

1997

The Effect of Cancer Diagnosis Information on the Anxiety of Patients with an Initial Diagnosis of First Cancer

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**THE EFFECT OF CANCER DIAGNOSIS INFORMATION ON THE ANXIETY OF
PATIENTS WITH AN INITIAL DIAGNOSIS OF FIRST CANCER**

By

Kim S. Allen

A THESIS

**Submitted to
Grand Valley State University
in partial fulfillment of the requirements for the
degree of**

MASTER OF SCIENCE IN NURSING

Kirkhof School of Nursing

1997

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ABSTRACT

THE EFFECT OF CANCER DIAGNOSIS INFORMATION ON THE ANXIETY OF PATIENTS WITH AN INITIAL DIAGNOSIS OF FIRST CANCER

By

Kim S. Allen

The purpose of this study was to examine the effect of differing educational programs on state anxiety of patients with an initial diagnosis of first cancer. The Neuman Systems Model was used as the conceptual framework. The convenience sample included 40 patients in an outpatient chemotherapy clinic. The control group (n=21) received the standard cancer education, the experimental group (n=19) received additional cancer diagnosis information. The dependent variable, state anxiety, was measured using the Spielberger State-Trait Anxiety Inventory. Two-way ANCOVA demonstrated that, after controlling for pre-test trait and state anxiety, the experimental group who received additional cancer diagnosis information had lower scores in state anxiety. This finding was not significant ($F= 1.99$, $df = 1,36$, $p = .167$). However, the intervention explained 42.67% of the variance in state anxiety. The findings suggest that cancer diagnosis information may decrease state anxiety in patients with an initial diagnosis of first cancer.

Dedication

This work is dedicated to my grandfather, Philip A. DeSico, D.D.S. He provided the inspiration and encouragement for my professional goals.

Acknowledgments

I would like to personally extend my sincere gratitude and appreciation to those special individuals that contributed to the successful completion of this research project.

Special thanks to Louette Lutjens, Ph.D., R.N., my chairperson, for her continual encouragement, expertise, smile, and unrelenting support.

My sincere appreciation to Brenda Lazarus, Ph.D., and Ruth Ann Brintnall, MSN, R.N., for their support, time, and unique contributing perspectives.

I would like to thank my nursing colleagues and co-workers for all their support, patience, and encouragement.

I would like to thank my mother, Sandra, my husband, Jim, and my family for their love, patience, support, and encouragement throughout my educational and professional achievements.

Last but not least, I would like to thank Stephen L. Smiley, M.D., and the entire outpatient chemotherapy staff for their perseverance, compassion, and support throughout the study.

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CHAPTER 1

INTRODUCTION

The current health care era provides improved health care technology, consumer availability of health care information, and health care educational strategies. Despite these advancements, the word cancer still evokes a negative emotional response in people for whom this diagnosis is made. A cancer diagnosis may be associated with pain, chronicity, altered body image, loss of function, and death (Lev, 1992). According to the American Cancer Society statistics (Parker, Tong, Bolden, & Wingo, 1997) approximately 1,382,400 Americans will be diagnosed with new cases of invasive cancer this year.

Cancer is a chronic, complex illness that has biologic, psychologic, and social ramifications throughout the disease process. According to Miaskowski (1987), the chronicity of the disease increases the need for patient education. Recent studies have revealed that cancer patients desire information related to the various phases of their illness (Derdiarian, 1986; Dodd & Ahmed, 1987; Grahn & Johnson, 1990; Lev, 1992). Cancer patients have a right to know and be informed about their health and treatment options. It is widely recognized in the literature that the diagnosis of cancer and its treatment introduce many potential stressors into the lives of cancer patients and family members. Stressors have the ability to affect one psychologically and thus have the potential to produce anxiety. Major stressors have been identified in the diagnosis and treatment phases. Derdiarian (1987a) found that cancer patients seek information to

appraise harms and threats implied by the cancer diagnosis. Other studies have been conducted which support the significance that education has on reducing patient anxiety (Ali & Khalil, 1989; Grier, 1990; Porocho, 1995; Rainey, 1985; Wells, McQuellon, Hinkle, & Cruz, 1995).

Oncology nurses understand the informational needs of cancer patients and strive to design educational programs which address these needs. Derdarian (1987b) found that newly diagnosed cancer patients have significant informational concerns related to diagnosis. Currently, educational programs attempt to provide information about diagnosis. The diagnosis information usually consists of disease-specific booklets which are either available in waiting rooms or informally provided to patients. Research to date has not examined what effect providing diagnosis information to patients with an initial diagnosis of first cancer has on anxiety.

It is crucial for nurses to understand the informational needs of the patient with an initial diagnosis of first cancer. It is important for nurses to reduce or control patient anxiety by providing pertinent and accurate information on cancer diagnosis.

Problem Statement

Outpatient oncology nurses generally structure patient educational programs to include information related to diagnostic tests, treatment protocols, nutrition, support groups, and management of side effects. Providing patients with an initial diagnosis of first cancer with information specific to their diagnosis is not included consistently in educational programs. Research suggests that cancer patients have additional informational needs related to their diagnosis. The current research has not examined the effect of diagnosis information on anxiety. Therefore, it is necessary to evaluate the effect

diagnosis information has on the anxiety state of patients with an initial diagnosis of first cancer undergoing outpatient chemotherapy treatment. The purpose of this study was to investigate how differing educational programs affect the anxiety of patients with an initial diagnosis of first cancer undergoing outpatient chemotherapy treatment.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

Conceptual Framework

Neuman's (1989) system model of nursing views the person as a multidimensional system interacting with the environment at all times (see Figure 1). The model is based on stress and the reaction to stress. The person is composed of a basic core, five interacting variables, and lines of defense and resistance. The person interacts with the environment to function harmoniously and maintain stability. The interrelationships of the person's variables determine the nature and degree of the person's reaction to environmental stressors.

Person. Neuman conceptualizes the person as an open, dynamic system consisting of a basic core surrounded by a series of concentric rings or boundaries (see Figure 1). The person (client/client system) contains five interrelating variables: physiological, referring to bodily structure and function; psychological, referring to mental processes and relationships; sociocultural, referring to combined social and cultural functions; developmental, referring to life developmental processes; and spiritual, referring to spiritual belief influence (Neuman, 1989). The interrelationship of the variables determines the nature and degree of the person's reaction to stressors. These variables are found in all three lines of defense and resistance. In this study the person is defined as any patient who has received an initial diagnosis of first cancer following histological evidence

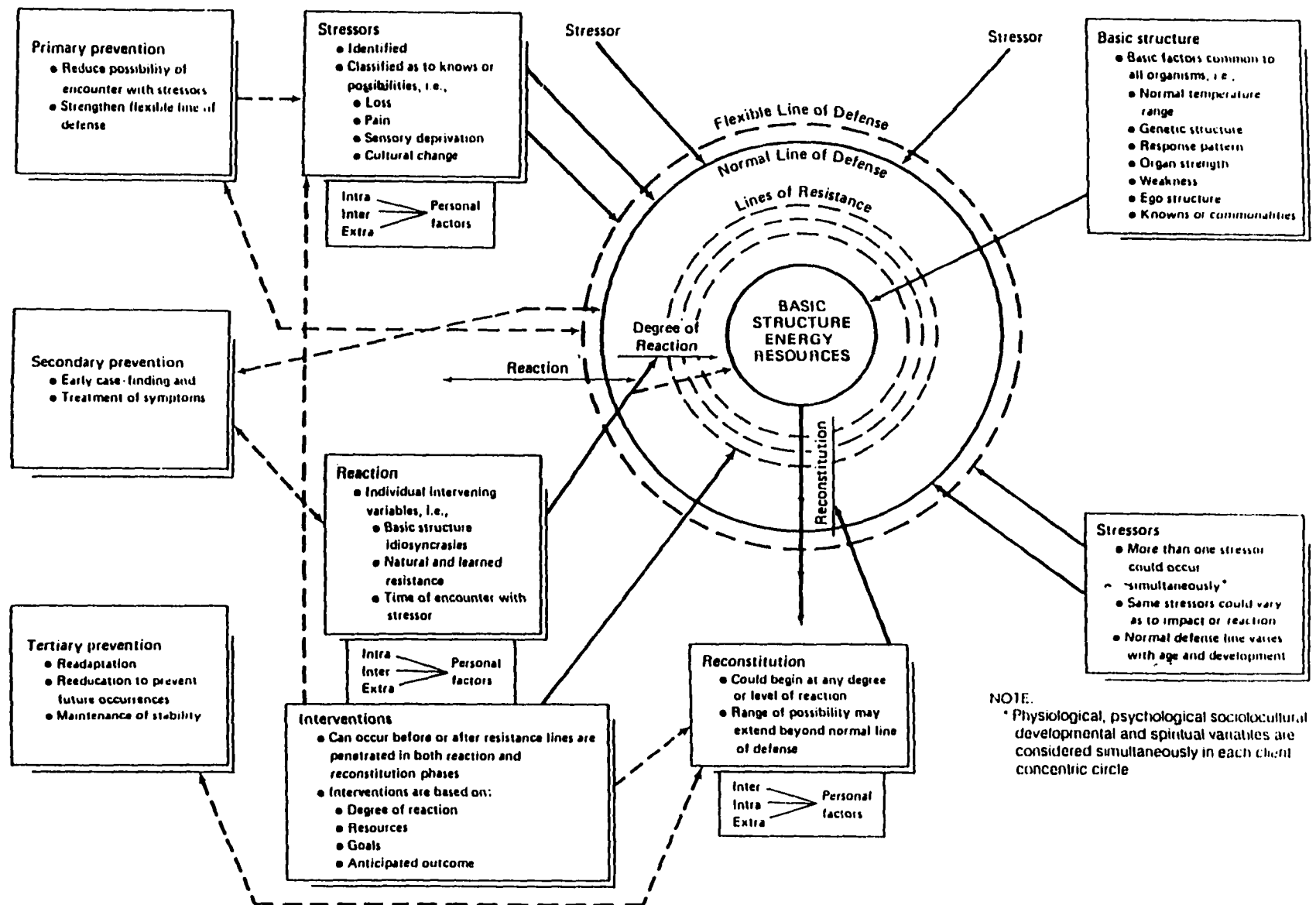


Figure 1. The Neuman Systems Model. Original diagram copyright: 1970 by Betty Neuman. [Note: From The Neuman Systems Model. (2nd Ed.) (p. 26) by B. Neuman, 1989, Norwalk, CT: Appleton & Lange.]

of the presence of a malignancy and who will be undergoing chemotherapy treatment in an outpatient oncology setting.

The basic core described by Neuman (1989) consists of survival factors common to all organisms and includes genetic structure, response patterns, body temperature, ego strength, cognitive ability, and organ strength and weakness. These innate factors are necessary to support system integrity and life (Neuman, 1989, p.29). In this study, the factor in the basic core of interest is defined as the organ/organ system weakness or cancer pathology (see Figure 2).

The concentric circles include the lines of resistance, the normal line of defense, and the flexible line of defense. These features function as protective mechanisms for the basic core. The lines of resistance surround the basic core and are activated once the normal line of defense is penetrated. These lines contain some known and unknown factors which support the person's basic core and thus promote system integrity (Neuman, p.30). Energy depletion and death will result if these lines are ineffective in reversing the system's reaction to the stressor invasion. In this study, the lines of resistance are conceptualized as intact psychological responses.

The normal line of defense represents the usual wellness level of the person. The adjustment of the person's five interrelating variables to stressors determines his/her wellness level. This line is dynamic as it responds to an insufficiently protected flexible line of defense. When the person's usual state of wellness is unable to effectively respond to stressors, invasion occurs and symptoms result. Usual patient coping strategies have been defined as the normal line of defense in this study.

The flexible line of defense is the outermost ring and is a dynamic buffer system for

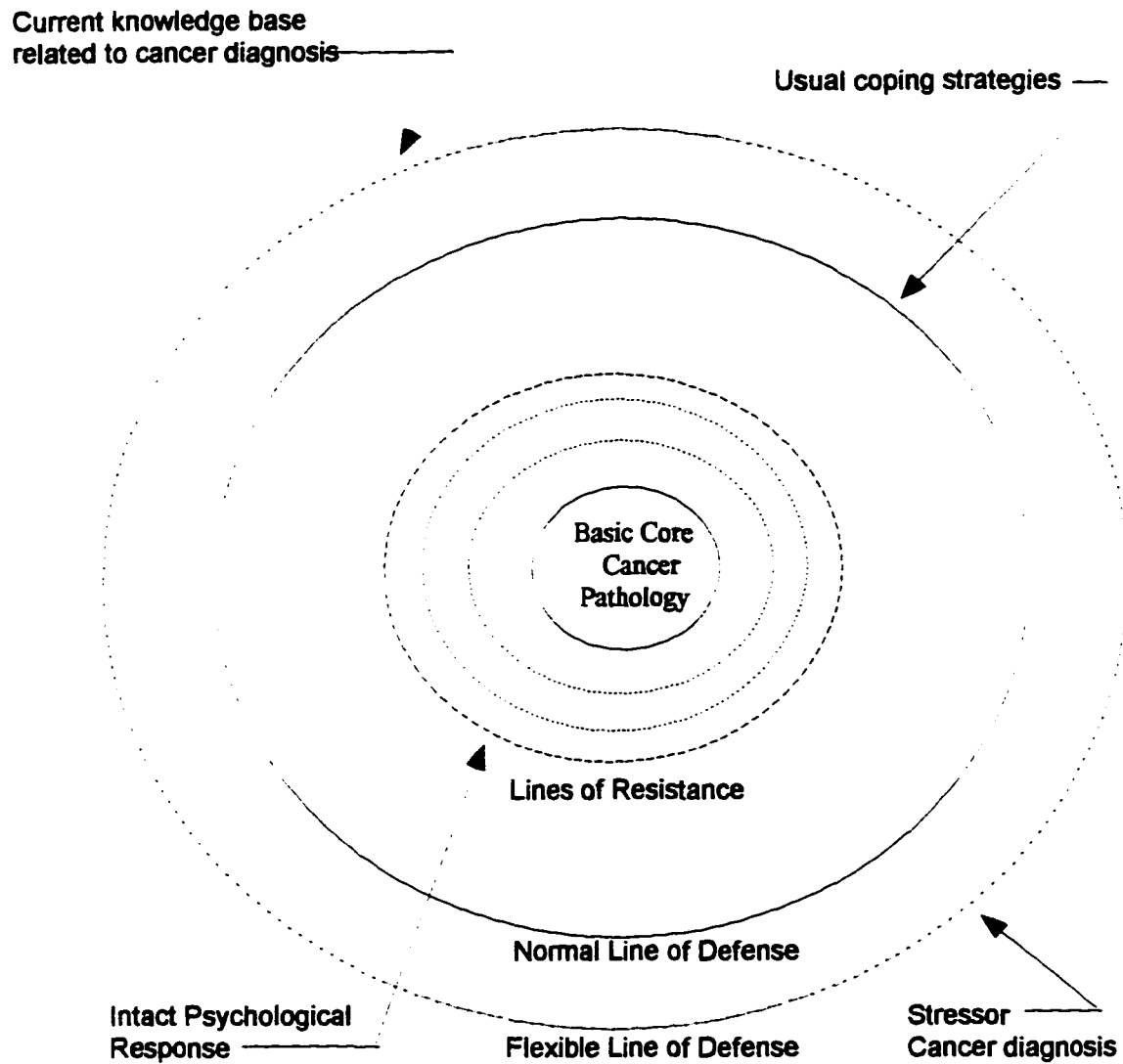


Figure 2. The reconceptualization of the study concepts in relationship to the Neuman System Model.

(Adapted from Neuman, B. 1989. The Neuman Systems Model.)

the person's stable or normal state. This protective mechanism is ever changing as it attempts to resist a stressor invasion. Stressors, whether single or multiple in nature, have the potential to reduce the effectiveness of the buffer system (Neuman, 1989, p.29). In this study the flexible line of defense is reconceptualized as the patient's current knowledge base related to cancer diagnosis.

Environment. Neuman (1989) broadly defined this concept "as all internal and external stressors or influences surrounding the identified client or client system" (p.31). Neuman defines stressors as any phenomenon that might penetrate both the flexible and normal lines of defense, resulting in either a positive or negative outcome. The nature of the person and environment relationship is interactive and reciprocal in nature. Input, output, and feedback occurs as the person influences or is influenced, positively or negatively, by the environmental stressors. These environmental stressors can be internal or external in nature. The internal environment consists of forces or influences within the client or client system and correlates with intrapersonal stressors or factors. The external environment includes all external forces or influences to the client or client system and correlates with inter-and extrapersonal stressors or factors. (Neuman, 1989, p. 31). Stressors may vary in nature, intensity, perception, and reaction produced. The intrapersonal stressor causing disharmony in this study is identified as the cancer diagnosis.

Health. Neuman conceptualizes health as a dynamic continuum of wellness to illness. Health is a condition that exists when there is equilibrium or harmony within the person's system variables. Disruption of the system or stressor invasion of the lines of defense reduces the state of wellness and represents illness. Cancer patient education

programs that include cancer diagnosis information can potentially decrease anxiety.

Health in this study is conceptualized as anxiety that can be managed with usual coping strategies.

Nursing. Nursing creates a connection among the person, the environment, health, and nursing (Neuman, 1989, p.34). This connection is facilitated by three levels of prevention. Primary prevention attempts to reduce stressor encounters and thus strengthen the flexible line of defense. Secondary prevention is used when a reaction has occurred and symptoms exist. This intervention aims to attain wellness and protect the person's (client/client system) basic core by strengthening the internal lines of resistance. Tertiary prevention aims to maintain stability. Nursing promotes system stability by assisting patient adjustments required for an optimal wellness level. As nurses assist the patient, there is concern for all the variables within the lines of defense and resistance that affect the patient's response to environmental stressors. Therefore, providing the patient with cancer diagnosis information is a means of secondary prevention which aims to strengthen intact psychological responses.

In this study, the client system or patient, has been exposed to the environmental stressor, cancer diagnosis. The patient attempts to adapt to this stressor by activating the various lines of defense and resistance. The patient's flexible line of defense is penetrated because the patient lacks sufficient information related to the cancer diagnosis. As a result, the patient mobilizes his/her normal line of defense, namely usual coping strategies, in an effort to prevent further stressor invasions. Literature suggested that information-seeking is a universal coping strategy used by patients experiencing a new cancer diagnosis (Lev, 1992). Ineffective coping strategies due to inadequate knowledge allow for further

stressor penetration of the lines of resistance. This is evidenced by the patient's psychological signs and symptoms of anxiety.

In this study, the aim of providing patients with an initial diagnosis of first cancer with secondary prevention, or cancer diagnosis information, is to reduce the threat of the invading stressor and thus protect the client/client system. Providing the patient with information related to cancer diagnosis will help reduce the threat of the cancer diagnosis by strengthening the internal lines of resistance and supporting intact psychological responses. Strengthening the internal lines of resistance which support the basic core will reduce the degree of reaction to the stressor and decrease anxiety.

Theoretical Definitions of Terms

Standard Education Program. The individualized, informal, informational interaction between the oncology nurse and the participant.

Cancer Diagnosis Information. Information which describes a specific cancer disease, etiology, and course of progression.

State Anxiety. An emotional state which includes feelings of apprehension, nervousness, and worry (Spielberger, 1983).

Trait Anxiety. An emotional state which relates to overall feelings of anxiety or general coping abilities (Spielberger, 1983).

Hypothesis

The following research hypothesis was tested: When considering initial trait and state anxiety scores, there will be a significant difference on post-test state anxiety scores of patients with an initial diagnosis of first cancer between those who participate in the standard education program and those who participate in the standard education program

and additionally receive cancer diagnosis information.

Literature Review

Cancer Patients and Their Informational Needs. Most of the research conducted to explore informational needs of cancer patients has been qualitative or exploratory in design. Studies have attempted to either determine or assess strategies used by cancer patients and their families as they adapt to the disease and its treatment.

Lev (1992) examined how individuals adapt to the reality of receiving cancer treatments. This exploratory study used an interview guide which consisted of questions and visual analogue items. Open-ended and closed-ended questions were used to gather data related to the patient's previous experiences, perceptions of the stressful event, expectations, specific strategies and choice of strategies used when encountered with a stressful event. Visual analogues were used to measure the perception of treatment stress.

The sample was drawn from two clinic settings and consisted of 47 adult subjects with mixed cancer diagnoses who were evaluated, treated, or had been treated with chemotherapy or radiation therapy. The subjects were assessed as to how they perceived themselves as preparing for treatment and were subsequently placed into one of three groups: preparers, avoiders, or suppressors.

Lev (1992) found that patients' perception of whether or not cancer treatments were perceived as stressful depended on their individual resources and coping mechanisms. Subjects in the preparer and suppressor groups were adaptive. Their perceived threat was decreased as evidenced by decreased stress ratings. The avoider group and their defensive actions were not adaptive and subsequently reported increased stress. Information-seeking was one of several strategies used by subjects in all groups

and appeared to increase adaptation of some subjects but not others. The results of the study suggested that despite the fact that avoiders use information-seeking as a defensive action, this strategy has the potential to assist some cancer patients as they attempt to cope with cancer treatment. The study was limited by its sample size.

Derdiarian's (1987a) review of the literature provided evidence of the informational needs of patients. In addition, the review indicated that prospective studies fail to delineate the nature and scope of these informational needs. Derdiarian described a theoretical framework in an attempt to better understand the nature, relevance, and scope of the informational needs of recently diagnosed cancer patients. The framework is constructed from theories of coping, appraisal, information-seeking needs, and hierarchy of needs.

Derdiarian's framework implies that during an appraisal the relevance of the situation (harms, threats) will determine the degree of relevance and nature of information needed. A lack of information will determine the nature and/or scope of information desired. As a mode of coping, information-seeking aims to problem solve and control or reduce emotional distress. Derdiarian reported that retrospective surveys reveal that soon after diagnosis informational needs related to disease concerns (diagnosis, diagnostic tests, treatments, and prognosis) are significant.

Adams (1991) detailed the phases of cancer care and the various corresponding patient informational needs. Before health professionals can effectively meet these needs there needs to be an understanding of some of the issues inherent to the nature of cancer. Cancer varies as a disease and thus progresses with different patterns. Very often cancer is associated with pain, disfigurement, changes in bodily function, suffering, and death.

Uncertainty is associated with the disease as well as the treatment which has the potential to produce anxiety. Goals during the diagnosis and treatment phases focus on providing information related to prognosis, diagnosis, cure rate, diagnostic tests, treatment options and management of side effects, and self-care activities. By providing this information, it is expected that patients' anxiety will decrease and participation with a treatment plan will be maximized.

A study by Dodd and Ahmed (1987) used a convenience sample ($N = 60$) in a longitudinal survey study design to determine the types of information (cognitive versus behavioral) newly diagnosed outpatient radiation patients preferred. Anxiety and preference for information were measured at two interviews. The Health Opinion Survey (HOS) and the Health Care Preference Survey (HCP) assessed the patients' preference for type of information. The State-Trait Anxiety Inventory (STAI) assessed state and trait aspects of anxiety. The findings reported that the majority of patients ($N = 38$) preferred cognitive information. In addition, preference for cognitive information significantly decreased from the first to the second interview ($p=.027$). This finding may suggest that patients need less information as they progress through their course of treatment. Trait anxiety was the only significant predictor (negative) of the HCP information subscale at the first interview ($F=4.4$, $p=.04$) and state anxiety was the only significant predictor (negative) of the same subscale at the second interview ($F= 9.97$, $p=.003$). Limitations of the study were use of a convenience sample and non-random assignment into groups. The low and non significant association between the HOS and HCP at both interviews is an additional limitation. The HCP subscales reliability coefficients were low ($r=.36, .2, .31$), indicating that the instrument contained noncontributing items and warrants revision and

further testing.

Grahn and Johnson (1990) reported that different factors have the potential to affect cancer patients' level of understanding of information. Providing patients with information that they need or desire is one important factor that needs to be considered. The study used a convenience sample ($N = 50$) to assess the learning needs of cancer patients at different stages throughout the course of their cancer disease and treatment. The instrument used was a needs assessment questionnaire that was developed and based on the content of the "I Can Cope" program of the American Cancer Society. The questionnaire content included 12 areas related to cancer care and treatment. The same researcher collected the data over a period of two months. The findings indicated that patients and family members have an extensive desire to learn about cancer and its ramifications. Specifically, 88% of the subjects responded that they lacked knowledge or knew too little about cancer and the impact of cancer diseases on the human body. The desire and need for cancer information was the highest percentage reported. Alternative treatment modes and side effect management information were the next highest, each rating 85%.

The study was limited by non-random sampling. In addition, Grahn and Johnson (1990) recognized that when people are assessed about their learning needs there is a tendency for them to answer positively. There were variances in the response percentages of all the different topics, which could be interpreted that the study participants did consider all the questionnaire response options.

Derdiarian (1986), in a prospective study, described the nature and the relevance of the informational needs of recently diagnosed cancer patients. The Derdiarian

Informational Needs Assessment (DINA), a semi-structured interview instrument was used to collect the data. Patients' responses or values were analyzed and classified into disease, personal, social, and family categories and then further divided into subcategories. The results revealed significant ($F = 23$, $df = 3,177$, $p < .0001$) differences among the scores of informational needs of the major categories. Information needed about disease ($M = 21.3$, SD not reported) was significant ($p < .05$) when compared to the other major categories. Further analysis using Tukey's (HSD) test of multiple comparison indicated further significant ($F = 51.2$, $df = 3,177$, $p = .0001$) differences in the disease subcategories (treatment, prognosis, diagnosis, tests). Analysis showed a significantly ($p < .05$) greater need for information about treatment than for any other disease subcategory. Prognosis ranked second, diagnosis third, and tests last. Analysis of variance (ANOVA) measures were used to further examine the subject's responses to the disease subcategories. Comparably, the disease subcategories differed significantly ($F = 3.4$, $df = 3,98$, $p < .02$). Analysis showed that treatment and prognosis were significantly more important than tests and diagnosis. Prognosis ranked second, not significantly greater than diagnosis, but significantly ($p < .05$) more than tests. The study was limited by the non-random sampling and the inability to control intervening variables.

Summary of the literature review strongly suggests that as patients attempt to cope with cancer they desire and seek information related to their illness (Derdiarian, 1987a & 1987b; Grahn & Johnson, 1990; Lev, 1992). This strategy aims to problem solve and control emotional distress (Derdiarian, 1987a). Dodd and Ahmed (1987) suggested that cognitive information may be of greatest value and benefit to cancer patients at the beginning of their treatment. Derdiarian's (1986) study supported these findings but more

specifically identified that informational needs about disease were significantly greater than other needs (personal, family, and social). Further analysis reinforced the significant value patients attach to treatment, prognosis, and diagnosis information.

Cancer Education and Anxiety. Ali and Khalil (1989) conducted an experimental study using a convenience sample ($N = 30$) of low socioeconomical Egyptian bladder cancer patients undergoing surgical urinary diversion. The study examined the effect of educational preparation on anxiety. The independent variable, educational preparation, consisted of detailed information related to operative and postoperative care. Sources of stressors were identified and also incorporated into the program. The control group subjects were provided with routine physical preoperative care. A pre-test post-test control group design was used to measure the dependent variable, anxiety. Data were collected using Spielberger's State Trait Anxiety Inventory (STAI). The hypothesis, that patients who receive educational preparation prior to surgery exhibit less state anxiety on the third day postoperatively than a control group was supported ($p < .000$). The second hypothesis, which stated that patients who receive educational preparation prior to surgery exhibit less state anxiety before discharge, was also supported ($p < .000$). These findings suggested that educational preparation reduces postoperative anxiety. It was further suggested that education about a stressful event can reduce stress and anxiety. This study was limited by its sample size.

Rainey (1985), Grier (1990), Wells et al. (1995), and Porocho (1995) also examined the effects of education on reported levels of anxiety. Rainey specifically studied preparatory education and its relationship to coping styles and emotional status. The study used a convenience sample ($N = 60$) in a quasi-experimental design. The sample study

included cancer patients beginning their first course of radiation treatment. Pre-test measurement was done for both groups 1-3 days after treatment began and was repeated during the final five days of treatment. The independent variable, high information condition, consisted of formal and informal information. The control group subjects or low information group was provided with routine radiation and departmental information. One of the dependent variables, emotional status, was assessed by using the state form of Spielberger's State Trait Anxiety Inventory (STAI). The Total Mood Disturbance (TMD) instrument was used to measure affective arousal. The other dependent variable, knowledge related to radiation therapy, was assessed by a 21-item, objective questionnaire.

The results at the initial assessment showed a statistically significant ($p < .001$) effect of intervention (high versus low information) on the measure of knowledge. Although the patient education group had a lower state anxiety and TMD scores than the control group, these differences were not significant. The analyses of variances revealed that at the follow-up evaluation, the patient education group, regardless of coping style, reported less state anxiety ($M = 37.9$ vs $M = 43.6$, $p < .05$) and lower TMD ($M = 19.5$ vs $M = 41.2$, $p < .005$) than the control group. These findings support the value of providing patient education prior to a stressful event. Providing information may help reduce psychologic distress. In addition, even though patient education did not significantly decrease anxiety immediately, the intervention did affect anxiety and mood disturbance as evidenced by the findings that the experimental group showed less affective distress during the course of the treatment. In contrast, the control group's affective distress scores actually increased slightly.

Grier (1990) conducted a quasi-experimental study to explore the effect structured patient education had on the anxiety of newly diagnosed cancer patients initiating chemotherapy. The study used a convenience sample ($N = 20$). The independent variable, structured patient education, consisted of formal and informal information. The control group subjects received routine informal information. Anxiety, the dependent variable, was measured in a pre-test post-test group design. Spielberger's State Trait Anxiety Inventory was the instrument used to collect data. T-test results showed that the state anxiety scores were reduced from pre-test to post-test for both groups but the decrease with the experimental group was much larger than the control group (M difference = 18.5, $t = 2.75$, M difference = 2.5, $t = .81$, respectfully) and statistically significant ($p=.02$). The study supported the significance of patient education and its effect on reducing state anxiety of newly diagnosed cancer patients. The study was limited by its small sample size and the use of mixed cancer diagnoses.

Wells et al. (1995) tested the efficacy of a pilot orientation program in reducing distress levels of newly diagnosed cancer patients. The study used a convenience sample ($N = 33$) in a pre-experimental design. The sample study included consecutively referred, newly diagnosed cancer patients scheduled for outpatient chemotherapy treatment.

The independent variable, the orientation program, consisted of a clinic tour and related concrete and sensory information, treatment procedure information, and an information/discussion session with the oncology counselor. Subjects in the control group were provided with routine clinic care. Post-test measurement was done for both groups during their first clinic visits and after they received either the orientation program or the usual clinic care.

The post-test design was used to measure the dependent variables, anxiety and general distress. Data was collected using Spielberger's State Trait Inventory (STAI) and the Profile of Mood States-Short Form- Total Mood Disturbance Scale (POMS-TMDS). The Wilcoxon rank sum test was used to compare both groups. The results showed a statistically significant ($p<.001$) effect of the orientation program on distress and anxiety. Specifically, the STAI S-Anxiety mean scores for the control and intervention groups were 63.6 and 36.0, respectively ($p<.001$); the STAI T-Anxiety mean scores for the control and intervention groups were 47.3 and 34.0, respectively ($p<.001$); and the mean scores on the POMS for the control and intervention groups were 21.6 and 8.0, respectively ($p<.001$).

These findings suggest that an information-based orientation program can reduce the anxiety and distress of newly diagnosed cancer patients. The study had several limitations. First, the sample size was small. Second, the presence of a knowledgeable, caring oncology counselor may have been the critical influence in the orientation, not the tour. A direct comparison is needed to determine which condition, with the counselor or without the counselor, influences the effect. Third, pre-testing was not done. Pre-test data determines whether the two groups were initially similar in terms of their anxiety and general distress. This study had no basis on which to judge the initial equivalence of the two cancer patient groups.

Poroch (1995) explored the effectiveness of preparatory patient education in reducing anxiety and improving satisfaction during the course of radiation treatment. The study used two groups of 25 patients ($N=50$) in a quasi-experimental time series design. The patients were matched according to treatment type and gender.

The independent variable, the preparatory patient education (PPE), was provided in two sessions to the experimental group. The first session was conducted before radiation treatment commenced and consisted of routine unit orientation and treatment planning. The second session included specific information on the treatment phase and side effects. The control group received the usual care and spent equal time with the researcher discussing their experience of cancer.

Test measurements were performed three times for both groups and assessed the dependent variables, anxiety and patient satisfaction. The first test measure (T^1) was conducted before the first teaching session. The second test measure (T^2) was conducted during the first week of radiation treatment and immediately prior to the second teaching session. The third test (T^3) was conducted at the completion of the course of radiation therapy.

Data were collected using Spielberger's State Trait Anxiety Inventory (STAI) and the Pienschke Patient Satisfaction Questionnaire (PPSQ). The demographic variables were distributed equally across the two groups. Analysis of relationships between demographic items and variables did not show any significant relationships. The state anxiety scores of both groups at T^1 were significantly higher than the trait anxiety scores, indicating the presence of an anxiety-provoking threat ($t = 3.32$, $df = 48$, $p < .05$).

Results at T^1 established that both groups had the same level of state and trait anxiety prior to radiation treatment ($t = 1.53$, $df = 48$, $p = .065$ and $t = 0.01$, $df = 48$, $p = .497$, respectively). At T^2 , after the first intervention, the experimental group results demonstrated a significant main effect of PPE on state anxiety ($F = 10.96$, $df = 1, 47$, $p = .002$). The main effect of time on state anxiety was $F = 15.17$, $df = 2, 94$, $p = .000$.

One tailed t test demonstrated a significant difference of state anxiety at T² and T³ between the two groups. The experimental group was significantly less anxious than the control group after the first PPE intervention at T² ($t = 3.72, p = .000$). This outcome was sustained following the second PPE intervention at T³ ($t = 3.48, p = .000$). In terms of measuring patient satisfaction, the experimental group was more satisfied than the control group at T² ($F = 18.9, df = 1,46, p = .000$). Satisfaction scores at T³ were not significantly different, with both groups expressing high satisfaction. These findings support the value of providing patients with preparatory education before threatening procedures occur. Therefore, prolonged, unnecessary anxiety or distress has the potential to decrease effective coping.

The research findings suggested that cancer patients benefit from pertinent and relevant information. Ali and Khalil (1989), Grier (1990), Rainey (1985), Porocho (1995), and Wells et al. (1995) studied the relationship between education and anxiety. Collectively, these studies supported the suggestion that providing cancer patients with relevant and applicable information reduces anxiety.

The experience of a cancer diagnosis is one that can produce anxiety, which has the potential to increase if informational needs of patients are not met. Patients with an initial diagnosis of first cancer desire information in an effort to decrease anxiety. Nursing interventions that reduce patient anxiety by providing patient information is supported by research findings. It is important that nursing continue to recognize the informational needs of patients' with an initial diagnosis of first cancer and provide relevant information. These informational needs, although many, include the desire to learn more about the cancer diagnosis.

This study will contribute to the current body of literature by determining the significance, if any, of expanding patient education programs to include cancer diagnosis information for the patients with an initial diagnosis of first cancer. The results may suggest increased opportunities for nursing to address more effectively the informational needs of cancer patients.

CHAPTER 3

METHODOLOGY

Design

This study used a quasi-experimental design to examine the effect of educational programs on patients with an initial diagnosis of first cancer undergoing outpatient chemotherapy treatments. Participants who met the inclusion criteria were selected conveniently from all patients with an initial diagnosis of first cancer who came to the outpatient clinic for chemotherapy from April 1995 to January 1997 (21 months). The 92 weeks were assigned randomly to form control and experimental groups of patients who were scheduled to come to the clinic. The control group participated in the standard education program. The experimental group participated in the standard education program and, in addition, received cancer diagnosis information. The independent variable or experimental intervention was cancer diagnosis information; the dependent variable under study was state anxiety.

MODEL OF DESIGN				
Control group	Pre-test	Standard Education Program		Post-test
Experimental group	Pre-test	Standard Education Program	Cancer Diagnosis Information	Post-test

Contamination is a situational condition that may occur if, during their first chemotherapy treatment, study participants discussed the educational information they each receive. Attempts to minimize this situation were addressed by introducing the experimental intervention on randomly assigned weeks. Constancy of communication was addressed by limiting the number of oncology registered nurses involved in conducting the education programs and testing of participants. The investigator thoroughly trained and prepared the oncology nurses about the study methodology, data collection process, and patient education variables.

Selection of Participants

The study was conducted in an outpatient chemotherapy clinic located in a 200 bed, metropolitan midwestern acute care hospital. A convenience sample ($N = 40$) of patients with an initial diagnosis of first cancer were recruited for the study. The participants were recruited during their initial visit to the outpatient chemotherapy clinic. Participants were assigned to either the control or experimental group depending on the random assignment of the week of their initial visit. Inclusion criteria consisted of the following: (a) cancer diagnosis with confirmed histological evidence; (b) 21 years old or older; (c) physically and mentally able to answer questions on the survey; (d) completion of 10th grade; (e) an outpatient chemotherapy treatment plan; and (f) able to read and understand English. Exclusion criteria consisted of previous history of malignancy or previous personal experience with chemotherapy.

Characteristics of the Participants

Control Group. Twenty-one patients participated in the control (no intervention) group. The three most common diagnoses included breast, lymphoma, and colon cancer.

The remaining diagnoses included ovarian, lung, and bladder cancer. Table 1 depicts the specific distribution. Age ranged from 30 - 83 years with a mean of 62.81 years (s.d. = 11.898).

Table 1

Control Group: First Time Cancer Diagnoses (n=21)

Diagnosis	Frequency	Percent
Breast	5	23.8
Lymphoma	5	23.8
Colon	4	19.0
Ovarian	2	9.5
Lung	2	9.5
Bladder	2	9.5
Prostate	1	4.8

Twelve (57.17%) of the control participants were female. Fourteen (66.7%) of the participants attended or completed high school and seven (33.37%) of the participants attended college. Fourteen (66.7%) of the participants were unemployed.

Experimental Group. Nineteen patients participated in the experimental (intervention) group. Like the control group, the three most common diagnoses included breast, lymphoma, and colon cancer. Table 2 depicts the specific distribution. Age ranged from 39 - 83 years with a mean of 66.47 years (s.d. = 12.620).

Table 2

Experimental Group: First Time Cancer Diagnoses (n = 19)

Diagnosis	Frequency	Percent
Breast	6	31.6
Lymphoma	5	26.3
Colon	3	15.8
Lung	2	10.5
Pancreas	1	5.3
Bladder	1	5.3
Esophageal	1	5.3

The gender of the experimental group was split; ten (52.6%) were male and nine (47.4%) were female. Similar to the control group, fourteen (73.7%) of the participants attended or completed high school and five (26.3%) of the participants attended college. The majority of the participants, sixteen (84.2%), were unemployed.

Intervention

During the standard education program, informational materials given to the participants included: (a) "Chemotherapy and You" booklet, National Cancer Institute (NCI), 1991; (b) "Taking Time: Support for people with cancer and the people who care about them" booklet, NCI, 1992; (c) Antineoplastic drug specific informational cards; (d) "Eating Hints: Recipes for Better Nutrition During Cancer Treatment" booklet, NCI, 1992; (e) "Nutrition: An ally in cancer therapy" booklet, Ross Laboratories, 1993; and

(f) "Lifeguard: Cancer support program", the acute care hospital study site, 1993.

In addition to the booklets distributed as part of the standard education program, the experimental group also received the experimental intervention, cancer diagnosis information. Cancer diagnosis information consisted of the cancer disease specific NCI booklet, "What You Need To Know About . . ." The contents in these booklets contained information specific to the type of cancer including diagrams, symptoms, definitions of various diagnostic tests, methods of treatment and side effects, clinical trials, definitions of medical terms, causes and prevention, and available support groups. The National Cancer Institute has identified the level of readability of these booklets as high school level. A readability assessment conducted by the investigator established the readability index of the NCI booklet on breast cancer at the 10th grade. The investigator used the SMOG (Simplified Measure of Gobbledegook) grading system for the assessment (Johnson & Blumberg, 1993).

Instrument

The Charles Spielberger State-Trait Anxiety Inventory (see Appendix A) was used to measure the dependent variable, state anxiety. Permission to reproduce the inventory was granted by purchasing the rights on a 2-year contract from Mind Garden Services, Palo Alto, CA. This instrument is a self-evaluation questionnaire and comprises separate self-report scales for measuring state and trait anxiety. The S-Anxiety scale (STAI Form Y-1) consists of 20 statements that evaluate how respondents feel "right now, at this moment." Situational or state anxiety is an emotional state which includes feelings of apprehension, nervousness, and worry. To measure state anxiety, participants responded to 20 items on a four-point summated rating scale according to the way they

felt at that moment. Trait anxiety relates to overall feelings of anxiety or general coping abilities. The T-Anxiety scale (STAI Form Y-2) consists of 20 statements and uses a four-point summated rating scale. Each subject received two total scores, one S-Anxiety score and one T-Anxiety score. Sociodemographic data collected included: age, gender, marital status, education level, and employment. Clinical data on specific type of cancer diagnosis also was collected.

According to Dreger (1978), review of the State-Trait Anxiety Inventory indicated that this specific anxiety measure is used widely and one of the best standardized in its field. Alpha reliability coefficients for Form Y were based on four groups of samples: (a) working adults, (b) college students, (c) high school students, and (d) military recruits. All but one of the S-Anxiety alphas were above .90 for the samples of working adults, students, and military recruits, with a median coefficient of .93. The alpha coefficients for the T-Anxiety were also uniformly high, with a median coefficient of .90.

In this study, reliability testing was done to measure the stability and the internal consistency of the instrument. Test-result reliability was performed by computing correlation coefficients. The correlation coefficient for the pre-test trait and post-test trait was .4920, $p=.001$. The correlation coefficient for the pre-test state and post-test state was .6249, $p=.000$. Both computations revealed a moderately positive relationship, indicating stability over time. In addition, the State-Anxiety scale was stronger, or more stable than the Trait-Anxiety scale. The Cronbach Alpha reliability coefficients are listed in Table 3. Results indicated a high degree of internal consistency with the instrument during each testing period. Reliability coefficients of .70 or greater are sufficient in making group comparisons (Polit & Hungler, 1991).

Table 3

Reliability Estimates for Pre-and Post-Test Trait and State Anxiety (N=40)

Test	Alpha
Pre-test Trait	.91
Post-test Trait	.93
Pre-test State	.94
Post-test State	.97

Human Subject Considerations

Written approval for human subjects was obtained from Grand Valley State University's human research review committee. Approval to conduct the study also was obtained from the outpatient clinic Medical Director, outpatient clinic Nursing Director and institutional review panel of the study hospital.

Data Collection Procedure

Three oncology registered nurses conducted the standard education program for both control and experimental groups and provided the experimental group with the cancer diagnosis information. In addition, the same three oncology nurses administered the pre-tests and post-tests. The investigator trained the oncology nurses about the study methodology and procedure, study participant eligibility criteria, informed consent procedures, and testing forms. To promote consistency and accuracy, the investigator provided the oncology nurses with written guidelines of the study procedure

(see Appendix B). In addition, the investigator provided the oncology nurses with the diagnosis information booklets, consents, study participant tracking log, research participant forms, and pre-test and post-test instruments. The three oncology nurses used a prepared log (see Appendix C) to track participants during the study. The log was used to track random assignment of the weeks, participant identification numbers, participant demographics, type of cancer diagnosis, type of patient education provided, and dates of first and second chemotherapy sessions, pre-tests and post-tests.

The three oncology nurses recruited participants at the time of their initial outpatient clinic visit. Informed consent was obtained (see Appendix D). Participants were provided with an informational sheet about the study (see Appendix E). The investigator assigned randomly 46 of the 92 weeks to one group. A coin flip by the investigator determined the assignment of the control or the experimental group to the assigned randomly 46 weeks. The introduction of the experimental intervention, cancer diagnosis information, occurred during the 46 weeks assigned randomly to the experimental group. Thus, participants were assigned randomly to either control or experimental group depending on the week of their initial scheduled clinic visit.

The pre-test was administered during the initial visit for both the control group and the experimental group but prior to their first chemotherapy session. Both groups of participants were provided with the standard education program during their initial clinic visit and after their initial pre-testing. The experimental group received the cancer diagnosis information booklet during their initial clinic visit after pre-testing. The post-test was administered to both groups after their first chemotherapy session, but before the second chemotherapy session.

Risks to Participants

The risks involved for the participants were minimal. If the participant experienced emotional distress during the testing, or verbalized desire to withdraw from the study the oncology nurses discontinued the testing process. All the testing initiated was conducted without difficulty.

Confidentiality and anonymity of all participants were maintained. These issues were addressed on the participant information sheet “Information for Research Participants”. The patient education sessions and testing were conducted in a private area.

CHAPTER 4

RESULTS

The purpose of this research was to investigate how differing educational programs for patients with an initial diagnosis of first cancer undergoing outpatient chemotherapy treatment affects their anxiety. Data analysis was accomplished using the Statistical Package for Social Sciences (SPSS/WIN) software.

Hypothesis

The hypothesis for this study was: When considering initial trait and state anxiety scores, there will be a significant difference on post-test state anxiety scores of patients with an initial diagnosis of first cancer between those who participate in the standard education program and those who participate in the standard education program and additionally receive cancer diagnosis information.

Participant group differences were compared for statistical significance using independent t-test, paired samples t-test, and two-way analysis of covariance (ANCOVA). Significance was set at $p < .05$ for all analyses.

Sample

Each participant (N=40) completed the questionnaire twice, providing both pre- and post-test scores for both trait and state anxiety. The minimum score for each test is 20. The maximum score for each test is 80. Higher scores are associated with higher trait and state anxiety. Pre- and post-test trait and state mean scores and their associated

standard deviations appear in Table 4. This table shows that the pre- and post-test state anxiety scores were higher than the pre- and post-test trait scores.

Table 4

Means and Standard Deviations For Pre- and Post-Test Trait and State Anxiety Scores
(N=40)

Test	M	SD
Pre-test trait score	35.675	10.894
Post-test trait score	36.050	11.397
Pre-test state score	40.275	13.230
Post-test state score	38.050	14.555

The mean post-test trait scores were higher, but similar to the pre-test trait scores (M = 36.050, M = 35.675, respectively). Both trait scores were lower than both state scores. The higher state scores suggest the perception of the presence of a threat by both groups. The mean pre-test state scores were higher than the mean post-test state scores (M = 40.275, M = 38.050, respectively). Both the pre-test state and post-test state scores displayed greater variability than both trait scores.

Comparison of Variables Between Groups

Before examining the anxiety scores between the experimental and control groups, statistical analyses were used to determine any existing differences between groups on the demographic and descriptive variables and the time interval between pre-testing and post-testing.

Age. Independent t-test analysis exploring group differences in age was performed. Results are shown in Table 5. Differences found were not significant ($p = .35$).

Table 5

Group Differences in Age

Group	M	SD	t-value	df
Experimental (n=19)	66.47	12.62		
			-.95	38
Control (n=21)	62.80	11.90		

Note: $p = .35$

Demographic and Descriptive Variables. Chi-square analysis was conducted to test the demographic and descriptive data for differences in proportions. Table 6 lists the results.

Table 6

Group Differences in Demographic Data and Descriptive Data

Data	χ^2	df	p value
Gender	.38	1	$p = .54$
Education level	1.40	2	$p = .49$
Employment status	1.64	1	$p = .20$
Cancer diagnosis	5.48	8	$p = .70$

Chi-square results indicated the differences between groups on the demographic and descriptive variables were not significant. These results revealed an overall homogenous sample group which suggests that the demographic variables did not influence the study outcomes.

Testing Intervals. Independent t-test analysis was done to determine group differences in the amount of time between the initial clinic visit and the pre-testing date (Date 1) and between the pre-testing date and the post-testing date (Date 2). Table 7 depicts the results.

Table 7

Group Differences Between Date 1 and Date 2

	Date 1				Date 2			
	M	SD	t-value	2-Tail Sig	M	SD	t-value	2-Tail Sig
Experimental group (n=19)	2.11	1.80			25.68	14.73		
			-1.24	.225			-1.07	.295
Control group (n=21)	.86	4.03			21.48	9.33		

Note: Date 1 = The amount of time between the initial clinic visit and pre-test date.

Date 2 = The amount of time between pre-test and post-test date.

The mean number of days for Date 1 and Date 2 were greater in the experimental group than in the control group (Date 1: M = 2.11; Date 2: M = 25.68 and Date 1: M = .86; Date 2: M= 21.48, respectively). T-test analysis revealed these differences were not significant at the .05 level.

Pre-test and Post-test Trait Scores

Control Group. The mean trait scores of this group slightly increased from pre-test to post-test ($M = 35.24$, $SD = 10.99$; $M = 36.91$, $SD = 11.56$, respectively).

Experimental Group. The mean trait scores of this group slightly decreased from pre-test to post-test ($M = 36.16$, $SD = 11.07$; $M = 35.11$, $SD = 11.45$, respectively). The pre- and post-test trait scores remained stable for each group, therefore analysis to examine differences within the groups was not warranted.

Group Comparisons. Independent t-tests were used to test the differences in the mean pre- and post-test trait anxiety scores between both groups. The findings were not significant ($t = -.26$, $df = 38$, $p = .794$ and $t = .49$, $df = 38$, $p = .624$, respectively).

Pre-test and Post-test State Scores

Control Group. The mean state scores of this group were almost unchanged from pre-test to post-test ($M = 40.19$, $SD = 12.73$; $M = 40.38$, $SD = 16.51$, respectively). Paired sample t-test analyses showed no significant difference between pre- and post-test state anxiety scores in the control group ($t = -.08$, $df = 20$, $p = .941$).

Experimental Group. The mean pre-test state score for this group was 40.37 ($SD = 14.12$). The mean post-test state score was 35.47 ($SD = 11.95$). This difference, (-4.90) was the largest found in all the tests for both groups. However, paired sample t-test analyses revealed that this difference was not statistically significant ($t = 1.73$, $df = 18$, $p = .102$).

Group Comparisons. Independent t-tests were used to test the differences in the mean pre- and post-test state anxiety scores between both groups. The review of the data analysis suggested that both the experimental and the control groups tended to report

similar levels of pre- and post-test state anxiety. The difference in the mean pre-test state score between the two groups was not significant ($t = -.04$, $df = 38$, $p = .967$). The post-test state score of the control group was 40.38. The post-test state score of the experimental group was 35.47. Although the experimental group reported less post-test state anxiety, t-test analysis demonstrated that the difference between the post-test state scores of the two groups was not significant ($t = 1.08$, $df = 36.33$, $p = .286$).

Hypothesis Testing

Two-way analysis of covariance (ANCOVA) was used to provide statistical control for pre-test trait and state anxiety scores. Prior to conducting the analysis, assumptions were tested to determine if interactions existed between group membership and the covariates and between the independent variable and the dependent variable. No interactions were found, therefore the ANCOVA analysis was performed. The results are presented in Table 8.

Table 8

Results of Two-Way ANCOVA

Source of Variation	SS	df	MS	F	Sig
Within cells	4741.22	36	131.70		
Regression	3280.47	2	1640.23	12.45	.000
Group	262.13	1	262.13	1.99	.167

Although the hypothesis was not supported, the adjusted means indicated less state anxiety in the experimental group who received the cancer diagnosis information as

compared to the control group. Also ANCOVA indicated that the experimental intervention explained 42.67% of the variance between the post-test state anxiety scores of the experimental and control groups ($R^2 = .426$).

CHAPTER 5

DISCUSSION

The findings of this study did not support the hypothesis that when initial trait and state anxiety scores are considered, there is a significant difference on post-test state anxiety scores of patients with an initial diagnosis of first cancer between those who participate in the standard education program and those who participate in the standard education program and additionally receive cancer diagnosis information. However, post- test state anxiety scores were lower in the experimental group when compared to the control group. The experimental intervention explained 42.67% of the variance in post-test state anxiety scores. These findings suggest that cancer diagnosis information may decrease state anxiety in patients with an initial diagnosis of first cancer. These relationships will be discussed further.

Analysis of the demographic and descriptive characteristics of the experimental and control groups revealed no significant differences. The majority of the participants attended or completed high school and were currently unemployed. There was equal distribution of gender. The age of participants ranged from 30-83 years with a mean of 64.6 years. Breast, lymphoma, and colon cancer were the most common cancer diagnoses for both groups.

Overall, the study participants in the study reported similar pre-test trait and post-test trait scores. The variability between these two tests was minimal. Trait anxiety

measures overall feelings of anxiety or anxiety proneness and refers to the tendency one perceives stressful situations as dangerous or threatening. Trait anxiety refers to general coping abilities and may be influenced by the frequency and intensity of past anxiety states and their manifestation (Spielberger, 1983). The similarities of the participants pre-test and post-test trait scores suggest that the overall feelings of anxiety or general coping abilities of both groups remained stable, or unchanged overtime. The tendency of the groups to perceive the cancer diagnosis and its implications as threatening did not increase from pre-test to post-test.

The pre- and post-test state scores of the participants were higher than their respective trait scores. State, or situational anxiety measures feeling of apprehension, nervousness, and worry at time of testing (Spielberger, 1983). The presence of higher state than trait anxiety scores suggests that the participants perceived their current situations as stressful or threatening. This perception would be expected for newly diagnosed, first time cancer patients. Test taking preceded administration of chemotherapy. The higher state anxiety may have reflected concerns over treatment. The participants reported lower post-test state anxiety scores than pre-test state anxiety scores. This finding suggests that the perception of a stressful event or threat decreased overtime. The patient's increased knowledge and familiarity with his/her chemotherapy treatment and the clinic may have contributed to this perception.

The mean pre-test state anxiety scores of both groups were lower than the investigator had expected. The score range for each test was 20-80. The mean pre-test state anxiety scores of the experimental and control groups fell between 35-40. This finding may be explained by the fact that most of the study participants had been informed

recently of their diagnosis. It is the medical oncologist's philosophy and practice to schedule initial or new clinic visits within a week of the consultation. It is the goal of the clinic to enter patients into the system as soon as possible so medical interventions and the associated psychologic and social support measures are not delayed. Many of the study participants had been informed of their diagnosis just days before the administration of the pre-tests. Perhaps the anxiety scores of the study participants were low because the full impact of the cancer diagnosis and its manifestations had not yet been realized.

The demographic characteristics of the participants may have contributed to the lower than anticipated state anxiety scores. The mean age of the participants was 64.6 years. As expected, the majority were unemployed or retired. The social and psychologic ramifications of a cancer diagnosis and accompanying stressors, may vary within age groups. As a result, the associated anxiety also may vary in perception and intensity. It is possible that the older, newly diagnosed cancer patient may have less perception of a threat in the early diagnosis phase than the younger patient.

Analysis within the experimental and control groups revealed some differences in anxiety. The experimental group reported a slight decrease in trait anxiety. Because trait anxiety is influenced by past experiences, the cancer diagnosis information received by the experimental group may have contributed to this decrease in anxiety. One would expect a directional relationship, that is, when overall anxiety decreases one's perception of a threat also decreases. The state anxiety of the experimental group decreased from pre-test to post-test. This difference however, was not significant.. In contrast to the experimental group, the control group reported a slight decrease in trait anxiety and a slight increase in state anxiety from pre-test to post-test.

Further analysis which explored the differences in trait and state anxiety scores between both groups did not demonstrate any significant findings. There was, however, a moderate difference (-4.90) between the experimental and the control group on post-test state anxiety scores. Two-way ANCOVA revealed that cancer diagnosis information explained 42.67% of the variance in state anxiety when controlling for pre-test trait and state anxiety scores. These findings suggest that cancer diagnosis information may decrease the state anxiety of patients with an initial diagnosis of first cancer.

During the initial clinic visit, the oncology nurses observed that participants did not ask for specific cancer diagnosis information. However, it was noted many of the participants who received the cancer diagnosis information verbalized appreciation for the booklets. These patients stated they had not received this specific type of information. Information seeking, an attempt to appraise threats and minimize anxiety, was not a strategy used by the study participants. One possible explanation for this is that cancer patients early in the diagnostic phase may not perceive their diagnosis and its implications as threatening.

Relationship of Findings to the Conceptual Framework

Neuman's (1989) key concepts provide a framework to understand stress and the client/client system reaction to stress. In addition, the framework provides intervention modalities to protect and promote client/client system wellness. This study found that providing cancer diagnosis information to patients with an initial diagnosis of first cancer may decrease state or situational anxiety. These findings are supported by and consistent with the model.

Neuman conceptualizes the client/client system variables and their interrelationship

as determining the nature and degree of reaction to stressors. Stressors may differ in intensity, perception, and reaction produced. In this study, variability of stress reaction from person-to-person was demonstrated in the wide range of differing pre- and post-test anxiety scores. Neuman's model further supports the study's suggestion that reaction to stress varies between age groups.

Neuman's model provided the investigator with a framework to understand how patients interact in their dynamic, internal and external environment. Research has found that cancer patients seek information to appraise harms and threats implied by the cancer diagnosis (Derdiarian, 1987a). Information seeking is an attempt to reduce psychological responses, such as anxiety. Neuman's model explains this phenomenon by viewing the client/client system and its sub-parts as continually interacting with the environmental stressors to equalize disharmony and promote stability or health. An understanding of how patients respond to and interpret stressors provides a strong foundation to support specific, effective nursing interventions.

Neuman identifies secondary prevention as an intervention modality to reduce the degree of reaction to stressors. Recognizing the goal of this modality, this study provided a secondary intervention, cancer diagnosis information, to a group of patients to determine its impact on their anxiety. Although not significant, the findings suggest that the intervention may decrease anxiety thus supporting Neuman's goal to protect the psychological variable in the basic structure of the client/client system.

Neuman's model, while broad and complex, was helpful to better understand how newly diagnosed cancer patients respond to stressors. The model supports the purpose of nursing practice, that is to assist clients to retain, attain, or maintain optimal system

stability (Neuman, 1989). The goal of this research was to provide support for a nursing intervention that assists cancer patients to attain psychological wellness by decreasing perceived state anxiety.

Relationship to Findings in Previous Research

The patient samples, cancer educational treatment modalities, and associated educational interventions varied in previous studies and with the present study. The findings of this study were not significant, however they do lend some support to previous research that studied the relationship between education and anxiety.

The patient sample in the present study consisted of newly diagnosed first time cancer patients. With the exception of studies by Wells, et al. (1995) and Grier (1990) previous research did not differentiate between newly diagnosed cancer patients and recurrent diagnosed cancer patients. Recurrence of a chronic, disabling disease is associated with loss of function and death. It is possible that patients with a recurrent cancer diagnosis may respond to the stressor of recurrence with greater anxiety than newly diagnosed first time cancer patients. This may explain why pre-test state anxiety scores, when used, and post-test state anxiety scores were higher in previous research when compared to this study.

The patient samples in previous studies and this study included mixed cancer diagnoses. An exception was the study by Ali and Khalil (1989) who narrowed their focus to bladder cancer. Sample sizes of previous studies ranged from 20 -60 patients.

The experimental intervention, educational program and information, provided to the experimental cancer patients in the previous research was related directly to the cancer treatment modalities. These modalities varied and included surgical procedure, radiation

therapy, and chemotherapy administration. The patients in this study were undergoing chemotherapy treatment and received chemotherapy treatment information. However, the experimental intervention in this study, cancer diagnosis information, was broad and not specific to treatment modality education.

Despite these differences, the positive influence of cancer information on state anxiety of cancer patients is supported by previous research (Ali & Khalil, 1989; Grier, 1990; Porocho, 1995; Rainey, 1985; Wells, et al., 1995). Earlier research findings consistently demonstrated significant differences in anxiety between cancer patients who received standard, routine information and those who received standard, routine information and additional information (Ali & Khalil, 1989; Grier, 1990; Porocho, 1995; Rainey, 1985; Wells, et al., 1995).

Limitations and Recommendations

The findings of this research study are from a small, conveniently selected sample (N=40). Therefore the findings can not be generalized beyond the present sample. Generalizability would be facilitated using random sampling and a larger sample.

Several threats to internal validity may have influenced the results of the study. Threat of history may have occurred as participants in either group could have been exposed or had access to information similar or related to cancer diagnosis information between the pre-test and post-test time interval. Cancer diagnosis information is readily available at local cancer agencies, health care settings, libraries, and through the use of computer technology. Further research should assess the participant's exposure to other sources of cancer diagnosis information.

Maturation is a more relevant consideration. Cancer and its implications can

create various changes within the patient during the course of the study. The changes occur as the disease process and the treatment plan progress and can influence psychological, physical, or spiritual variables. Examples of change can be related to: (a) diagnosis acceptance; (b) support systems; (c) biological changes secondary to the disease itself; (d) direct and indirect effects of chemotherapy; and (e) value and belief systems. Any one or combination of these changes may have influenced the general perception of anxiety of the participants, specifically at the post-test measurement. There was an average of a 3 week time interval between pre-test and post-test measurements. Post-testing participants before 3 weeks may have more accurately measured anxiety related to the experimental intervention and thus minimized the threat of maturation. Test sensitization may have occurred with the participants. This threat was minimal as it is more likely to occur when dealing with opinions, attitudes, controversial or novel material (Polit & Hungler, 1991).

The average time interval between distribution of the cancer diagnosis information and the post-test date of the experimental group was 25.6 days. Because this time interval was long, the post-test results may not have reflected the true impact of the cancer diagnosis information. The anxiety of these participants may have been less if measured shortly after the intervention. Post-test measurement within a 10 -14 day period would perhaps determine a more accurate assessment of the influence of cancer diagnosis information on anxiety.

A limitation of the study was the use of three oncology nurses to conduct the education programs and testing of the participants. The investigator attempted to minimize this limitation by thoroughly training and preparing the oncology nurses about

the study. One nurse was replaced due to staff turnover.

The descriptive statistics did not include the length of time participants had known about their cancer diagnosis. An assessment was not made to determine what, if any, cancer diagnosis information the participants received prior to their initial chemotherapy clinic visit. Additionally, the presence or absence of co-existing or chronic disease processes was not assessed. The perception of threat of another chronic disease and the associated coping strategies may have influenced the participant's anxiety related to the cancer diagnosis. A revised demographic/descriptive tool should include this information to determine the relationships, if any, these variables would have on anxiety.

Another limitation of the study was the inclusion criteria of mixed cancer diagnoses. Cancer diagnoses vary in their prognosis, treatment modalities, and implications. A narrower focus would provide guidelines to individualize the learning needs for specific groups of patients.

The oncology nurses encouraged the patients to read the material. The study did not assess whether or not the experimental group did read the cancer diagnosis booklet. Determining if the booklet was read would have lent support to the study findings.

Implications for Nursing

Previous nursing research demonstrates that cancer patient education significantly decreases patient anxiety. The findings from this study suggest that providing cancer diagnosis information to newly diagnosed, first time cancer patients may decrease the psychological impact of anxiety.

These findings have implications for the clinical practice of oncology nurses. Oncology nurses strive to address the informational needs of cancer patients. Dierderian

(1986 b) found that newly diagnosed cancer patients have significant information concerns related to disease, specifically diagnosis. Typically, outpatient oncology clinics attempt to meet these informational needs by providing cancer diagnosis booklets in the waiting room. This informal approach is effective only if patients see the availability of the booklets or deliberately seek out the booklets. In addition, stocked displays run the risk of not providing all available booklets at all times. This inconsistent, haphazard approach can be more effective if oncology nurses include cancer diagnosis booklets routinely in their standard patient education programs. The booklets should be provided early in the diagnosis phase. Additionally, oncology nurses need to encourage patients to read the booklets. The importance of providing relevant information must be recognized by oncology nurses. This nursing intervention will help reduce the threat of the cancer diagnosis and its associated anxiety and will facilitate wellness.

Oncology nurses recognize that cancer and its biologic, psychologic, and social ramifications introduce many potential stressors into the lives of cancer patients and their families. In an effort to address these stressors, oncology nurses provide a wide range of multi-media education. The goal of the education is to facilitate patients' understanding of the available support systems, nutritional needs, cancer disease process and treatment options, management, and outcomes. These multi-media educational strategies are not always tailored to the individual needs of the cancer patients. While nursing recognizes the individual, unique needs of patients, the tendency is to provide the same structured or standard education to all cancer patients, regardless of age or cancer disease process. In order to meet the individual needs of patients more effectively oncology nurses need to assess formally the educational needs of newly diagnosed cancer patients during the initial

clinic visit.

Cancer and its implications create various changes within the patient as the disease process and treatment plan progress. These changes may be associated with additional, as well as different educational or informational needs. Therefore, it is recommended that oncology nurses continually reassess and evaluate the educational needs of patients throughout diagnosis and treatment. It is expected that reassessing and providing relevant, needed information at the appropriate time will decrease patient anxiety and maximize patient participation with the treatment plan.

The results of this study have implications for education. Outpatient chemotherapy nursing orientation programs typically focus on cancer types, treatment protocols and management of side effects, and nutritional and social supports. Little attention is given to the potentially complex psychological needs of cancer patients. Orientation programs and their curricula must teach novice oncology nurses about cancer patients and their psychological needs. Specifically, the curriculum needs to address why these stressors exist, how the stressors can be assessed, and what nursing interventions can be used to manage stressors and their impact. Novice oncology nurses need to appreciate the significant role education plays in an attempt to reduce psychological stressors, specifically, anxiety.

Nurse administrators need to be cognizant of the cancer diagnosis informational needs of newly diagnosed first time cancer patients. Additionally, nurse administrators must recognize that the provision of cancer diagnosis information may decrease anxiety. It is the role of the administrator to provide resources necessary to meet the informational needs of cancer patients. The necessary resources include cancer diagnosis booklets,

complete patient assessment tools, and comprehensive oncology orientation programs.

The focus of this study was to determine the effect of cancer diagnosis information on state anxiety of patients with an initial diagnosis of first cancer. Although the research hypothesis was not supported the findings indicate that when controlling statistically for pre-test trait and state anxiety the provision of cancer diagnosis information may decrease state anxiety. These findings reveal another opportunity for nurses to address the psychological impact of a cancer diagnosis.

APPENDICES

APPENDIX A

The Charles Spielberger State-Trait Anxiety Inventory

APPENDIX A SELF-EVALUATION QUESTIONNAIRE

Developed by Charles D. Spielberger
in collaboration with
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STAI Form Y-1

Name _____ Date _____ S _____
Age _____ Sex: M _____ F _____ T _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

NOT AT ALL
SOMEWHAT
MODERATELY SO
VERY MUCH SO

- | | | | | |
|--|---|---|---|---|
| 1. I feel calm | ① | ② | ③ | ④ |
| 2. I feel secure | ① | ② | ③ | ④ |
| 3. I am tense | ① | ② | ③ | ④ |
| 4. I feel strained | ① | ② | ③ | ④ |
| 5. I feel at ease | ① | ② | ③ | ④ |
| 6. I feel upset | ① | ② | ③ | ④ |
| 7. I am presently worrying over possible misfortunes | ① | ② | ③ | ④ |
| 8. I feel satisfied | ① | ② | ③ | ④ |
| 9. I feel frightened | ① | ② | ③ | ④ |
| 10. I feel comfortable | ① | ② | ③ | ④ |
| 11. I feel self-confident | ① | ② | ③ | ④ |
| 12. I feel nervous | ① | ② | ③ | ④ |
| 13. I am jittery | ① | ② | ③ | ④ |
| 14. I feel indecisive | ① | ② | ③ | ④ |
| 15. I am relaxed | ① | ② | ③ | ④ |
| 16. I feel content | ① | ② | ③ | ④ |
| 17. I am worried | ① | ② | ③ | ④ |
| 18. I feel confused | ① | ② | ③ | ④ |
| 19. I feel steady | ① | ② | ③ | ④ |
| 20. I feel pleasant | ① | ② | ③ | ④ |

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SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name _____ Date _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

ALMOST NEVER
SOMETIMES
OFTEN
ALMOST ALWAYS

- | | | | | |
|--|---|---|---|---|
| 21. I feel pleasant | ① | ② | ③ | ④ |
| 22. I feel nervous and restless | ① | ② | ③ | ④ |
| 23. I feel satisfied with myself | ① | ② | ③ | ④ |
| 24. I wish I could be as happy as others seem to be | ① | ② | ③ | ④ |
| 25. I feel like a failure | ① | ② | ③ | ④ |
| 26. I feel rested | ① | ② | ③ | ④ |
| 27. I am "calm, cool, and collected" | ① | ② | ③ | ④ |
| 28. I feel that difficulties are piling up so that I cannot overcome them | ① | ② | ③ | ④ |
| 29. I worry too much over something that really doesn't matter | ① | ② | ③ | ④ |
| 30. I am happy | ① | ② | ③ | ④ |
| 31. I have disturbing thoughts | ① | ② | ③ | ④ |
| 32. I lack self-confidence | ① | ② | ③ | ④ |
| 33. I feel secure | ① | ② | ③ | ④ |
| 34. I make decisions easily | ① | ② | ③ | ④ |
| 35. I feel inadequate | ① | ② | ③ | ④ |
| 36. I am content | ① | ② | ③ | ④ |
| 37. Some unimportant thought runs through my mind and bothers me | ① | ② | ③ | ④ |
| 38. I take disappointments so keenly that I can't put them out of my
mind | ① | ② | ③ | ④ |
| 39. I am a steady person | ① | ② | ③ | ④ |
| 40. I get in a state of tension or turmoil as I think over my recent concerns
and interests | ① | ② | ③ | ④ |

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APPENDIX B

Study Procedure Guidelines

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STUDY PROCEDURE GUIDELINES

The following guidelines outline the process for the study procedure. The purpose of the guidelines is to assist the involved oncology nurses, serving as research assistants, as study participants are enrolled into and progress through the study. It is critical to the integrity of the study that consistency and accuracy be maintained.

1. Daily, the oncology nurse will identify new patients by checking the daily appointment book. Daily, the oncology nurse will check the study tracking log to identify study participants returning for his/her second visit (posttesting).
2. The oncology nurse will recruit each study participant at the time of his/her initial clinic visit.
3. The oncology nurse will explain verbally to each potential study participant the study, its purpose, and participant expectations as outlined on the "Information For Research Participants". The oncology nurse will provide each participant with a copy of the information sheet.
4. The oncology nurse will present the "Informed Consent of Participant" to each study participant. After each study participant verbally consents to participate, the oncology nurse will witness each study participant's signature.
5. The oncology nurse will log each study participant on the tracking form. Each study participant will be assigned into experimental group or control group depending on the randomly assigned week indicated on the log.
6. All patient teaching and testing will be conducted in a private place.
7. The oncology nurse will administer the pretest to each study participant prior to his/her first chemotherapy.
8. The oncology nurse will provide both groups of study participants with the standard patient education. The oncology nurse will encourage each participant to read the information before his/her next visit.
9. The oncology nurse will provide each experimental study participant with the disease specific "What You Need To Know" booklet. The oncology nurse will encourage each study participant to read the booklet before his/her next visit.

10. The oncology nurse will administer the posttest to each study participant prior to his/her second chemotherapy session.
11. The oncology nurse will indicate on the tracking log as pretesting, standard patient education, cancer information, and posttesting are completed.
12. The oncology nurse will place the completed tests in the designated folder.
13. The oncology nurse will discontinue testing if a study participant verbalizes desire to withdraw from the study or exhibits emotional symptoms (e.g., crying, inability to finish the test).
14. Control study participants who request cancer diagnosis information will be provided with the appropriate booklet and hence dropped from the study.

APPENDIX C

Study Participant Tracking Log

APPENDIX C

**STUDY PARTICIPANT LOG
OUTPATIENT CHEMOTHERAPY DEPARTMENT**

#	STUDY PARTICIPANT HOSPITAL I.D. NUMBER	CONTROL GROUP (C)	O R	EXPERIMENTAL GROUP (E)	DATE OF INITIAL VISIT (1st)	TYPE OF CANCER DX	STD. PT. EDUCATION RECEIVED	CANCER DX INFO. PROVIDED Y or N	DATE OF 2nd DT	EMPLOYMENT STATUS	AGE	GENDER	ED LEVEL	PRETEST DATE	POST TEST DATE

APPENDIX D

Informed Consent of Participant

APPENDIX D

INFORMED CONSENT OF PARTICIPANT

A detailed explanation of the study and its purpose have been given to me and I understand it. I understand that my participation in the study will not affect the type of medical treatment or care that the physician has planned for me.

I understand that my chart will be reviewed and information gathered from it. This information will include gender, age, and information related to my specific cancer diagnosis.

I understand that there may be no direct benefit to me as a result of the study but new knowledge may be learned which may be of value to me and/or others.

I was given an opportunity to ask any questions about the study and all were answered to my satisfaction.

I know I am free to withdraw this consent and to stop participation in the study at any time without any change in the services provided to me.

I have been assured that my personal identity will not be revealed and will remain confidential in reports or other releases of the results of the study. At my request a summary of the results will be given to me.

Of my own free will I consent to attend and participate in the study.

Participant: _____

Witness: _____

Date: _____

APPENDIX E

Information for Research Participants

APPENDIX E

INFORMATION FOR RESEARCH PARTICIPANTS

The study in which you are being asked to participate is titled "The Effect of Cancer Diagnosis Information on the Anxiety of Patients with an Initial Diagnosis of First Cancer". The purpose of this study is to evaluate first time newly diagnosed cancer patients and how they respond to patient education.

As a participant you will be asked to complete two questionnaires at different intervals of your care. Each questionnaire contains 40 questions and requires 10-15 minutes or less of your time. Both questionnaires will be given to you before your second chemotherapy session and will be done with pencil and paper.

Every attempt will be made to maintain your confidentiality. Your name will never be attached to the questionnaire. Reports and papers will never discuss individual findings and will include only group data. The risks associated with this study are minimal. Some questions may cause emotional discomfort. You may withdraw from the study at any time without any change in the services provided to you.

The personal benefits to you are limited. The results of this study will help identify the first time newly diagnosed patients' responses to their cancer diagnoses and associated patient education.

This study is being conducted by Kim S. Allen, R.N. She is a graduate nursing student at Grand Valley State University. This study will continue for 4-6 months. If you have any questions about the study you may contact the outpatient chemotherapy nurse.

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