) and those with primary /elementary education (79.2%) were more distressed (p-value=0.005) than those in the other groups. This means that those who were more distressed lack or had little information about their disease and its treatments. To further investigate the distress level of participants, their place of residence was assessed and it was realised that urban dwellers were more distressed than rural residents.

Table 4.4.3 shows the relationship between clinical variables and distress. Breast cancer patients were more distressed than any of the participants with other forms of cancers. Though other cancers had some level of distressed out of the 94 participants who had breast cancer, 57 (60.6%) were distressed. cervical, ovary and head & neck cancer patients also showed some level of distress. Those participants who were in the curative phase of the treatment were more distressed than those in the palliative stage. Those having stage three diseases were more distressed than those in the other stages. Also those having cycle 5 and above were more distressed. The clinical variables did not significantly contribute to distress of participants

Table 4.4.4 showing the relationship between side effect of chemotherapy and distress level. Participants experienced a lot of side effects from the chemotherapy. The ten most common side effects were assessed in relation to distress. It was noted that some of the participants who had these physical effects had some form of distress. Hair loss being the highest; out of 101 participants who had hair loss, 67% of them were distressed. Chi-square analysis showed that hair loss (p-value=0.001), nausea (p-value=0.051), lack of sleep (p- value=0.013), night sweats (p-value=0.005), hot flushes and change sleep patterns and diarrhoea (p-value= 0.031) significantly related to distress levels of participants. Aching jaw was at a borderline significance. Also a chart (fig.4.4) shows a pictorial presentation of the relationship between the side effects of chemotherapy and distress status of participants.

There are several factors that affect emotional distress among cancer patients. The disease condition on one hand and the treatment regimen on the other hand. Strong et al (2007 in their research, found out that there were an association with age < 65, female gender, cancer type and extent of disease. Zabora et al (2001) also found younger age and lower income to be associated with higher levels of distress. Also Pascoe et al (2000) found that gender, aged <65 years and having advanced disease were associated with distress, but they all did not find an association with employment status and level of education. Also, Senf et al (2010) in their study of acute cancer patients found out that the younger age, those with metastasis and poor functional status were distressed.

In our study it was seen that younger age (p=0.052), employment status (p=0.026), income level (p=0.003) and educational level (p=0.005) were all significantly related to the distress status of the participants but there was no relationship with gender, cancer type and stage of disease. With age those below age 45 were seen to be more distressed. Those at this age may have a lot of ambitions and responsibilities. The fear of the unknown plays a big part in their lives. Those who were employed were more distressed. This could be due to the fact that they had to combine their work with the scheduled treatments or whether they could still have their job back if people know about their disease. This may put a lot of stress on the cancer patients. Cancer drugs are very expensive; low income levels means inability to afford which may also increase the distress levels of participants. The complex nature of cancer and it management is not easy to understand and assimilate. This could mean that those with no or little education may have some difficulties which may increase their distress levels.

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. In our study we also found that more women (86.5%) were distressed (i.e. anxiety or depression) than men (13.5%). Friedman et al (1994) study of the relationship between anxiety and the socio-demographic variables in adult cancer patients indicates that females and patients who reported more communication problems with friends or relatives reported more anxiety and had more chemotherapy-related problems. Comparison of specific areas of adjustment suggests that women experience more difficulties in relation to body image and concerns of an emotional nature, while men are more likely to report practical difficulties with physical symptoms or impairment of functioning (Liang et al, 1990; Noyes et al, 1990).

6.0 CONCLUSION

Emotional distress is relatively high in cancer patients receiving chemotherapy and it is affected by a group of factors, patient's demographic and clinical characteristics. Of all these early identification and treatment of psychological problems has the probability to affect psychological and physical health outcomes. Early identification and intervention will be easier if health professionals predict a more vulnerable point during the treatment for their patient to develop distress and act accordingly using a multi-disciplinary approach. Good psychological support and the management of chemotherapy side effects, patients assessment and good rapport between patients and practitioner is necessary to enhancing continuity and quality of care delivered to cancer patients. This study showed that experience of emotional distress has negative impact on patient treatment and quality of life. They also have poorer treatment compliance and place a greater strain on the health care system. Results indicated that most of the cancer patients were distressed. This study, using HADS, identifies the distress levels of cancer patients undergoing chemotherapy is relatively high as 59% of the total participants were distressed. The study found out that the younger age, employment status, low income levels and low level of education significantly related to the distress level of patients. The study also found out that side effects from chemotherapy experienced by patients also contributed to the distress level of the participants.

With respect to the advancement in cancer care, little is done in relation to psychological morbidities. The study emphasized the prevalence of emotional distress in cancer patients undergoing chemotherapy and the need to provide services which will take care of this.

REFERENCES

Berard, R., Boermeester, F and Viljoen,G. (1998) Depressive disorders in an out-patient oncology setting: prevalence, assessment, and management. *Psycho-oncology* 7:112–120

Biritwum, R.B., Gulaid, J. and Amaning, A.O.(2000) Pattern of diseases or conditions leading to hospitalisation at the Korle Bu Teaching hospital in 1996. *Ghana Medical Journal* 2000; 34(4):197–205.

Bjelland, I., Dahl, A., Haug, T. and Necklemann, D. (2002) The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *Journal of Psychosomatic Research* 52: 69–77.

Bottomley, A .(1997) Psychosocial problems in cancer care: A brief review of common problems *Journal of Psychiatric and Mental Health Nursing* 4; 323-331

Breitbart, W. (1995). Identifying patients at risk or, and treatment of major psychiatric complications of cancer. *Support Care Cancer* 3 (1): 45-60.

Brinkley, D. (1983) Emotional distress during cancer chemotherapy. *British Medical Journal* 286(6366):663-664.

Burgess, C., Cornelius, V., Love, S., Graham, J., Richards, M., & Ramirez, A. (2005).

Depression and anxiety in women with early breast cancer: five year observational cohort study. *British Medical Journal, 330*(7493), 702.

Carlson, L.E., Angen, M., Cullum ,J. et al. (2004). High levels of untreated distress and fatigue in cancer patients. *British Journal of Cancer* 90(12): 2297–2304.

Carlson, L. and Bultz, B. (2003) Cancer distress screening: needs, models and methods. *Journal of Psychosomatics* Res 55: 403–409.

Cleland, C.S, Mendoza, T.R , Wang, X.S et al (2000) Assessing symptom distress in cancer patients: the M.D. Anderson Symptom. Inventory. *Cancer* 89:1634–1646.

Cohn, K.H. (1982) Chemotherapy from an insider's perspective. *Lancet.* 1; 1(8279):1006–1009

Cowley, L., Heyman, B., Stanton, M. and Milner, S. (2000) How women receiving adjuvant chemotherapy for breast cancer cope with their treatment: A risk management perspective *Journal of Advanced Nursing* 31(2); 314-321.

Dahlquist, L.M., Czyzewski, D.I., Copeland, K.G., et al(1993) Parents of children newly diagnosed with cancer: anxiety, coping, and marital distress. *Journal of Pediatric Psychology* 18 (3): 365-376.

Davis-Ali, S.H., Chesler, M.A. and Chesney, B.K.(1993) Recognizing cancer as a family disease: worries and support reported by patients and spouses. *Social Work Health Care* 19 (2): 45-65.

Derogatis, L. Morrow, G. and Fetting, J (1983) The prevalence of psychiatric disorders among cancer patients *Journal of the American Medical Association* 249; 751-757.

Devlen, J., Maguire, P., Phillips, P., et al (1987) Psychological problems associated with diagnosis and treatment of lymphomas: I. Retrospective study. *British Medical Journal*, 295: 953-954.

Fallowfield, L. J. (1990) Psychosocial adjustment after treatment for early breast cancer. *Oncology*. 4, 89-97.

Fallowfield, L., Ratcliffe, D., Jenkins, V. and Saul, J. (2001) Psychiatric morbidity and its recognition by doctors in patients with cancer. *British Journal of Cancer* 84: 1011–1015

Friedman, L.C., Lehane, D., Webb, J.A., et al.(1994) Anxiety in medical situations and chemotherapy-related problems among cancer patients. *Journal of Cancer Education* 9 (1): 37-41.

Gram, I.T. and Slenker, S.E.(1992) Cancer anxiety and attitudes toward mammography among screening attenders, non-attenders, and women never invited. *American Journal of Public Health* 82 (2): 249-251.

Gil, F., Grassi,L., Travado, L., Tomamichel, M. and Gonzalez, J.R,(2005)Southern European Psycho-Oncology Study Group. Use of distress thermometers to measure psychosocial morbidity among southern European cancer patients. *Support Care Cancer* 13: 600–606.

Grassi L, Travado L, Moncayo FL, Sabato, S. and Rossi, E.(2004) SEPOS Group. Psychosocial morbidity and its correlates in cancer patients of the Mediterranean area: findings from the Southern European Psycho-Oncology Study. *Journal of Affective Discord* 83: 243–248.

Gorman, L.M.(2006) The Psychosocial Impact of Cancer on the Individual, Family and Society. In Carrol-Johnson,Gorman and Bush(Ed) *Psychosocial Nursing Care Along the Cancer Continuum(*2nd ed.,pp.3-4).Oncology Nursing Society.

Harrison, J. and Maquire, P. (1994) Predictors of psychiatric morbidity in cancer patients. *British Journal of Psychiatry* 165:593-598.

Henriksson, M.M., Isometsä, E.T. and Hietanen, P.S., et al. (1995) Mental disorders in cancer suicides. *Journal of Affective Disorder* 36 (1-2): 11-20.

Holland, J.C(1999). Update: NCCN practice guidelines for the management of psychosocial distress. *Oncology (Huntingt*); 13:459–507.

Holland, J.C, (2002).History of psychocial Oncology: Overcoming attitudinal and conceptual barriers.*Pychosomatic Medicine*, 64,206-221.

Ibbotson, T., Maguire, P., Selby ,T., Priestman, T. and Wallace L.(1994) Screening for anxiety and depression in cancer patients: the effects of disease and treatment. *European Journal of Cancer.* **30 ,**37–40

Ignoffo ,R.J. and Rosenbaum, E.H. (2008). What happens in chemotherapy? In: Ko AH, Dollinger, M. and Rosenbaum ,E.H., eds. *Everyone's Guide to Cancer Therapy*, Revised 5th Edition. Kansas City, MS: Andrew McMeel Publishing.

Jacobsen, P.B., Donovan KA, Trask PC et al (2005*)*. Screening for psychologic distress in ambulatory cancer patients. *Cancer* 103 (7): 1494–1502.

Johnston, M., Pollard, B. and Hennessey, P. (2000) Construct validation of the hospital anxiety and depression scale with clinical populations. *Journal of Psychosomatic Research* 48: 579–584.

Keller, U. and Henrich, G. (1999) Illness related distress; Does it mean the same for man and women? Gender aspects in cancer patients' distress and adjustment. *Acta Oncology* 38:747-755.

Keller, M., Sommerfeldt, S., Fischer ,C., Knight, L., Riesbeck, M., Löwe, B., Herfarth, C. and Lehnert, T.(2004) Recognition of distress and psychiatric morbidity in cancer patients: a multi-method approach.*Annals of Oncology* Aug;15(8):1243-1249.

Kissane, D., Grabsch, B., Love, A., Clarke, D., Bloch, S. and Smith, G. (2004) Psychiatric disorder in women with early stage and advanced breast cancer: A comparative analysis *Australian and New Zealand Journal of Psychiatry* 38; 320-326.

Leiber, L., Plumb, M.M., Gerstenzang, M.L. and Holland, J.(1976) The communication of affection between cancer patients and their spouses. *Psychosomatic Medicine.* 38(6):379–389.

Liang, L. P., Dunn, S. M., Gorman, A. and Stuart-Harris, R. (1990) Identifying priorities of psychosocial need in cancer patients. British Journal of cancer, 62(6), 1000-1003.

Love, R. R., Leventhal, H., Easterling, D. V. and Nerenz, D. R. (2006) Side effects and emotional distress during cancer chemotherapy. *Cancer*; 63(3), Pages 604 – 612.

MacFarlane, M.E. and Sony, S.D. (1992) Women, breast lump discovery, and associated stress. *Health Care Women International* 13 (1): 23-32.

Mages, N. and Mendelsohn, C. (1979) Effects of cancer on patients' lives: a psychological approach. In: Hund, A, Slone, G. and Cohen F, editors. *Health psychology*. San Francisco: Jossey-Bass . p. 255–2584.

Maguire, P. (1994) ABC of breast diseases. Psychological aspects. *British Medical Journal* 309(6969) 1649-1652.

Maguire, G.P., Tait, A. & Brooke, M. (1980). Psychiatric morbidity and physical toxicity associated with adjuvant chemotherapy after mastectomy. *British Medical Journal* 281, 1179.

Massie, M.J. (2004) Prevalence of Depression in Patients With Cancer. *Journal of National Cancer Institute Monograph* (32): 57-71.

Mehnert, A. (2004). Prevalence of post-traumatic stress disorder, anxiety and depression in a representative sample of breast cancer patients. *Psychooncology*; 13(supplement):S62

Mehnert, A. and Koch, U.(2008) Psychological comorbidity and health-related quality of life and its association with awareness, utilization, and need for psychosocial support in a cancer register-based sample of long-term breast cancer survivors *Journal of Psychosomatic Research* 64, (4), Pages 383-391.

Miaskowski, C. (2004). Gender differences in pain, fatigue, and depression in patients with cancer. *Journal of National Cancer Institute Monogram* (32): 139-43.

Miranda, C. De Resende, C. Melo, C. Costa, A. and Friedman, H. (2002) Depression before and after uterine cervix and breast cancer neoadjuvant chemotherapy *.International Journal of Gynaecological Cancer* 12(6); 773-777.

Molassiotis, A., Akkers, O., Milligan, D., Goldman, J. and Boughton, B. 1996 Psychological adaptation and symptom distress in bone marrow transplant recipients. *Psycho-oncology* 5; 9-22.

Montazri, A., Harirchi, I., Vahdami, M., Khaleghi, F., Jarvandi, S., Ebrahimi, M. and Hajimahmoodi, M. (2000) Anxiety and depression in Iranian breast cancer patients before and after diagnosis *European Journal of Cancer Care* 9; 151-157.

Moorey, S., Greer, S., Watson, M., Gorman,C.,Rowden,L.,Tunmore,R.,Rorbertson,B. and Bliss, J. (1991) The factor structure and factor stability of the hospital anxiety and depression scale in patients with cancer. British Journal of Psychiatry, 158: 255–259.

Mykletun, A., Stordal. E. and Dahl, A. (2001) Hospital Anxiety and Depression (HAD) scale: factor structure, item analyses and internal consistency in a large population. *British Journal of Psychiatry* 179: 540–544.

National Cancer Institute (2009) Adjustment to Cancer: Anxiety and Distress PDQ URL health Professionalversionhttp://www.cancer.gov/cancertopics/pdq/supportivecare/adjustment/healthprofessional/page1(retrieved on 2nd December, 2009)

National Cancer Institute (2009) Depression health professional version PDQ URL.http://www.cancer.gov/cancertopics/pdq/supportivecare/depression/healthprofessional/page1(retrieved on 2nd December, 2009).

NCCN (2009) Practice guidelines for the management of psychosocial distress. *National Comprehensive Cancer Network. Oncology (Huntington)* 13 (5A): 113-47.

Nerenz, D.R., Leventhal, H. and Love, R.R. (1982) Factors Contributing to Emotional Distress in Cancer Chemotherapy. *Cancer,* 50(5):1020-1027.

Newell, Sanson-Fisher, Girgis, Ackland (1999) The physical and psycho-social experiences of patients attending an outpatient medical oncology department: a cross sectional study. *European Journal of Cancer Care,* 8 (2) 73.

Norton, T., Manne, S., Rubin ,S. et al,(2004) Prevalence of psychological distress among women with ovarian cancer. *Journal of Clinical Oncology*, 22(5): pp. 919-926.

Noyes, S.R., Holt, C.S. and Massie. M.J. (1998). Anxiety disorders. In: JC Holland (ed.). *Psycho-Oncology*. Oxford University Press, New York ; 548–563.

Pandey, M., Sarita, G. P.,Nankumama, D. et al(2006) Distress, anxiety, and depression in cancer patients undergoing chemotherapy. *World Journal of Surgical Oncology* 4:68.

Paraska, K. and Bender, C.M. (2003) Cognitive dysfunction following adjuvant chemotherapy for breast cancer: Two case studies. *Oncology Nurse Forum* 30:473-478.

Pascoe, S., Edelman, S. and Kidman, A. (2000) Prevalence of psychological distress and use of support services by cancer patients at Sydney Hospitals. *Australian and New Zealand Journal of Psychiatry* 34: 785–791.

Payne, S.A. (1992) A study of quality of life in cancer patients receiving palliative chemotherapy. *Social Science of Medicine* 35 (12): 1505-1509.

Peveler, R., Carson. A. and Rodin. G., (2002) Depression in medical patients *British Medical Journal* 325(7356) 149-152.

Program of Action for Cancer Therapy-Pact. (2006).Grant raising prospectus.Retrieved10th February, 2010, from http://www-nawb.iaea.org/pact.

Rebalance Focus Action Group (2005) A position paper: Screening key indicators in cancer patients—Pain as a 5th vital sign and emotional distress as a 6th vital sign. *Canadian Strategy for Cancer Control Bulletin* 7:4, supplementary).

Raison, C. and Miller, A. (2003) Depression in Cancer: new developments regarding diagnosis and treatment. *Biological Psychiatry* 54:283-294

Razavi, D. and Stiefel, F. (1994): Common psychiatric disorders in cancer patients. I. Adjustment disorders and depressive disorders. *Support Care Cancer* 2 (4): 223-232.

Rieker, P.P., Fitzgerald, E.M., Kalish, L.A. et al (1989*).* Psychological factors, curative therapies and behavioural outcomes: a comparison of testis cancer survivors and a control group of healthy men. *Cancer* 64: 2399–2407.

Sægrov, S. and Halding, A. (2004) What is it like living with the diagnosis of cancer? *European Journal of Cancer Care* 13; 145-153.

Sambo, L.G .(2010), Message of the WHO Regional Director for Africa on the occasion of World Cancer Day.

Sawyer, H. (2000).Meeting the information needs of cancer patients. *Professional Nurse* 15: 244-7.

Schag, C.A and Heinrich, R.L. (1989) Anxiety in medical situations: adult cancer patients. *Journal of Clinical Psychology* 45 (1): 20-27.

Senf .B., Brandt.H., Dignass.A., Kleinschmidt.R., and Kaiser.J.(2010) Psychosocial distress in acute cancer patients assessed with an expert rating scale. *Supportive Care in Cancer* 18(8):967.

Silberfarb, P. ,Philbert, D. and Levine, P. (1987) Psychosocial aspects of neoplastic disease Π affective and cognitive effects of chemotherapy in cancer patients *American Journal of Psychiatry* 137*;* 597-601.

Smith, A., Selby,P., Velikova, G., Stark, D., Wright, E., Gould, A. and Cull, A. (2002) Factor analysis of the Hospital Anxiety and Depression Scale from a large cancer population. *Psychology and Psychotherapy: theory, Research and Practice* 75: 165–176.

Stark, D., Kiely, M., Smith, A., Velikova, G., House, A. and Selby, P. (2002) Anxiety disorders in cancer patients: their nature, associations, and relation to quality of life. Journal of Clinical Oncology 20 (14): 3137-48.

Stefanek, M., Derogatis, L. and Shaw, A.(1987) Psychological distress among oncology patients. *Psychosomatics.* **28**:530–538

Strong, V., Waters, R., Hibberd, Rush, C. R., Cargill A., Storey, D., Walker, J., Wall, L., Fallon, M and Sharpe, M. (2007) Emotional distress in cancer patients: the Edinburgh Cancer Centre symptom study. *British Journal of Cancer.* 96(6): 868–874.

Thomas, B., Mohan ,V.N. , Thomas, I. and Pandey, M.(2010) Development of a distress inventory for cancer: preliminary results. *Journal of Postgraduate Medicine* 48:16-20.

Thorton,L.(2008) Taxanes May Increase Risk for Significant Psychological Symptoms. *Cancer* 113: 638-647.

Wiredu, E.K. and Armah, H.B. (2006) Cancer mortality patterns in Ghana: a 10-year review of autopsies and hospital mortality. *Biomedical Central Public Health* 6:159.

Wilson, K.G., Chochinov, H.M, Skirko, M.G., et al.(2007) Depression and anxiety disorders in palliative cancer care. *Journal of Pain Symptom Management* 33 (2): 118-29.

Worden, J. W. & Weisman, A. D. (1984) Preventative psychosocial intervention with newly diagnosed cancer patients. *General Hospital Psychiatry* 6, 243-249.

World health Organisation. (2009).Chronic diseases and health promotion.Retreived 20th November, 2009 from http://www.who.int/chp/en

Zabora, J., Brintzenhofeszoc, K., Curbow, B., Hooker, C. and Piantadosi, S. (2001) The prevalence of distress by cancer site. *Psycho-Oncology* 10: 19–28.

Zainal, .N., Hui, K., Hang, T. and Bustam, A .(2007) Prevalence of distress in cancer patients undergoing chemotherapy. *Asian-Pacific Journal of Clinical Oncology* 3(4):219-223.

Zigmond, A. and Snaith, R. (1983) The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavia* 67: 361–37.

TABLES

Table 1: Background (Demographic/clinical) characteristics

Demographic/clinical Variables	**Frequency, N=150**	**Percentages**
Sex		
Male	25	17
Female	125	83
Age		
25-45	68	45
46-65	64	43
66-85	18	12
Marital status		
Single	18	12
Married	101	68
Divorced	16	11
Separated	5	3
Widow/widower	9	6
Educational level		
None	7	5
Primary/elementary	48	33
Secondary	49	33
Tertiary	43	29
Employment status		
Employed	91	63
Unemployed	28	20
Retired	25	17
Expected income		
Below 500	71	57
501-1000	30	24
Above 1000	23	19
Residence of patients		
Urban	100	83
Rural	21	17
Stage of disease		
Stage 1	2	1
Stage 2	35	24
Stage 3	78	52
Stage 4	34	23
Phase of treatment		
Curative	110	75
Palliative	37	25
Tumour site		
Breast	94	63
Cervix	10	7
Prostrate	3	2
Ovary	13	9
H&N	11	7
Others	18	12
Phase of chemotherapy		
Cycle 1-2	22	17
Cycle 3-4	29	23
Cycle 5 and above	77	60
Total	**150**	**100**

Table 2: The HADS scores

Variable	Scale	Cut-off Criteria	Frequency	Percentage
Total HADS	Normal	<15	61	41%
	Abnormal (Distress)	≥ 15	89	59%
Anxiety Sub-Scale	Normal	0-7	58	38%
	Borderline	8 - 10	37	25%
	Abnormal(Anxiety)	11 -21	55	37%
Depression Sub-Scale	Normal	0-7	71	47%
	Borderline	8 – 10	43	29%
	Abnormal (Depression)	11 - 21	36	24%

Table 3: Ten most common side effects of chemotherapy

Side Effects	Frequency, N=150	Percentage (%)
Hair loss		
No	44	29
Yes	106	71
Change of skin colour		
No	57	38
Yes	93	62
Constipation		
No	60	40
Yes	90	60
Nausea		
No	62	41
Yes	88	59
Lack of sleep		
No	85	57
Yes	65	43
Dizziness(gradually wears off after a week or so)		
No	90	60
Yes	60	40
Vomiting		
No	94	63
Yes	56	37
Night sweats, hot flushes and change sleep patterns		
No	101	67
Yes	49	33
Aching jaw		
No	101	68
Yes	48	32
Diarrhoea		
No	106	71
Yes	44	29

Table 4: Relationship between Demographic Variables and Anxiety sub score

VARIABLES	Hospital Anxiety			X^2	P-Value
	0-7	8-10	11-21		
	Normal	Borderline	Abnormal		
Sex					
Male	13 (52%)	7 (28%)	5 (20%)	3.787	0.151
Female	45 (36%)	30 (24%)	50 (40%)		
Age					
25-45	23 (33.8%)	17 (25%)	28 (41.2%)	9.966	0.41
46-65	22 (34.4%)	18 (28.1%)	24 (37.5%)		
66-85	13 (72.2%)	2 (11.1%)	3 (16.7%)		
Marital status					
Single	7 (38.9%)	3 (16.7%)	8 (44.4%)	14	0.082
Married	36 (38.9%)	24 (23.8%)	41 (40.6%)		
Divorced	6 (35.6%)	7 (43.8%)	3 (18.8%)		
Separated	5 (100.0%)	0 (0%)	0 (0%)		
Window	4 (44.4%)	3 (33.3%)	2 (22.2%)		
Employment status					
Employed	30 (33.0%)	26 (28.6%)	35 (38.5%)	4.907	0.297
Unemployed	13 (46.4%)	6 (21.4%)	9 (32.1%)		
Retired	13 (52.0%)	3 (12.0%)	9 (36.0%)		
Expected income per month (GHC)					
500 and below	19 (26.8)	20 (28.2%)	32 (45.1%)	11.593	**0.021**
501-1000	12 (40.0%)	6 (20.0%)	12 (40.0%)		
Above 1000	15 (65.2%)	4 (17.4%)	4 (17.4%)		
Level of education					
None	2 (28.6%)	3 (42.9%)	2 (28.6%)	5.027	0.540
Primary/elementary	14 (29.2%)	13 (27.1%)	21 (43.8%)		
Secondary	21 (42.9%)	9 (18.4%)	19 (38.8%)		
Tertiary	19 (44.2%)	11 (25.6%)	13 (30.2%)		

Table 5: Relationship between Demographic Variables and Depression sub score

VARIABLES	Hospital Anxiety			X^2	P-Value
	0-7	8-10	11-21		
	Normal	Borderline	Abnormal		
Sex					
Male	14 (55.0%)	9 (36.0%)	2 (8.0%)	4.239	0.120
Female	57 (45.6%)	34 (27.2%)	34 (27.2%)		
Age					
25-45	27 (39.7%)	20 (29.4%)	21 (30.9%)	4.775	0.311
46-65	33 (51.6%)	18 (28.1%)	13 (20.3%)		
66-85	11 (61.1%)	5 (27.8%)	2 (11.1%)		
Marital status					
Single	10 (55.6%)	7 (38.9%)	1 (5.6%)	8.875	0.353
Married	46 (45.5%)	27 (26.7%)	28 (27.7%)		
Divorced	6 (37.5%)	4 (25.0%)	6 (36.5%)		
Separated	3 (60.0%)	2 (40.0%)	0 (0.0%)		
Window	6 (66.7%)	2 (22.2%)	1 (11.1%)		
Employment status					
Employed	43 (47.3%)	27 (29.7%)	21 (23.1%)	0.954	0.917
Unemployed	15 (53.6%)	6 (21.4%)	7 (25.0%)		
Retired	11 (44.0%)	8 (32.0%)	6 (24.0%)		
Expected income per month (GHC)					
500 and below	27 (39.0%)	22 (31.0%)	22 (31.0%)	15.592	**0.004**
501-1000	13 (43.3%)	11 (36.7%)	6 (20.0%)		
Above 1000	19 (82.6%)	3 (13.0%)	1 (4.3%)		
Level of education					
None	3 (42.9%)	3 (42.9%)	1 (14.3%)	18.623	**0.005**
Primary/elementary	14 (29.2%)	18 (37.5%)	16 (33.3%)		
Secondary	20 (40.8%)	16 (32.7%)	13 (26.5%)		
Tertiary	31 (72.1%)	6 (14.0%)	6 (14.0%)		

Table 6: Relationship between Demographic Characteristics and Distress Status

Variable	Distress Status		X^2	P-VALUE
	<15 normal	>15 distress		
Sex				
Male	13 (52.0%)	12 (48%)	1.597	*0.206*
Female	48 (38.4%)	77 (61.6%)		
Age				
25-45	24 (35.3%)	44 (64.7%)		
46-65	25 (39.1%)	39 (60.9%)	5.925	***0.052***
66-85	12 (66.7%)	6 (33.3%)		
Marital status				
Single	7 (38.9%)	11 (61.1%)		
Married	39 (39.6%)	62 (61.4%)		
Divorced	8 (50.0%)	8 (50.0%)	1.597	*0.809*
Separated	3 (60.0%)	2 (40.0%)		
Window	4 (44.4%)	5 (55.6%)		
Employment status				
Employed	29 (31.9%)	62 (68.1%)		
Unemployed	15 (53.6%)	13 (46.4%)	7.302	**0.026**
Retired	14 (56.0%)	11 (44.0%)		
Expected income per month (GHC)				
500 and below	21 (29.6%)	50 (70.4%)		
501-1000	12 (40.0%)	18 (60.0%)	11.262	**0.003**
Above 1000	16 (69.6%)	7 (30.4%)		
Level of education				
None	2 (28.6%)	5 (71.4%)		
Primary/elementary	10 (20.8%)	38 (79.2%)	12.740	**0.005**
Secondary	22 (44.9%)	27 (55.1%)		
Tertiary	24 (55.8%)	19 (44.2%)		
Residence of patient				
Rural	5 (23.8%)	16 (76.2%)	2.177	0.140
Urban	41 (41.0%)	59 (59.0%)		

Table 7: Relationship between Chemotherapy Side Effects and Distress Status

Ten most common side effects	Distress Status		X^2	P-VALUE
	<15 normal	>15 distress		
Hair loss	34 (32.1%)	72 (67.9%)	11.054	**0.001**
Change in skin colour	34 (36.6%)	59 (63.4%)	1.711	0.191
Nausea	30 (34.1%)	58 (65.9%)	3.815	**0.051**
Constipation	32 (35.6%)	58 (64.4%)	2.436	0.119
Dizziness(gradually wears off after a week or so)	21 (35.0%)	39 (65.0%)	1.331	0.249
Vomiting	18 (32.1%)	38 (67.9%)	2.691	0.101
Lack of sleep	19 (29.2%)	46 (70.8%)	6.217	**0.013**
Night sweats, hot flushes and change sleep patterns	12 (24.5%)	37 (75.5%)	7.893	**0.005**
Aching jaw	14 (29.2%)	34 (70.8%)	3.628	**0.057**
Diarrhoea	12 (27.3%)	32 (72.7%)	4.629	**0.031**