

ANXIETY REDUCTION IN ADULT CANCER PATIENTS
RECEIVING RADIATION THERAPY

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CHAPTER I

INTRODUCTION

The overall incidence of cancer has shown a slight, steady increase over the years. Second only to heart disease as a cause of death in the United States, cancer poses one of the major health problems of the twentieth century. Cancer develops and flourishes in one out of every four persons. In the 1970s, it was expected that newly diagnosed cases of cancer would number 6 1/2 million, 3 1/2 million persons would die of the disease, and over 10 million persons would be under medical supervision (American Cancer Society 1978).

Cancer has long been viewed by health professionals and laymen alike as a disease to be feared above all others. Although this fear may be slowly diminishing, ingrained attitudes do not change easily, and for most people the word "cancer" alone produces fear. There is something about cancer that causes more fear and anxiety in individuals than any other disease. Psychological stress occurs when there is a threat to man's health or well-being. Just the word "cancer" instantly evokes terrible thoughts of death, mutilation, and emaciation and a

profound sense of futility that there is not present or future prospect of resolving the problem. Inherent with the diagnosis of cancer is anxiety regarding the initiation of treatment and its future outcome.

Treatment of the patient with cancer is multimodal. Radiotherapy is widely used alone or in conjunction with surgery and chemotherapy. Approximately one-half of all cancer patients receive radiotherapy at some time during their overall treatment. Most patients undergoing radiotherapy suffer some degree of anxiety and often associated depression. Many believe that radiation therapy makes patients deathly ill. Perhaps their anxiety is due in part to the stereotyped picture that radiation treatment is given only to patients with far advanced cancer as a desperate measure, and that such patients have little if any chance for survival. Furthermore, the patient's anxiety is increased by his lack of control over the treatment and disease process, and his fear of the unknown.

The nurse is the health professional who has closest and most frequent contact with the patient and his family. Therefore, the nurse may be in a position to lessen patient anxiety. One way to decrease anxiety is to provide the patient with specific information relevant

to the anxiety producing situation so he can deal with the event. Proper psychologic preparation and adequate explanations can help the patient accept the therapy with a lessening of anxiety and fear.

Patient education programs primarily consist of verbal instructions concerning the format of the treatment. This kind of preparation does not allow the patient to view the radiotherapy department, the equipment, the environment, meet personnel, and hear sounds that may be experienced during the procedure. Lack of adequate auditory and visual exposure to the procedure and environment in which the treatment will take place allows for the patient to fantasize about the procedure. Such fantasies along with misconceptions regarding radiotherapy may increase patient anxiety concerning the treatment.

This study was implemented to determine if there was a reduction of anxiety in the cancer patient receiving radiotherapy for the first time after viewing an audiovisual presentation about radiotherapy rather than receiving a standard verbal explanation.

Statement of the Problem

The research problem for this study was:

When pre-instruction state anxiety scores are controlled, do adult cancer patients who receive

audiovisual instruction before their first radiation treatment experience significantly different state anxiety scores than do adult cancer patients who receive standard verbal instruction?

Purposes

The purposes of the study were to:

1. Determine pre-instruction state anxiety scores pre-radiation therapy for adult cancer patients prepared by audiovisual instruction
2. Determine pre-instruction state anxiety scores pre-radiation therapy for adult cancer patients prepared by a standard verbal instruction
3. Determine post-instruction state anxiety scores for pre-radiation therapy adult cancer patients prepared by audiovisual instruction
4. Determine post-instruction state anxiety scores for pre-radiation therapy adult cancer patients prepared by a standard verbal instruction
5. Compare post-instruction anxiety scores for each group pre-radiation therapy while controlling for pre-instruction anxiety scores.

Background and Significance

Cancer is a major health problem in the United States as well as throughout the world. It is indiscriminate in its effects on age, sex, race, and socioeconomic groups. There are over three million Americans alive today who have a history of cancer, two million of them with a diagnosis of five years or more (American Cancer Society 1978). It is projected that in 1979, about 765,000 will be diagnosed as having cancer, with an additional 300,000 diagnosed as having non-melanoma skin cancer (American Cancer Society 1978). As a result of modern diagnosis and treatment methods, one-third of all people who get cancer this year will be alive at least five years after treatment (American Cancer Society 1978). Through extensive national publicity and the provision of health care information, Americans are becoming increasingly aware of cancer, its prevention, and treatment.

Stress is a natural reaction when a person's health or well-being is threatened or affected. Due to the increasing incidence and management of cancer, more persons are aware of its meaning and significance. "Cancer," "malignancy," "metastasis," "tumor," and "carcinoma" have becoming terrifying words to most people.

Literature reveals there is universal agreement that a diagnosis of cancer is psychologically stressful and evokes various degrees of anxiety in the patient (Levine 1962; Peck 1972; Volicer and Bohannon 1975; Holland 1976; Vettesse 1976; Ryan and Neuenschwander 1977). Anxiety is a common response to a stressful situation such as the diagnosis of cancer. There is widespread consensus that in most persons an increase in anxiety is characterized by feelings of tension and apprehension, and by heightened autonomic nervous system activity (Freud 1936; Martin 1961; Spielberger 1966).

Spielberger (1972) described anxiety as a specific emotional state which consists of unpleasant, consciously perceived feelings of nervousness, tension, and apprehension, with associated activation or arousal of the autonomic nervous system. Anxiety may be initiated by a stressful external stimulus that is perceived as dangerous or threatening, or by a thought or idea that forecasts threat or causes the individual to recall an earlier danger situation. According to Peplau (1952), anxiety is energy which cannot be observed directly. Its presence is implied when the energy is transformed and becomes observable. The cause of anxiety is viewed by Peplau (1952) as any threat to the security of the individual.

These beliefs are applicable to the patient with cancer.

Cancer patients, irrespective of their premorbid anxiety level, are exposed to many factors which dramatically increase their anxiety state. Among these factors is the very word "cancer," the reaction of significant others, and fear--fear of disfiguration, physical pain, mental changes, reduced vitality, helplessness, dependence, social life curtailment, unknown consequences, and death. Among these anxiety producing experiences is the beginning of radiation therapy.

Radiotherapy and chemotherapy are often used in conjunction with surgery in the treatment of cancer. Moss, Brand, and Battifora (1973) related the curative usefulness of radiotherapy and distinguished it as one of the most valuable tools available. Irrespective of its therapeutic value, many patients fear radiation as inherently damaging, producing widespread and pervasive side effects. In view of these widespread negative perceptions of radiation therapy, it is not surprising that the beginning of radiation therapy is often associated with a sharp increase in the anxiety state. Peck and Boland (1977) conducted a study involving interviews with fifty patients receiving radiotherapy. Interviews revealed radiation

was feared as inherently damaging and quite possibly carcinogenic. Patients were found to be anxious and depressed. Gottschalk (1969) compared the effects of actual and sham radiation, total and half body. It was noted that a sharp increase in anxiety prior to treatment, real or sham, occurred. Forester, Kornfeld, and Fleiss (1978) reported a study in which they evaluated two hundred cancer patients, half of whom received betatron therapy and half linear accelerator therapy.

The incidence and severity of anxiety and depression were high in both groups; as radiotherapy continued the symptoms tended to decrease in intensity among the patients treated with the linear accelerator and to increase among the betatron patients (Forester, Kornfeld, and Fleiss 1978, p. 960).

The difference was thought to be partly due to the noise of the machine and length of the actual treatment.

Research by Peck and Boland (1977) has shown that many of the patient's most alarming and upsetting expectations of radiation reflect the fact that they receive little objective information about the actual treatment. In fact, Peck and Boland (1977) reported that most of their patients had received little or no authoritative information prior to treatment, and instead had obtained information from friends and relatives. This information from non-professionals was frequently so inadequate that

Peck and Boland (1977) described it as "inaccurate, pessimistic, and planning" (p. 181).

Volicer (1974) reported that an inadequate explanation of treatment and diagnosis was found to be highly stressful events for hospitalized as well as non-hospitalized patients. Since anxieties based on ignorance or misinformation can be significantly diminished with an appropriate educational program (Egbert 1964; Healy 1968; Putt 1970; Johnson 1972; Johnson, Morrissey, and Leventhal 1973; Lindeman and Stetzer 1973; Schmitt and Woolridge 1973; Johnson and Rice 1974; Kinney 1977; Barnett 1978), replacing a patient's erroneous perceptions of radiation therapy with professionally presented, factual information should significantly reduce the state anxiety elicited by the initiation of radiation therapy.

In view of the preceding evidence, the importance of a pre-radiation therapy teaching plan is apparent. If anxiety is related to the patient's progress and morbidity it is vital that nurses attempt to relieve it. Through examination of the literature, it is evidenced that the nurse has an important function in patient teaching and constructive alleviation of patient anxiety (Gregg 1952; Bird 1955; Janis 1958).

The American Nurse's Association (1976) stated, "It is a nursing responsibility to engage in health teaching to advise clients on matters relating to their health" (p. 18). Patient teaching is not a luxury, but a right if patients are to receive maximum benefit from today's knowledge of treatment, prevention, and control of disease (Winslow 1976). Pohl (1978) considered the nurse's teaching function as one which should be applied at every appropriate opportunity. Teaching should help patients understand the importance of health principles and practices, as well as help them assume the responsibility for applying what they learn to themselves and their families. Murray and Zentner (1975) maintained that teaching should be an integral part of the nursing care plan, and the teaching-learning process is important at any state of wellness-illness continuum.

In patient teaching, pictures frequently convey meanings more clearly and easily than do words. Words used in explanations, whether verbal or written, are subject to diverse interpretations. According to Pohl (1978), audiovisual materials, such as slides, may serve several purposes in the teaching-learning process. They may extend the learner's sensory experience, thus adding to the learner's perceptions. The concreteness of

audiovisual materials may give meaning to abstractions and make complicated explanations unnecessary. Jones, Dunbar, and Jirovec (1978) advocated that the use of slides with audiotape "combines auditory and visual senses to present a multiplicity of learning materials in a creative, stimulating manner" (p. 43). The increased impact upon the senses enhances learning and the subsequential retention of information presented. Gagne (1977) believed that "the addition of a picture to oral verbal instruction makes it possible for the learner to encode the objects or events depicted as specific, retrievable images" (p. 309).

Examination of the literature indicates that among the functions of the professional nurse, teaching and reduction of patient anxiety receive high priority. Although many studies report anxiety reduction in patients undergoing diagnostic and surgical treatment, no studies were found which examined the reduction of anxiety in patients receiving radiotherapy for cancer. There is a further need to study methods to reduce anxiety in cancer patients scheduled to begin radiation treatment. Nurses must be aware of interventions aimed toward reduction of patient anxiety prior to radiation treatment and prevention of the patient's tendency to imagine the worst.

Assumptions

The assumptions for this study were:

1. Receiving radiation therapy is perceived as a threatening event requiring the patient to adapt psychologically and physiologically
2. Lack of information about radiation therapy contributes to the anxiety experienced by the patient
3. Patients have a right to receive information about treatments they are scheduled to experience
4. Patient anxiety reduction is a professional nursing function
5. People learn through reading, seeing, hearing, touching, and experiencing.

Theoretical Framework

The theory upon which this study was based is the Trait-State Anxiety Theory proposed by Spielberger (1966). Spielberger distinguished conceptually and operationally between anxiety as a transitory state and anxiety as a relatively stable personality trait. He referred to Trait-Anxiety as a personality trait characterized by a lowered threshold for becoming anxious in a variety of situations perceived as threatening. Spielberger, Gorsuch, and Lushene (1970) defined State-Anxiety

as a transitory emotional state or condition of the human organism that is characterized by subjective consciously perceived feelings of tension, apprehension, and heightened autonomic nervous system activity. State-Anxiety is a reaction to perceived threat which varies in intensity and fluctuates over time.

Spielberger (1966) postulated that perception of threat is prerequisite for elevation in State-Anxiety and is greatly influenced by past experiences. When the individual appraises a situation as threatening, an Anxiety-State reaction occurs, and the amount of threat perceived by the individual will determine the intensity of the Anxiety-State reaction. Spielberger further explained that the persistence of the evoking stimuli as well as the individual's prior experience with similar circumstances determine the duration of the Anxiety-State. Anxiety-State reactions are unpleasant and may initiate behavior which defends against the threat resulting in a reduction in the level of Anxiety-State.

Spielberger identified two important classes of stressor situations that appear to have different implications for the "evocation" of Anxiety-State in persons who differ in Anxiety-Trait. Individuals with high Anxiety-Trait appear to interpret circumstances in which

their personal adequacy is evaluated as more threatening than do low Anxiety-Trait individuals, and situations that are characterized by physical danger are not interpreted as differentially threatening by high and low Anxiety-Trait subjects. Accordingly, Spielberger (1966) posited that differential elevation in Anxiety-State would be expected for persons who differ in Anxiety-Trait under circumstances characterized by some threat to self-esteem, but not in situations that involved physical danger unless personal adequacy is also threatened.

According to Spielberger there are two types of anxiety, and they are quite different in their etiology and treatment. The first type is a chronic anxiety that is part of the individual's personality structure. This type of anxiety, labeled Trait-Anxiety by Spielberger, is relatively unchanging overtime and is an expression of a deep personality characteristic. Since it reflects a relatively fixed personality trait, this chronic level of anxiety is relatively unaffected by short-term environmental events. The second type of anxiety, labeled State-Anxiety by Spielberger, is a reaction to anxiety eliciting stimuli in the immediate short-term influences and is relatively independent of Trait-Anxiety.

Just as Trait and State Anxiety differ in their etiology, they also differ in their treatment. Alterations in Trait-Anxiety require important and often pervasive changes in the basic personality structure. Such changes require significant amounts of time and often require professional help. On the other hand, State-Anxiety is readily influenced by short-term changes in the environment. For example, many patients respond to having blood drawn with a sharp increase in State-Anxiety. This anxiety can be greatly decreased (or increased) by the reactions, appearance of competence, and general attitude of the technician. State-Anxieties reflect factors in the immediate environment and hence are readily modifiable by environmental change.

One of the most powerful known environmental factors is education. Ignorance of an unknown procedure or misinformation about that procedure is often a significant source of State-Anxiety. Peck and Boland (1977) noted that a sharp increase in anxiety is encountered prior to experiencing radiation therapy. Many patients fear radiation as inherently damaging, and producing extremely disturbing side effects, thereby posing a threat to their physical well-being, and subsequently their self-esteem. Since many of these feelings are

based on a lack of understanding, the nurse, as an educator, may greatly reduce the patient's State-Anxiety by presenting relevant information about the impending treatment.

Hypothesis

For the purposes of this study, the following hypothesis was tested:

With pre-instruction state-anxiety scores controlled, there will be no significant difference between post-instruction state-anxiety scores of pre-radiation therapy adult cancer patients prepared by audiovisual instruction as compared to pre-radiation therapy adult cancer patients prepared by standard verbal instruction.

Definition of Terms

For the purposes of this study, the following terms were operationally defined:

Pre-radiation Therapy Adult Cancer Patient-- person 21 years of age or older who has been diagnosed as having cancer and has a physician's order to receive radiation therapy

Critically ill--extremely sick so that the individual has much difficulty meeting his basic physical

and physiological needs, and survival beyond a few weeks is doubtful

State Anxiety--a score received on Spielberger's State-Anxiety Scale (Appendix A)

Audiovisual instruction--audiotape and slide presentation of the teaching plan utilized in preparing the adult cancer patient for radiation therapy. The content of the teaching plan is congruent with that used in the verbal preparatory instruction method (Appendix B includes complete teaching plan)

Standard verbal instruction--verbal presentation of a teaching plan utilized in preparing the adult cancer patient for radiation therapy. The content of the teaching plan is congruent with that used in the audiovisual preparatory instruction method (Appendix C includes complete teaching plan)

Limitations

The limitations of this study were:

1. The stage of cancer and medical regimen varied among the patients
2. Some patients were receiving curative and some palliative radiation treatment

3. Patients may have possessed varying preconceived ideas about radiation treatment

4. Some of the patients had previous experience with relatives or friends receiving radiation treatment

5. The adjustment to the diagnosis of cancer varied among patients

6. Educational background of the patients was varied

7. Information patients requested and/or received from personnel relevant to radiation treatment may have interfered with the state-anxiety scores

8. The population involved in the study was limited to one private hospital

Delimitations

The delimitations for this study were:

1. This was the patient's first time to receive radiation therapy

2. The patients were 21 years of age or older

3. The patients were able to read, speak, and understand English

Summary

Anxiety is present to some degree in persons with a diagnosis of cancer, as the disease is viewed by

most individuals as life threatening itself. There are few therapeutic modalities that cause more misunderstanding and apprehension than receiving radiation therapy in cancer treatment. The ordeal of having to undergo radiation therapy adds enormously to the fear and anxiety already induced by the diagnosis itself, highlighting the need for effective nurse-patient communication. Through a review of research studies, it has been documented that nurses can reduce patient anxiety through various methods of patient education related to giving specific information.

Chapter II presents literature reviews on the theoretical development of anxiety, cancer, and radiation therapy; the relationship between anxiety, cancer, and radiation therapy; and patient education in nursing. Chapter III explains the procedure for collection and statistical treatment of data. The results of data analysis and its interpretation of pre and post state anxiety scores of the subjects are interpreted in Chapter IV. Chapter V, the final chapter, contains the summary, conclusion, implications, and recommendations for further research.

CHAPTER II

REVIEW OF LITERATURE

Anxiety has long been considered a fundamental human emotion. The phenomena of anxiety has been the focus of investigation, description, writings, and analysis by numerous theoreticians. Review of the literature reveals that the concept of anxiety assumes a central position in most theories of behavior and/or personality. However, despite the general agreement of its significance, there is little agreement among theoreticians as to the nature of anxiety, conditions that arouse it, and specific experiences that influence the individual's vulnerability.

Theoretical Development of Anxiety

Freud (1936) described the nature of anxiety as "something felt," an unpleasant affective state of condition. Freud's initial theory of anxiety placed emphasis on its biological origin in the sexual instinct. Freud maintained that it was interference with the adequate discharge of the psychic components of sexual tension--that is, its specifically libidinal aspects--

that gave rise to anxiety. As his theory became more complex, he proposed a new mechanism, "repression," which he viewed as playing a major role in causing the accumulation of sexual energy. In this theoretical scheme, anxiety was viewed as being the result of repression. Freud (1936) later revised his initial theory of anxiety to shift emphasis away from a basically physiological perspective toward a perspective that was more decisively psychological. Freud's new theory defined anxiety as being a signal that indicated that presence of a dangerous situation. Anxiety was viewed as a psychological reaction of the ego to dangers that threatened it from within and without. Anxiety, thus conceived of as originating in the ego as an ego affect, became a psychological force in its own right. Freud (1936) made further distinction between objective and neurotic anxiety on the basis of whether the source of danger originated from the individual's external world or from internal impulses.

Later, neo-Freudian theorists proposed a shift in emphasis from a purely individualistic, biological and instinctual approach to a socially oriented, cultural and environmental approach. Horney (1937), a prominent neo-Freudian theorist, explained that most anxiety process has a common denominator relationship to hostility.

Usually, some sensitivity is hurt and this infringement arouses hostility. According to Horney (1937), the feeling of danger and helplessness inherent in anxiety occurs because of the element of repressed hostility.

Horney (1937) stated:

These processes brought about by repressed hostility result in the affect of anxiety. . . . the repression generates exactly the state which is characteristic of anxiety; a feeling of defenselessness toward what is felt overpowering danger menacing from outside (p. 75).

Sullivan (1953), also a neo-Fruedian theorist, proposed an interpersonal theory of anxiety. Sullivan described anxiety as an exclusively human, social phenomena that always pertains to interpersonal relations. It is an intensely unpleasant state or tension elicited by the experienced disapproval and/or condemnation of significant others. It expresses the individual's anticipation or actual sense of being a failure in his most fundamental task, that of becoming a human being. For Sullivan, anxiety is not adaptive, it is disjunctive; it temporarily cuts the individual off from his necessary environment and renders him helpless. In anxiety, the individual flees from his own experience; he flees from himself. Anxiety distorts the individual's ability to comprehend reality, limits stimuli that are perceived,

and results in disassociation of disapproved facets of the personality.

In this early works, Mowrer (1950) proposed a learning-theory approach to anxiety. For Mowrer, anxiety is the anticipation of actual physical injury or pain, and anticipation that is learned through stimulus-response conditioning. The organism perceives the danger signal (stimulus), and the conditioned response which follows in anticipation of danger--a response characterized by tension, organic discomfort, and pain--is anxiety. Any behavior which reduces anxiety is rewarding, and hence such behavior becomes learned. Mowrer postulated that this phenomena is, to a large extent, learned; that it can serve to motivate trial-and-error behavior; and that its reduction reinforces the learning of new habits.

Mowrer (1950), in his later writings, proposed a "guilt theory" to describe anxiety. Mowrer (1950) stated:

. . . anxiety comes, not from acts which the individual would commit but dares not, but from acts which he has committed but wishes he had not (p. 537).

According to Mowrer (1950) anxiety is a product, not of too little self-indulgence and satisfaction, but of irresponsibility, guilt, and immaturity.

Kierkegaard (1944) described anxiety from an existentialistic point of view based on his notion of freedom, choice, and personal responsibility. Kierkegaard understood anxiety as an experience in its own right, not requiring a strict basis in the natural scientific attitude nor an understanding within an interpersonal realm. In Kierkegaard's view, anxiety is intimately tied to the existence of potential freedom, for whenever man considers potential courses of action, he is faced with insecurity. In other words, any choice involves the experience of anxiety, thus, from the existential position, the events preceding anxiety are intrinsic to man's existence in a world in which choice exists. Anxiety arises with this confrontation of freedom in that the agent who must choose and who has no guarantee of the final outcome, must also bear the full responsibility of his choice. Kierkegaard believed that a person cannot be free and responsible without encountering anxiety; and considered anxiety to be both inherent in and necessary for human growth.

Tillich (1952) also presented an existential view of anxiety by defining it as a type of fear resulting from the threat of nothingness or non-being. Tillich further noted a common trait of most anxiety theories

is an emphasis on unresolved conflicts between structural elements of the personality.

An existential psychologist, May (1950), defined anxiety as "the apprehension cued off by a threat to some value that the individual holds essential to his existence as a personality" (p. 191). Anxiety is the subjective state of the individual's becoming aware that his existence can become destroyed, that he can lose himself and his world, that he can become "nothing." May defined anxiety as diffuse apprehension, differing from fear in its vagueness and objectlessness, and as a state that is associated with feelings of uncertainty, helplessness, and threat to the core or essence of personality. Thus, May attributed anxiety not to some devisive intrapsychic conflict or external danger, but rather to the fundamental clash between being and the threat of non-being. A certain amount of anxiety is, therefore, a normal and inevitable aspect of human nature.

May (1950) viewed normal anxiety as an expression of the capacity of the organism to react to threats-- a capacity that is innate and has its inherited neurophysiological system. May (1950) proposed a "learning theory" approach by suggesting "the capacity for anxiety is not learned, but the quantities and forms of anxiety

in a given individual are learned" (May 1950, p. 208)

Lazarus (1966) described stress as extreme disturbance of biological and psychological functioning brought about by unusually threatening, damaging, or demanding life conditions. According to Lazarus, stress and anxiety disrupt the important values and goals of the individual. The ability to control the environment, to avoid pain, and to maintain personal identity are threatened.

Any perception of threat can lead to the experiencing of anxiety. For Lazarus (1966), threat is a state in which the individual anticipates harm. Cognitive appraisal of the situation results in cues that signify threat or non-threat to the individual. Intellectual resources, education, knowledge, beliefs, and past experiences influence the appraisal. Once a stimulus has been appraised as threatening, coping processes to reduce or eliminate the anticipated harm are set into motion.

Rycroft (1968) defined anxiety as an emotion directed toward something in the future. Rycroft further explained that "only those who have a future are ever anxious and, conversely, being anxious is an indication

that one is not entirely without hope for the future" (p. 8). For Rycroft (1968), the essence of anxiety is a form of fear or apprehensiveness, a danger, a problem, a test situation, or an opportunity that has been encountered, but its precise nature is as yet unknown and no effective action can yet be taken. Rycroft (1968) stated,

The anxiety disappears the moment the situation is fully understood; one ceases to be a sentinel and becomes an agent, and the preparedness for action is replaced by action itself (p. 12).

In a study conducted by Graham and Conley (1971) they defined anxiety as

. . . the apprehensive tension or uneasiness which stems from the subjective anticipation of imminent or impending danger, in which the source is largely unknown or unrecognized (p. 114).

Graham and Conley further explained anxiety to be an alarm reaction occurring in the presence of a threat to the organism.

In his conceptual analysis of anxiety, Izard (1972) maintained that all complex emotion processes such as love, hostility, depression, and anxiety contain as elements two or more of the fundamental emotions or their components. Explicitly, Izard proposed that anxiety includes fear and two or more of the fundamental emotions of distress, anger, shame (including shyness and guilt),

of distress, anger, shame (including shyness and guilt), and the positive emotion of interest--excitement.

The factor analytic studies of Cattell and Scheier (1961) resulted in the emergence of empirical evidence of different types of anxiety concepts. These investigators identified two distinct anxiety factors which they labeled trait anxiety and state anxiety. The trait anxiety factor was interpreted as measuring stable individual differences as a relatively permanent personality characteristic. Component characterological variables of the trait anxiety factor included "ergic tension," "ego weakness," "guilt proneness," "suspiciousness," and "tendency to embarrassment" (Cattell and Sheier, 1961, p. 57). The state anxiety factor was based on a pattern of physiological variables such as respiration rate and systolic blood pressure, that covaried over occasions of measurement, defining a transitory state of the organism which fluctuated over time.

Levitt (1967) delineated situational anxiety and anxiety proneness or predisposition. Identification of anxiety is affected by the individual's cognitive appraisal of the situation, therefore, making it a transitory state which varies in response to a stimulus. Anxiety-proneness is a relatively unfluctuating condition

(personality trait) of the individual which exerts a constant influence on his behavior (Levitt 1967).

Spielberger, Gorsuch, and Lushene (1970) utilizing the differentiation between trait and state anxiety as delineated by Cattell and Scheier (1961), further explained these concepts.

State anxiety (A-State) is conceptualized as a transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension and heightened autonomic nervous system activity. A-State may vary in intensity and fluctuate over time.

Trait Anxiety (A-Trait) refers to relatively stable individual differences in anxiety proneness, that is, to differences between people in the tendency to respond to situations perceived as threatening with elevation in A-State intensity (Spielberger, Gorsuch, and Lushene 1970, p. 3).

Factors Causing Anxiety

The process of daily living is one of continual coping with circumstances and events that examine the defenses against anxiety; it demands constant coping efforts by the individual. Generally, anxiety will be experienced by an individual who is either confronted by or anticipating a situation that he perceives as threatening. The perceived threatening situation may be real or imagined. Anxiety is likely to be associated with illness and hospitalization (American Journal of Nursing 1965).

Carnevali (1966) listed nine categories of anxiety-producing factors: (1) death, (2) pain and discomfort, (3) destruction of body image, (4) disruption of life plans, (5) finances, (6) loss of control over one's environment, (7) separation from one's normal environment, (8) anxieties caused by previous experiences, and (9) the unknown. Peplau (1952) explained the cause of anxiety as any threat to the security of an individual. For Peplau, threats are placed in two categories: (1) to the biologic integrity, and (2) to the self-system. Janis (1958) proposed that the threat of body damage will elicit fear. It is generally believed that hospitalization, especially for surgical procedures, produces anxiety because there are unknown elements about possible discomforts and possible outcomes (Janis 1958; American Journal of Nursing 1965; Graham and Conley 1971; Volicer 1974).

Levitt (1967) delineated anxiety-evoking events which individuals face in the course of existence. The occurrence or anticipation of such events as illness, surgery, dental treatment, death, sensory deprivation, and sensory overload were viewed by Levitt as anxiety-evoking. Levitt further expounded upon what he termed "illness anxiety." He explained that illness anxiety

may be non-specifically related to contracting a serious illness or infirmity, or it may be expressed as concern about pain, treatment, temporary or permanent disability, financial loss, separation from family, personality changes, and death. The focus may be the self or others, especially members of the immediate family (Robbins 1962; Levitt 1967).

Fear of disease is widespread and currently focuses on cancer. Literature reveals universal agreement that a diagnosis of cancer is anxiety-evoking for the individual (Levine 1962; Peck 1972; Volicer 1974; Volicer and Bohannon 1975; Holland 1976; Vettese 1976; Ryan and Neuenschwander 1977). An exploratory study by Robbins (1962) regarding the nature of anxieties that individuals hold in regard to illness revealed cancer to be

. . . the disease most salient to the respondents, perceived as most severe, and most often reported as a source of experienced concern. Cancer was primarily perceived in terms of death and incurability and was the only disease giving rise to strong affective language (p. 37).

Because patients are often subjected to treatment procedures that they do not understand and over which they have no personal control, they may experience a sense of helplessness, a state which is associated with anxiety (American Journal of Nursing 1965).

Individuals with cancer perceive radiation treatment to be anxiety-provoking due to their lack of accurate knowledge and control over the treatment (Gottschalk 1969; Peck and Boland 1977; Forester, Kornfeld, and Fleiss 1978). Volicer (1974) discussed inadequate explanation of treatment and anticipation of pain or discomfort as a result of treatment as sources of stress during illness or hospitalization. Based upon the aforementioned literature, nurses may anticipate that cancer patients scheduled to receive radiation treatment are acutely vulnerable to anxiety.

Manifestations of Anxiety

The extent to which the manifestations of anxiety are exhibited is dependent upon the severity of the perceived threat. Lazarus (1966) described four main classes of reaction which have typically been used to index stress. These include: (1) reports of disturbed affects such as fear or anxiety, anger, depression, and guilt; (2) motor-behavioral reactions such as tremor, increased muscle tension, and speech disturbances; (3) changes in the adequacy of cognitive functioning; and (4) physiological change resulting from the effects of the autonomic nervous system and the adrenal glands linked to the emotions of fear and anger.

Generally, the manifestations of anxiety are numerous and divisible into two categories as described in the fields of physiology and psychology. Physiologically, there is increased activity of the sympathetic nervous system as a result of the autonomic nervous system increasing the amount of circulating adrenalin. The respirations become rapid and shallow, resulting in a poor effort tolerance. Tachycardia, elevated blood pressure (particularly the systolic pressure), dilation of the facial and neck arterioles with vasoconstriction of peripheral arterioles resulting in pallor and coldness of the hands and feet are commonly observed cardiovascular manifestations. The visceral response of the gastrointestinal system includes a decreased salivary secretion which results in dryness of mouth, nausea, vomiting, anorexia, or occasionally an increased appetite. Diarrhea may also occur. In the genitourinary system, frequency and urgency of micturition is common. Interference with sexual functioning may occur.

Tremors, aches, and pains characteristic of anxiety states result from increased tension of the voluntary musculature. The sudomotor system is activated, resulting in sweating from the palms, axillae, and forehead (Rees 1973). The overall effect of the physiological

reactions which are mediated primarily through the autonomic nervous system is to prepare the individual for the "fight or flight" response to the anticipated threat (Neylan 1962; American Journal of Nursing 1965).

Graham and Conley (1971) attempted to measure physiological manifestations of anxiety. They listed twenty-six behaviors observed for in a study involving seventy patients who were under stress due to impending surgery. Findings indicated that patients facing major surgery do show some of the commonly accepted behaviors as signs of anxiety; although the method and sample utilized provided no definite evidence that the behaviors and signs of anxiety examined are present with any degree of consistency on the preoperative evening with the exception of elevated systolic blood pressure and verbal descriptions of fear and anxiety (Graham and Conley 1971). The findings were significant at the .01 level. An additional finding was that patients facing symbolically castrating surgery, or surgery which was likely to reveal malignancy, manifested higher levels of anxiety than did patients facing types of surgery less realistically threatening.

In the psychological realm, there is an increased self-awareness felt as self-consciousness, or as

heightened awareness of one's body. There is often heightened perception of surroundings which may be distorted (Neylan 1962). There is an increased alertness and focus of attention to the perceived threat. Emotionally, feelings of tension, nervousness, and apprehension are prevalent. Although many types of behavior may be elicited by anxiety, some of the more common manifestations include anger, complaining, constructive action, crying, defensive behavior, denial, irritation, panic, quarreling, restlessness, sullenness, and withdrawal (American Journal of Nursing 1965).

Branch (1965) maintained that man utilizes mental mechanisms of ego defense in his attempt to alleviate anxiety. Mental mechanisms are psychological safeguards used by everyone at some time or another in an attempt to relieve emotional tension, anxiety, and conflict. Mechanisms that are used to relieve anxiety include: compensation, denial, displacement, dissociation, identification, internalization, projection, rationalization, reaction formation, regression, repression, restitution, sublimation, substitution, symbolization, and undoing (Branch 1965)

According to Rees (1973), the anxious patient "anticipates problems, crosses his bridges before he

reaches them, and fears that dangers and calamities lies awaiting him around the corner" (p. 3). He characteristically and repeatedly seeks reassurance, while his speech is often rapid and may exhibit hesitancy or stammering.

Measurement of Anxiety

Anxiety is a hypothetical concept that must be defined operationally for research purposes. The definition is essentially the instrument or technique utilized to measure anxiety in the research project. Many investigators have attempted to adopt or construct a measuring procedure.

Various measures of autonomic nervous system activity have been employed in an attempt to assess the physiological component of anxiety. Spielberger (1972) stated that in terms of the volume of research, the galvanic skin response and changes in heart rate appear to be the most popular physiological measures. Considerable attention has also been aimed toward blood pressure, muscle action potential, palmar sweating, and respiration.

Pride (1968) conducted a study involving 108 hospitalized subjects utilizing urinary potassium levels

to measure physiological stress. A verbal measure of anxiety, the IPAT Anxiety Scale, was used as an outside criterion for the potassium measure. Findings revealed there was not a positive correlation between urinary potassium levels and the IPAT Anxiety Scale score.

In a study utilizing an adrenal measure for evaluating nursing effectiveness, Foster (1974) studied twelve patients admitted to the hospital for possible coronary arteriography. All patients were cared for in the routine manner with the exception of the experimental group who received interpersonal communication therapy from the nurse-investigator. The results suggested that urinary sodium/potassium ratio is a valid index for the body's biochemical response to stress; however, the ultimate justification for the sodium/potassium ratio as a criterion measure of nursing effectiveness needs further investigation.

A computer program using a Bayesian probability theory was designed by Lagina (1972) to diagnose anxiety levels among hospitalized adult patients. Three independent measures of anxiety were tested on each of the fifty patients participating in the study. The independent measures included: galvanic skin response, the score from a paper and pencil adjective checklist, and a

diagnosis of the patient's anxiety level by the nurse who cared for him at the time. Results indicated low correlation among the symptoms in the program and among the computer diagnosis and the three independent measures of anxiety.

Volicer (1974) conducted a study to quantify stress associated with the hospital experience. Through administration of the Social Readjustment Rating Scale to 216 medical-surgical patients, she discovered a wide range of scores to the forty-five ranked events. Although the subjects showed a high degree of consensus as to how the events should be ordered, Volicer concluded that further research was needed to develop an effective hospital stress rating scale.

Progress has been notable in the assessment of personality characteristics over the past three decades, although most advances have occurred in the measurement of personality traits rather than in the evaluation of psychological states. The inventory is by far the most popular device for the measurement of anxiety in experimental situations. An inventory consists of a series of statements or words that are descriptive of the way in which an individual may feel or think about himself or his environment (Levitt 1967).

The first comprehensive battery of self-report scales for the assessment of feelings appears to have been developed by Hildreth (1946). Based upon verbal reports of military patients, Hildreth derived 175 phrases that typified moods and attitudes. He then classified these into six categories. Each category was then scaled. The result was the Hildreth Feeling and Attitude Battery, a set of scales that measured various moods and affect states.

There are several different inventories frequently used in evaluating anxiety. Taylor's Manifest Anxiety Scale (Taylor 1953) was the first anxiety inventory to come into general use. The Manifest Anxiety Scale is composed of fifty items selected from the 550 item Minnesota Multiphasic Personality Inventory on the basis of their ability to detect clinical anxiety as determined by the judgments of expert clinicians. Inspection of the items in the Manifest Anxiety Scale suggests that it measures a predisposition to anxiety, not an immediate state. Review of the literature reveals the Manifest Anxiety Scale is one of a number of proposed measures of anxiety composed of Minnesota Multiphasic Personality Inventory items.

The IPAT Anxiety Scale was developed by Cattell and Scheier (1961) to measure anxiety proneness. The IPAT items clearly refer to a continuing, not a momentary state, as shown by use of the words "often," "always," and the like. The IPAT Anxiety Scale is more closely related to trait anxiety than to state anxiety.

At the present time, Zuckerman's Affect Adjective Check List (1960) is the instrument most widely used for assessing the subjective phenomenological component of anxiety states. The Affect Adjective Check List has eleven anxiety-positive adjectives--that is those that directly describe anxiousness, and ten anxiety-negative items. It is easily administered and is one of the few instruments that assesses state anxiety instead of predisposition.

The Spielberger (1972) State-Trait Anxiety Inventory (STAI) was developed to provide reliable, relatively brief self-report measures of both state and trait anxiety. The A-State Scale consists of twenty statements aimed toward measuring subjective feelings at a particular moment, while the A-Trait Scale consists of twenty statements measuring how the individual generally feels. Levitt (1967) described the STAI as a carefully developed instrument from both theoretical

and methodological standpoints, utilizing highly sophisticated and rigorous test construction procedures.

Academic learning situations have been the primary focus of studies using the STAI for measuring anxiety (Spielberger, Gorsuch, and Lushene 1970). Review of the literature published during the last decade reveals the utilization of the STAI to evaluate anxiety in the hospitalized patient. Summaries of three selected studies are given in the following paragraphs.

Parino (cited in Spielberger, Gorsuch, and Lushene 1970) investigated the effects of different kinds of pre-therapy information on therapeutic outcome for snake-phobic psychiatric patients. The STAI scales were given to the subjects immediately prior to entering the fear producing situation and the A-State scale was given immediately after the subjects left the situation. A-State scores were significantly lower compared to pre-therapy A-State scores; whereas A-Trait scores were unchanged. The findings were interpreted by Parino as supportive of Spielberger's conceptual distinction between state and trait anxiety.

A study conducted by Auerbach (1973) evaluated the effects of surgery-induced stress on anxiety and the relationship between preoperative state anxiety level

and postoperative adjustment. A-Trait scores were found to be essentially the same preoperatively and postoperatively. There was a slight decline in A-State scores from twenty-four hours preoperatively to forty-eight hours postoperatively, and a marked decrease in the postoperative convalescence period. The authors concluded that there was no relationship to severity or type of surgery, the patient's surgical history, or his age.

Lum (1978) measured self esteem and used the STAI to assess degrees of anxiety in a study exploring relationships between selected nursing activities and patient outcomes for the oncology patient who was receiving chemotherapy. Lum concluded that both the content and quality of explanation of the treatment and care regimen correlated positively with the patient's self esteem. Further analysis revealed the higher the patient's self esteem, the lower the state anxiety level.

Cancer and Radiation Therapy

"Cancer is a term used to characterize abnormal growth of cells which may result in the invasion of normal tissues or the spread to other organs [metastases]" (Berito 1977, p. 1731). Clinical observations and theories

of cancer extend to the beginning of medical history, although it was not until the development of biology and pathology in the nineteenth century that a scientific approach to neoplastic disease became feasible (del Regato and Spjut 1977).

Cancer is a disease of the cell that is transmitted to the descendants of the cell.

It is recognized by the behavior of a population of abnormal cells within a normal tissue, as manifested by varying degrees of morphologic disorientation, aggressive growth and invasion, with ultimate destruction of the normal cell population (Shimkin 1977, p. 14).

Although the exact etiology of cancer is unknown, it is thought to develop as a result of changes within the cell nucleus. The process by which etiologic agents produce nucleolar changes remains obscure. Knudson (1970) reported that

. . . the fact that a cancer is an abnormal cell arising from a normal cell and is able to reproduce itself suggests that cancer is a genetic disease of somatic cells (p. 70).

Shimkin (1977) stated,

The potentially deleterious effects of cancer cells are due to their basic characteristics of autonomy and anaplasia. Therefore, if allowed to remain untreated, the abnormal cell mass expands and invades surrounding and distant tissue with ultimate destruction of the normal cell population (p. 14).

Guyton (1976) reported that physiologically normal tissues may gradually suffer nutritional death resulting from the cancer cell's capacity to proliferate indefinitely and "demand essentially all the nutrition available to the body" (p. 38).

Since cancer is a disease of the cell, it can arise from cells in any body tissue. According to the American Cancer Society (1978), in the United States the most common anatomical site for cancer is the lung. The intestines and breast rank second and third, respectively. The statistics are exclusive of the estimated new cases of non-melanoma skin cancer which surpass each of the sites aforementioned. Cassileth (1979) specified that although cancer is best conceived as a group of diseases with different causes, different treatments, and different prognoses, the public views it as a singular, horribly painful, always fatal condition. This viewpoint has had a particularly disturbing effect on the cancer patient.

Centuries of medical advances have resulted in a multimodal treatment of cancer. Radiation was used to treat breast cancer within one year of Roentgen's discovery in 1895. With that discovery, therapeutic options for cancer patients have doubled in that

radiation therapy became affiliated with surgery as a treatment modality. Four years later, in 1899, its effect was validated with the first radiation-produced cancer cure for basal cell carcinoma of the skin (Brady 1976).

Radiation therapy, which comprises only one form of treatment, may be used alone or in conjunction with surgery, chemotherapy, or immunotherapy. Radiation utilized ionizing radiation for curative or palliative results in the cancer management, depending upon tumor distribution at the time of treatment (Parker 1980). Unfortunately, Moss, Brand, and Brattifora (1973) purported, "the tremendous palliative value of radiotherapy results in an association of radiotherapy with inoperability or even incurability that is difficult to overcome" (p. 3). According to Parker (1980), ionizing radiation can be very effective in controlling a variety of human malignancies and, consequently, is utilized in the management of one-half to two-thirds of all patients with cancer. Peck and Boland (1977) indicated that this amounted to at least 350,000 cancer patients each year.

Gamma rays are utilized in the radiotherapy of cancer. According to DeVita (1977), "gamma rays emanate from naturally occurring or artificially produced

radioactive elements such as radium or Cobalt 60" (p. 1747). Gamma radiations of very short wave-lengths have extremely high penetrating power in materials of low atomic number such as water and body tissue; they are efficiently inhibited in materials of high atomic number such as lead. The ionizing events following irradiation lead to a large variety of DNA breaks and damage.

The exact lethal lesion of X-irradiation remains undefined, but once alteration in nucleotide sequences occur, a change in transcription, or defective repair results, leading to cell death (DeVita 1977, p. 1747).

According to Parker (1980), every effective therapeutic procedure has undesirable, and at times, hazardous side effects. Although uncomfortable and self-limiting, early reactions, including constitutional and local effects, may occur during or immediately following a radiation therapy series. Common side effects include anorexia, nausea, vomiting, diarrhea, esophagitis, skin and mucosal reactions, epilation, and hematopoietic suppression. The manifestations of side effects varies with the site and dose of treatment. Deeley (1970) related that weakness, extreme tiredness, headache, nausea, and vomiting are complications which most often accompany radiation therapy.

Haylock and Hart (1979) surveyed thirty cancer patients being treated with localized radiation via linear accelerator regarding fatigue levels and fatigue symptoms they experienced. Throughout the period of data collection, it was observed that the decreased fatigue levels consistently followed the absence of radiation exposure over the weekends. Statistically significant increases in the level of fatigue experienced by the subjects occurred over their course of radiation therapy. Haylock and Hart (1979) asserted that the existence of post-irradiation fatigue is not a novel observation, but rather an expected reaction. It was concluded that tiredness in the whole body, tired legs, heavy head, eye strain, yawning, wanting to lie down, and feeling ill were the physical symptoms correlating with fatigue levels at a statistically significant level. Although the study supported the idea that fatigue was of a physical rather than psychological etiology, the study could not delineate a physiologic indicator of fatigue.

Welch (1979) spoke of nausea and vomiting as one of the most distressing side effects both physiologically and psychologically in radiation therapy patients. With the increasing utilization of radiation therapy, there is

increasing information (accurate as well as inaccurate) available to lay persons. According to Welch (1979), besides the anxiety over an uncertain and unpredictable future which accompanies the diagnosis of cancer, fear of special procedures and treatments presents an additional stressor. The fear of treatments used to manage cancer stems in part from a lack of knowledge regarding the anti-neoplastic techniques and from anticipation of side effects that impose an added burden on an already devastating experience (Welch 1979).

Although there are few studies recorded that explore the emotional aspects of radiation therapy for cancer, literature agrees that anxiety is expected in the patient receiving radiation therapy for cancer (Hinton 1973; Peck and Boland 1977; Haylock and Hart 1979; Welch 1979). When asked their reaction to the disease and its treatment, cancer patients interviewed in a study by Mitchell and Glicksman (1977) revealed fear of the radiation therapy they were receiving and felt they had been inadequately prepared for the experience by their referring physician. Schmale (1976) found reactions of anxiety, dread, and skepticism toward orthodox treatment among patients with a recurring cancer. Schmale also observed individuals with rigid

personalities, adolescents, young adults, retirees, and the elderly had a low tolerance for therapy.

Gottschalk (1969) studied sixteen patients with metastatic carcinoma who were receiving total of half body radiation as palliative treatment by means of a cobalt 60 teletherapy unit. Findings affirmed a statistically significant increase in pretreatment anxiety (but not in hostility) in the patients.

Friedman (1980) related that diagnostic techniques, various surgeries, and other forms of therapy are sources of anxiety and fear for most cancer patients. Friedman emphatically stated that information about diagnostic and treatment forms can counteract anxiety and fear in the cancer patient.

In a study conducted by Peck and Boland (1977), a psychiatrist interviewed fifty patients scheduled to receive radiation therapy. Findings indicated that patients believed requiring radiation was "bad news." Radiation was feared as inherently damaging and quite possibly carcinogenic. Interviews after completing treatment revealed depression and anxiety to be even greater than in the pre-treatment interviews, indicating that radiation treatment was stressful in itself. Of the patients interviewed, fewer than one-third judged

themselves improved by radiation and more than one-third felt worse and judged treatment to have been ineffective, not realizing that their new distress resulted from side effects of radiation.

Peck and Boland (1977) believed that patients suffer irrational fears of damage and death because of erroneous conceptions of radiation which health care professionals fail to correct. Most of the patients interviewed had received little or no information about radiation and possible side effects before treatment began. Most received inaccurate, pessimistic, and alarming information by relatives or friends. Burns, pain, and scars were found to be side effects which were most feared. Other sources of fear included being alone during the treatment, the noise of the machine, the size of the machine, feeling that the machine could fall, and receiving from the referring physician a gross underestimate of the number of treatments to be received. In the same study, Peck and Boland (1977) observed that patients were helped if they received teaching about what to expect with the treatment and a warning as to possible side effects. If teaching were implemented, patients would have a reduction of erroneous misconceptions of radiation treatment (Peck and Boland 1977).

Nursing literature suggests the need for patient education regarding radiation therapy and possible side effects in an attempt to reduce the radiation patient's anxieties. The patient with cancer, undergoing radiation treatment, is confronted with an array of complex and bewildering machinery, a large body of misinformation about radiation, and all too often, little to no accurate information about the treatment. Janetakos (1977) stated that the patient needs to know the therapeutic and side effects of treatment if he/she is to understand and come to terms with what is happening to him/her. Lang (1977) emphasized that continual teaching and reassurance is needed by all patients, especially during the first few days of radiation treatment when the new experience is especially bewildering and frightening. Lang further explained that symptoms caused by radiotherapy often mimic the disease itself and may be interpreted by the patient as progression of the disease and failure of the treatment unless teaching and reassurance to the contrary are provided.

Patient Education

Teaching is an integral part of patient care and has been included in recent definitions of nursing and

standards of nursing practice (Redman 1976; Jenny 1978; Pohl 1978). From the initial encounter with the patient, and throughout their relationship, the nurse is providing the patient with information about the diagnosis and treatment. In an attempt to assist the patient in adjusting to the disease process and treatment regimen, and to hasten his recovery, the nurse must teach (Gusfa, Christoff, and Headley 1975).

Winslow (1976) believed that although education is the responsibility of every member of the professional health team, the nurse is one of the best persons to teach the patient. The nurse has most frequent contact with the patient, is knowledgeable about his diagnosis, treatment, and prognosis, and is best able to assume his point of view and speak at his level of understanding.

Lambertsen (1968) defined nursing as a "dynamic therapeutic, and educative process in meeting the health needs of society" (p. 126). Lambertsen further explained that the nurse is concerned with the patient's ability to understand; this knowing or understanding eases anxiety and fears. With an increasing focus upon the nurse's teaching role, it is essential for the professional nurse to be competent in the teaching-learning process.

Jenny (1978) emphatically spoke to the importance of the nurse's teaching function. According to Jenny, patient education is one aspect of health education designed specifically for recipients of preventive, diagnostic, therapeutic, or rehabilitative services.

The objective of patient education

. . . is to activate the patient's engagement in the learning process, whereby he perceives his actual situation, accepts the diagnosis, projects the effects of the prescribed therapy on his future life, and commits his intentions to practice the prescription (Jenny 1978, p. 343).

Jenny (1978) further maintained that the function of the nurse is to help the patient develop new, more appropriate insights which will alter previous negative perceptions.

Byers and Dudas (1977) maintained that teaching is one of the most satisfying although difficult roles in nursing, and an increasing accountability for the nurse's teaching role is evolving. Byers and Dudas further explained that much of the nurse's teaching is conducted in relation to illness processes, their prevention, diagnosis, and treatment.

It was contended by Zanders (1978) that nurses have been teaching for many years. Patient teaching in the past has usually been by instinct rather than with

clearly defined objectives and methodologies. Zanders (1978) further pointed out that

Nurses' teaching is directed toward the development of knowledgeable patients who understand the function of their bodies, the principles of health maintenance, and the implications of disease and its treatment (p. 1).

Narrow (1979) made the distinction that the nurse is potentially the most significant teacher because of factors related to knowledge, opportunities for teaching, and the nature of the patient-nurse relationship. The nurse often has more opportunity for patient teaching than other professional members of the health care team, and is able to individualize the teaching, making it relevant to a given patient. According to Narrow (1979),

Nurses teach because teaching has long been accepted as an integral part of nursing practice and is now mandated by law in a number of states. Teaching is not an optional activity; it is an essential nursing intervention (p. 12).

Narrow (1979) acknowledged the onset of tests or therapy (including preoperative and postoperative teaching) as a primary time for a concentrated period of teaching. She further explained that the purpose of patient teaching may be divided into three categories: (1) to promote health, (2) to prevent illness, and (3) to cope with illness.

Pohl (1978) maintained that effective teaching is an essential part of nursing practice. "Nursing and teaching are inseparable, whether clients are critically or chronically ill, convalescing, or in excellent health" (Pohl 1978, p. 7). Pohl held that since the nurse has frequent and close contact with people who are likely to be particularly conscious of their own health or the health of family members, a unique contribution may be made toward the promotion of health on an individual basis.

Since the American Hospital Association (1972) published the Patient's Bill of Rights, there has been a rapidly escalating concern for patient teaching and health education. In Right number 2, the American Hospital Association delineates that the patient has the right to obtain complete current information concerning his diagnosis, treatment, and prognosis in terms which he can reasonably expected to understand. According to Narrow (1979), Nurse Practice Acts of several states now designate patient teaching as a nursing function; consequently, it is becoming a legal responsibility as well as a moral and professional one for nursing.

The necessity of the initiation, participation, and independent functioning of patients, as well as the

complexities of health care today, require an educational function in nursing (Redman 1976). Redman viewed all interaction with the patient as contributing to the broad process and objectives of teaching-learning. The nurse is continuously assessing the patient's needs, some of which can be met by providing information, clarifying his thinking, reflecting his feelings, or teaching him a skill. According to Haferkorn (1971), patient teaching, individualized according to need as perceived by the patient, can assist him to maintain or to regain his sense of control, hence releasing his energies from anxiety to do other things such as becoming an active participant in his therapeutic regimen.

Teaching is an integral part of nursing. Through teaching the patient is encouraged to talk about his apprehensions and fears. Teaching, even if most of it is giving information, will foster an atmosphere of caring. It enables the patient to think about alternatives and express, mull over, or fight back at alternatives facing him. This, in turn, relieves anxiety (Storlie 1971).

It is widely accepted that teaching patients is an important nursing function and evidence exists today that nurses are doing more health education than anyone

else (Somers 1976). Literature revealed that the educative process related to diagnostic and treatment procedures is paramount in gaining patient cooperation and controlling patient anxiety. This is especially vital in the diagnosis and treatment of an extremely threatening event such as cancer.

From a review of the nursing literature emerged an awareness that the nurse can be instrumental in preventing or reducing anxiety associated with stress-provoking events by giving specific information to the patient to aid him in coping with that event. From the original work of Janis (1958), a great majority of research has identified anxiety as a nursing care problem. Following a study of surgical patients, Janis (1958) implied that the arousal of a degree of anticipatory stress appeared to be one of the necessary conditions for developing inner defenses of the type that can function when the external dangers materialize. Janis further suggested that such stress should be tempered with preparatory communication providing the patient with a cognitive framework with which he might utilize in appraisal of a frightening situation.

Through a study of the effects of types of communication on patient's reaction to stress, Meyers

(1964) reinforced Janis' (1958) impressions. Meyers (1964) explained that less tension is created when the patient is provided with specific information upon which he can structure the event of impending stress. Meyers (1964) further indicated that

. . . to deprive patients of knowledge of what is to happen to them is to increase tension which may limit their ability to structure mild or more stressful situations in the future (p. 131).

According to Meyers (1964), telling the patient exactly what is going to happen to him through structured communication is most desirable to decrease tension throughout hospitalization and/or illness.

Beland and Passos (1975) contended that one way the nurse can contribute to the patient's sense of security, reduce his anxiety, and support his ego is by supplying information which assists the patient to understand what is happening to him and why it is happening. Aasterud (1965) indicated that the nurse is always responsible for the explanation of her own actions in addition to frequently being responsible for re-explaining information that has been imparted to patients by other health team members. Although nursing has placed emphasis upon the need for explanations, the type, extent, and timing has depended upon the individual nurse. At present

there is no specific guideline about when explanation should be given (Aasterud 1965). Aasterud believed that minor medical and nursing procedures are probably best explained just prior to their occurrence. Conversely, Janis (1958) suggested that it may be more difficult to reassure the patient after he has spent a great deal of time imagining what the threatening procedure may be like.

Dlouhy (1963) conducted an investigation to learn what patients wanted to know about their diagnostic tests. Findings indicated that patients wanted to know: (1) why and how a test is done, (2) how the equipment will affect him, (3) what they can do to help with the test, (4) the tester's competence, (5) interpretation of test results, and (6) if additional tests are necessary.

Johnson (1972) conducted an experimental study and found that accurate expectations about physical sensations to be experienced during confrontation with a threatening event reduced the distress caused by the threatening event. In addition, information describing the accurate expectations has proven more effective than the customary nursing practice of describing procedures and the usual expectations given by physicians in reducing patient anxiety.

Johnson, Morrissey, and Leventhal (1973) conducted a study involving forty-eight subjects scheduled to undergo gastrointestinal endoscopic examination. Findings supported that receiving information about the test prior to its taking place resulted in reduced anticipatory anxiety and less need for tranquilizer sedation at the .05 level of significance. Schmitt and Woolridge (1973) conducted a study which investigated the influence of psychological preparation in the preoperative patient by measuring verbal, interactional, and physiological variables. It was found that those patients who participated in a small group session the evening prior to surgery, in which they discussed their fears and concerns, received information about what to expect and how they could assist with their recuperation, experienced less anxiety the morning of surgery than a group of patients who received only routine care preoperatively.

Pride (1968) studied 108 hospitalized medical patients to determine if the amounts of potassium excreted in the urine could serve as a criterion measure of nursing. The nursing measure of patient teaching aimed at reducing stress was measured by concomitant decreases in urinary potassium. The study indicated that the amount of nursing care time is not so important as the way it

is spent in response to patient needs. Pride (1968) concluded that hospitalization stress was reduced through this interpersonal approach as measured by urinary potassium.

In a descriptive study, Lum (1978) explored the relationship between selected nursing activities and patient outcomes for fifty-seven oncology patients receiving chemotherapy. It was concluded that the content and quality of the explanation of treatment and care regimen were observed to be correlated positively with the patient's self esteem. Further analysis revealed that the higher the patient's self esteem, the lower his state anxiety level and the more compliant he was with regard to his treatment regimen. Numerous other studies can be found in the literature which indicate planned interpersonal communication and structured information can reduce patient anxiety (Dumas and Leonard 1963; Egbert 1964; Elms and Leonard 1966; Healy 1968; Levine and Fiedler 1970; Putt 1970; Lindeman and Stetzer 1973; Foster 1974; Kenney 1977).

Although it is widely accepted that radiation therapy is an anxiety-evoking event, the literature was found to be devoid of studies focused on nursing care, patient education, or anxiety levels of oncology patients

receiving radiation therapy. Therefore, it is imperative that the nurse incorporate this information in planning content, methods, and presentation form when constructing an instructional plan for the oncology patient scheduled for an anxiety-evoking treatment such as radiation therapy.

Teaching Methodology

Opportunities for teaching and learning in the nurse-patient relationship are almost boundless. Limitations arise only when the nurse does not recognize and make use of situations appropriate for patient education (Redman 1976; Pohl 1978; Narrow 1979). The teaching methodology that the nurse will most often utilize in nursing settings are those generally used in more or less informal settings with one learner or a small group of learners. The actual method of teaching chosen is dependent upon several factors such as the nature of the subject matter, the objectives, the nature of the learner, and the size of the group to be taught (Pohl 1978). Informal teaching, structured teaching, and teaching through supervision are the methods most often selected in patient teaching situations.

Informal teaching refers to casual, unstructured teaching that may occur in almost every contact between nurses and patients. It may be initiated by the nurse or the patient and it may occur without the actual awareness of either the nurse or the learner. It is important to recognize the fact that the words "casual" and "unstructured" are used to describe this type of teaching and does not mean it is unimportant or offhand. Techniques of informal teaching include talking and listening, asking and answering questions, and setting an example (Redman 1976; Pohl 1978).

Structured teaching refers to instruction that is planned in advance according to a definite teaching guide or outline. Structured teaching is implemented by utilizing the techniques of informal instruction, but with the difference that they are deliberately planned beforehand. Methods of structured teaching that are appropriate for the nurse-patient teaching are discussion, lecture, and demonstration (Redman 1976; Pohl 1978).

Teaching through supervision is a process by which an expert practitioner guides and directs the performance of a patient or less skilled worker. According to Pohl (1978), supervision is intricately bound with

teaching and a large part of effective supervision is teaching.

Lindeman and Van Aernam (1971) conducted a study comparing the effects of structured and unstructured preoperative teaching of 261 subjects on postoperative ventilatory function, length of hospital stay, and post-operative use of analgesics. The control group received unstructured preoperative teaching from the regular nurses who taught what they felt was adequate and correct; whereas the experimental group was taught according to a precise protocol. Findings indicated that structured teaching resulted in significantly improved postoperative ventilatory function and a reduced mean length of hospital stay.

A study conducted by Toth (1980) compared the effects of pretransfer teaching methods on twenty myocardial infarction patients' anxiety after leaving the coronary care unit. Findings indicated that a structured pretransfer teaching program was a more appropriate type of nursing intervention than an unstructured approach to lower anxiety.

There is less frustration for both patients and nurses when a structured teaching program--one which provides consistency of information and economy of time--

is utilized as a guide to patient education (Lindeman and Van Aernam 1974; Fralic 1976). Structured teaching programs tend to result in less confusion of patients by conflicting information and nurses are reassured that they are using an effective technique for the patient as opposed to general statements based upon intuition or experience alone.

Verbal communication is implied in all methods of teaching. Additional ways to communicate, such as the utilization of audiovisual aids, serve to enhance the teaching-learning process. Teaching aids such as slide-audiotape programs combine sight with hearing to introduce variety into the nurses' teaching, and adds concreteness which gives meaning to abstractions and makes complex explanations unnecessary (Pohl 1978).

Pictorial learning is superior to simply verbal instruction for recognition and recall (Redman 1976). Through audiovisual technology the teacher may capture experiences so that they may be relived or experienced repeatedly by many learners. Audiovisual instruction makes it possible to take the learner to inaccessible places such as the radiation treatment room and enables the learner to watch procedures that cannot be easily simulated (Narrow 1979).

McLean (1966) maintained that there are many opportunities to add impact to a variety of hospital communications by being able to show the learner what you mean as well as telling him. McLean further related that color slides not only add visual impact to a verbal presentation, but they can be used to show important areas of the hospital not normally viewed by the public. In an article by Collins (1973) on the use of audiovisual instruction for patient education, it was indicated that pictures provide psychological reassurance by making the procedure less mysterious.

Individuals are visually oriented from birth, as they develop surrounded by the visual influences of television, movies, books, school blackboards, projectors, advertising signs, and all types of visual stimulation. A publication by The 3M Company (1978) specified that retention is affected by the use of audiovisual aids. When relying upon verbalization alone to teach, an estimated 10 percent is retained, leaving 90 percent of the material to be misinterpreted or entirely forgotten. Combining an appropriate audiovisual aid to verbalization increases learner retention to approximately 50 percent. By both seeing and hearing the material

simultaneously, misinformation can be effectively avoided, and learning can be improved (The 3M Company 1978).

The research literature is sparse on pictorial learning in comparison with that on verbal learning; thus, theory on how individuals learn from pictures is immature. Irrespective of this fact, it is agreed that pictorial learning is superior to verbal for recognition and recall. With increasing frequency, references are being made to increasing kinds of equipment which the nurse uses in teaching patients. Educational literature extolls the advantages for both teacher and student of incorporating advances in media into learning situations. Perhaps patients and nurses could benefit from a judicious utilization of media in the realm of patient teaching.

The review of literature reveals that dealing with patient anxiety is viewed as a nursing function. Providing the patient with specific information through structured patient teaching about an upcoming event is one method of dealing with patient anxiety. The utilization of visual aids may improve the learning potential through visual stimulation and, thus, decrease anxiety by familiarizing the patient with unknown components

of an anticipated event such as undergoing radiation therapy for cancer.

Summary

A discussion of anxiety, possible causative factors of anxiety, manifestations of anxiety, and measurements of anxiety has been presented. The review of literature also revealed information regarding cancer and radiation treatment with a special focus on anxiety as it relates to cancer and cancer treatment. The nurse's role in patient education as a method to assist the individual to cope with anxiety was researched. The review of literature provided a basis for the formulation of the framework for this study.

CHAPTER III

PROCEDURE FOR THE COLLECTION AND TREATMENT OF DATA

The overall framework for this study was a pre-experimental, pretest-posttest static group design to compare the effect of audiovisual instruction and standard verbal instruction upon state anxiety levels in preparation of adult cancer patients for radiation treatment. The purpose of this chapter is to describe the methodology utilized in this investigation. The subject is covered under the following headings: (1) setting, (2) population and sample, (3) protection of human subjects, (4) instrument, (5) data collection, and (6) treatment of data.

Setting

The data were collected in a general hospital in a midwestern United States city with a population of approximately 100,000. The 430-bed hospital is a private non-proprietary institution. The hospital's radiation oncology department treats approximately fifty cancer patients per day, five days a week.

Population and Sample

Fifty-four patients participated in this study. The population consisted of adult cancer patients 21 years of age or older, who were scheduled to receive radiation treatment for the first time. All patients scheduled for radiation treatment were under the care of one radiation oncologist.

The subjects were selected for the study by convenience sampling. The convenience sample is a sample where "the subjects are selected because they happen to be available for participation in the study at a certain time" (Abdellah and Levine 1965, p. 709).

Protection of Human Subjects

Written consent for the study was obtained from the Texas Woman's University Human Research Review Committee (Appendix D) and the administration of the hospital utilized for the study (Appendix E). Verbal permission was obtained from the physician of the subjects involved in the study. Written informed consent was obtained from subjects agreeing to participate in the study (Appendix F). Subjects' names were not used. Signed consent forms were placed in a box utilized only for collecting the consent forms. The questionnaire forms were numbered

for coding purposes. Each subject was given verbal assurance of anonymity and confidentiality. Patients who agreed or did not agree to participate in this study were informed that the study would in no way involve physical risk or influence the care they received.

Instrument

To measure the participant's anxiety levels, the State-Trait Anxiety Inventory (STAI) (Appendix A) devised by Spielberger, Gorsuch, and Lushene (1970) was used for both groups. This test is comprised of separate self-report scales for measuring two distinct anxiety concepts: state anxiety (A-State) and trait anxiety (A-Trait). The STAI-Trait Scale consists of twenty statements that ask subjects to describe how they generally feel; whereas, the A-State Scale, also consisting of twenty statements, asks the subjects to indicate how they feel at a particular moment in time. Subjects are asked to respond to each STAI item by rating themselves on a four point scale. Response choices range from low anxiety (1) to high anxiety (4). The range of possible scores for the STAI varies from a minimum score of 20 to a maximum score of 80. Spielberger, Gorsuch, and Lushene (1970), explain that:

Although originally developed as a research instrument for investigating anxiety phenomena in "normal" (non-psychiatrically disturbed) adults, the STAI has also been found to be useful in the measurement of anxiety in junior and senior high school students, and in neuropsychiatric, medical and surgical patients (p. 3).

Spielberger, Gorsuch, and Lushene (1970) reported the test-retest reliability for the A-Trait Scale is reasonably high, ranging from .73 to .86 while the stability coefficients for the A-State Scale are relatively low, ranging from .16 to .54 as would be expected for a valid measure designed to reflect the influence of situational factors.

Evidence of the concurrent validity of the STAI A-Trait Scale is confirmed through its moderate to high ($r = .75-.85$) correlations with the IPAT Anxiety Scale and the Taylor Manifest Anxiety Scale, as illustrated by a study utilizing college students and neuropsychiatric patients (Spielberger, Gorsuch, and Lushene 1970). Evidence bearing on the construct validity of the A-State Scale is exemplified by a study of 977 undergraduate college students. These students were first administered the A-State Scale with standard instructions (Norm condition), then were asked to respond according to how they believed they would feel just prior to the final

examination in an important course (Exam condition). Spielberger, Gorsuch, and Lushene (1970) reported that "the main score for the A-State Scale was considerably higher in the Exam condition than in the Norm condition for both males and females" (p. 11).

The instrument is easily administered, with complete instructions printed on the test form, and it is readily understood by the subject. Considering that the focus of the study was to compare the effects of the independent variable on anxiety states of the two groups receiving radiotherapy, the A-State Scale was utilized exclusively. The four categories for the A-State Scale are: 1--not at all, 2--somewhat, 3--moderately so, and 4--very much so. The subjects who scored the test in the study had varied ranges of scores. The preinstruction state anxiety scores ranged from a low score of 24 to a high score of 69. The postinstruction state anxiety scores ranged from a low score of 20 to a high score of 66.

Data Collection

The study sample for this investigation was obtained with the cooperation of the staff in the radiation oncology department at the hospital. Each afternoon, a

list of patients scheduled for the initiation of a first time series of radiation treatments the following day was obtained from the radiation oncology department. Hospitalized patients were then contacted by the investigator between the hours of 1:00 P.M. and 4:00 P.M. and asked to participate in the study. Outpatients were invited to participate upon arrival at the radiation oncology department the first scheduled day of treatment. Any patient who was scheduled to receive radiation therapy and met the selection criteria received an invitation to participate in the study.

Each subject received a standard approach by the investigator in which the purpose of the study was explained and consent to participate was requested (Appendix G). Each subject was given a verbal assurance of strict confidentiality regarding their responses to the questions. Any patient meeting the criteria, who agreed to participate in the study, was accepted as a subject.

The subjects who consented to participate in the study were alternately assigned to two groups. Each subject was assigned a number. The odd numbered subjects were assigned to Group I and the even numbered subjects were assigned to Group II. Group I consisted to twenty-seven pre-radiation therapy adult patients with cancer

who received preparatory standard verbal instruction (Appendix C). Group II consisted of twenty-seven pre-radiation therapy adult patients with cancer who received preparatory audiovisual instruction (Appendix B). The content of each instructional plan was identical. During the course of the study, thirteen patients were eliminated from the study for the following reasons: (1) one patient refused to participate in the study, (2) four patients were considered to be critically ill, and (3) eight patients were unable to complete questionnaires due to physical or sensory limitations.

After the subject had read and signed the consent form, he/she was given the A-State Scale prior to the respective preparatory instruction. Directions for the scale were read aloud to each subject by the investigator and time was allowed for the patient to complete the scale.

Following the completion of the original testing, the groups were approached as follows:

Group I--Thank you for finishing the questions. I would like to tell you about radiation treatment and answer any questions you may have. I will see you again immediately prior to your first radiation treatment to have you complete a few more questions (A-State Scale).

Group II--Thank you for finishing the questions. I would like you to see a slide presentation about radiation therapy. The presentation is approximately fifteen minutes in length. After the presentation, I will answer any questions you may have concerning the treatment. I will see you again immediately before your first radiation treatment and ask you to complete a few questions.

The instructional plan was then implemented. Prior to the first radiation treatment, the investigator administered the A-State Scale. The completed A-State Scale was then collected by the investigator.

Treatment of Data

Data were analyzed by means of a 2 x 2 mixed model analysis of variance (Winer 1962). Kerlinger (1973) stated it is a "method for the analysis of data yielded by experiments in which randomization and manipulation of at least one independent variable has been used" (p. 147). He further explained "there is no better way to study research design than through an analysis of variance approach" (Kerlinger 1973, p. 148). The level of significance was .05.

CHAPTER IV

ANALYSIS OF DATA

This chapter presents the results of the data obtained in the study conducted to compare state anxiety levels of adult cancer patients who received an audio-visual instructional method or a standard verbal instructional method. Pre and post instructional method scores were calculated and compared for each of the two groups. A two by two mixed model analysis of variance (Winer 1962) was the statistical measure used to analyze the data. The discussion of data analysis follows.

Description of Sample

Although demographic data were not collected for the sample, in general the sample consisted of twenty-eight females and twenty-six males between approximately 50 to 75 years of age. There was a mixture of black and white, middle class subjects. The sites for radiation therapy consisted of breast, lung, pancreas, colon, bladder, and prostate.

Results

The hypothesis which was tested was: With pre-instruction state anxiety scores controlled, there will be no significant difference between post-instruction state anxiety scores of pre-radiation therapy adult cancer patients prepared by audiovisual instruction as compared to pre-radiation therapy adult cancer patients prepared by standard verbal instruction.

The State Anxiety Inventory Scale was scored using the approach suggested in the STAI Manual (Spielberger, Gorsuch, and Lushene 1970). Table 1 shows a comparison of STAI A-State scores by groups. The state anxiety scores for the verbal instruction (Group I) and audiovisual instruction (Group II) groups were compared in a two by two mixed model analysis of variance (Winer 1962). The results of this analysis of variance (ANOVA) are shown in table 2. The between subjects main effect of type of instruction was not significant indicating there was no general effect attributable to type of instruction. The within subjects main effect for time of testing was significant ($F_{1,52} = 11.08, p < .01$) indicating that anxiety scores decreased after instruction.

TABLE 1

COMPARISON OF STAI A-STATE SCORES BY GROUP

	State Score I Before Instruction	State Score II After Instruction	Mean difference between pre and post state scores
Group I (n = 27) (Standard Verbal Instruction)			
Mean	39.19	37.66	1.53
S.D.	11.49	12.81	
Group II (n = 27) (Audiovisual Instruction)			
Mean	41.37	34.88	6.49
S.D.	10.89	9.71	

TABLE 2

RESULTS OF TWO BY TWO MIXED MODEL ANALYSIS OF VARIANCE

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between Subjects	11207.67	3			
Type of instruction	2.37	1	2.37	< 1	
Error between	11205.30	52	215.49		
Within Subjects	2626.00	54			
Time of test	432.00	1	432.00	11.08	< .01
Instructional Method X time	166.26	1	4.26	4.26	< .05
Within error	2027.74	52	38.99		

The type of instruction X time of test interaction was also significant ($F_{1,52} = 26, p < .05$). This interaction is shown in figure 1. Inspection of this figure indicates that both groups exhibited decreased anxiety scores following instruction, but the decrease was significantly greater in the audiovisual group. The null hypothesis that with pre-instruction state anxiety scores controlled, there will be no significant difference between post-instruction state anxiety scores of pre-radiation therapy adult cancer patients prepared by audiovisual instruction as compared to pre-radiation therapy adult cancer patients prepared by standard verbal instruction was not accepted.

Summary

Results of data from the State Anxiety Inventory (A-State) were analyzed by a two by two mixed model analysis of variance. The results of the study failed to confirm the hypothesis that with pre-instruction state anxiety scores controlled there will be no significant difference between post-instruction state anxiety scores of pre-radiation therapy adult cancer patients prepared by audiovisual instruction as compared to pre-radiation therapy adult cancer patients prepared

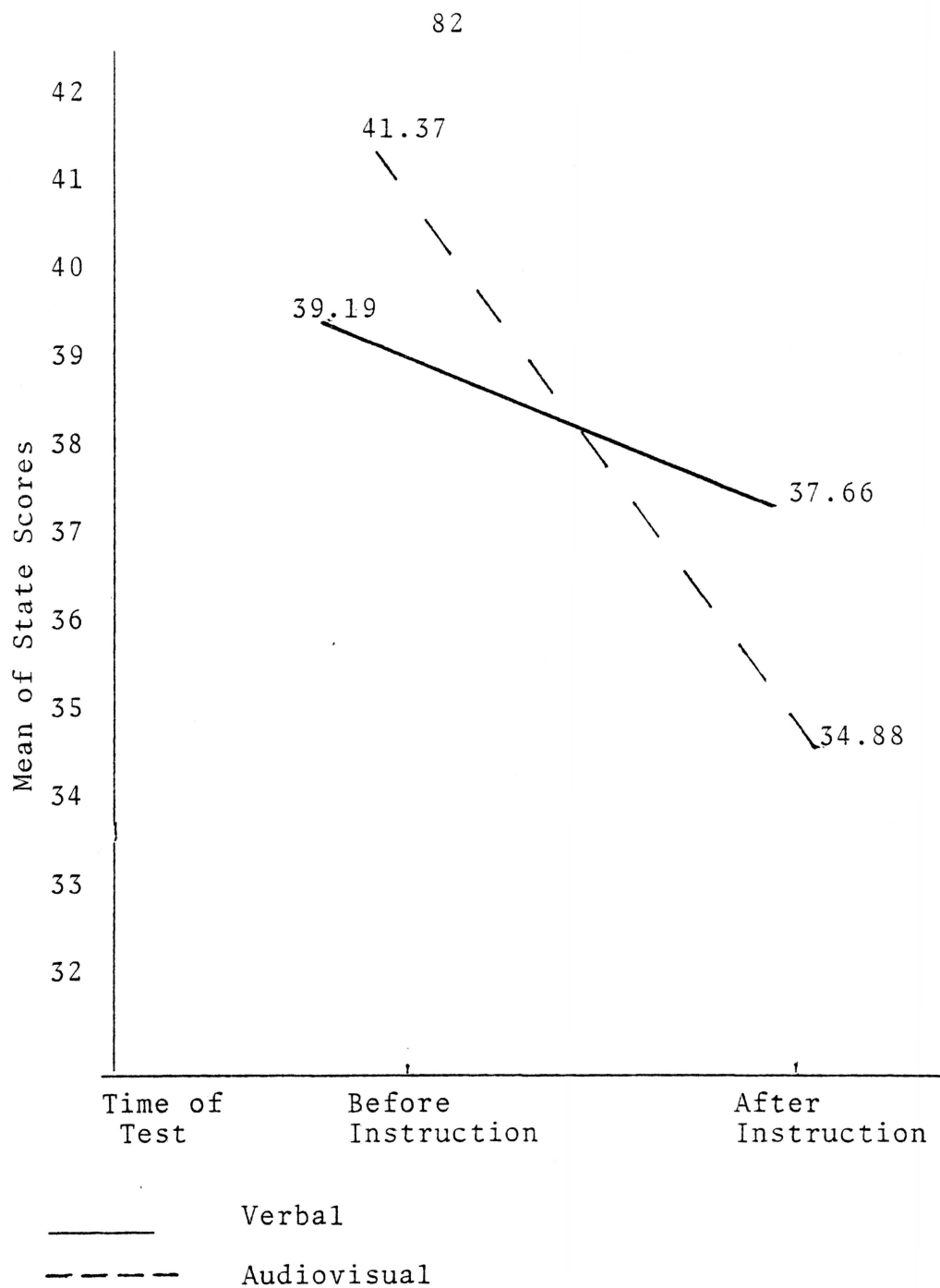


Fig. 1. Interaction between the type of instruction X time of test

by standard verbal instruction. Both pre-radiation therapy Group I and Group II did demonstrate a significant decrease in state anxiety ($p < .01$) as measured by the STAI A-State between pre-instruction and post-instruction. The decrease exhibited in the audiovisual group was significantly greater than the decrease in the standard verbal group at the .05 level of significance.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary

A pre-experimental, pretest-posttest static group design was used to test the research hypothesis that with pre-instruction state anxiety scores controlled, there will be no significant difference between post-instruction state anxiety scores of pre-radiation therapy adult cancer patients prepared by audiovisual instruction as compared to pre-radiation therapy adult cancer patients prepared by standard verbal instruction. Anxiety was the dependent variable studied, while the method of presentation of the instructional plan was the independent variable.

The setting for the study was the radiation oncology department in a general hospital in a mid-western state. The method of convenience sample selection was used to obtain fifty-four subjects. The subjects were randomly assigned to one of two groups. Each pre-radiation group completed the State-Anxiety Inventory prior to the method of instruction. Group I received a standard verbal instruction plan about

radiation therapy while Group II received the same information via an audiovisual instructional plan. Both groups were given the STAI A-State Scale again after the instruction and just prior to their first radiation treatment. Both groups were found to have a significant decrease in state anxiety ($p < .01$) after instruction. The audiovisual group's decrease in anxiety pre-radiation therapy was significantly greater than the standard verbal group's decrease in pre-radiation therapy anxiety at the .05 level of significance.

Conclusions and Implications

Results of this study revealed that patient education does have a value and different teaching methods produce different results. Analysis of data collected confirmed the beliefs cited in the review of literature that education of patients has the potential to decrease anxiety. It can be concluded from this study that both audiovisual and verbal instruction for patients undergoing radiation therapy for the first time have the potential for decreasing patients' anxiety.

Based upon the conclusion for this study, implications for nursing education, patient education,

and research are formulated. These implications can provide incentive and direction for future nursing research studies.

In recent years, nursing and nurse educators have become concerned with the holistic approach to patient care. Greater emphasis is being placed upon the psychosocial in addition to the physical and physiological variables of patients. Educators must teach students about the phenomena of anxiety, its causes, and manifestations. Helping patients to deal constructively with anxiety, however, requires more than just a general understanding of the concept. It requires learned interpersonal skills as well as methods to decrease patients' anxiety. These skills must be emphasized in all aspects of nursing education and perfected through continuous application in the clinical setting. Awareness of anxiety is developed in the student role, as the student becomes aware of his/her own anxiety and recognizes that the same manifestations indicate increased anxiety in others. Nurse educators can assist students in recognizing methods that reduce anxiety in themselves which may also be applied to the patient-nurse relationship. Gleaning information about an unknown future or upcoming event will be evident to the

student as a means to deal with anxiety. Hopefully, this will assist the student in recognizing the importance of patient education as a means to decrease patient fears and anxiety. Students must also be taught accurate, current information about cancer, its diagnosis and treatment modalities, and the prevalence of anxiety in the cancer patient. If nurse educators adequately prepare students in the realm of cancer nursing and methods to reduce anxiety, hopefully, these principles will become an integral part of their nursing practice.

With increasing emphasis upon patient rights and changes in nurse practice acts, patient education is an imperative component of nursing care. Nurses will generally agree and the review of literature reinforces that patient education is an important nursing function, although this aspect of care is often overlooked for other health care activities. The cancer patient is a prime candidate for education, as he already has some degree of anxiety resulting from his diagnosis. In addition to having undergone the trauma of a battery of investigative procedures, having been subjected to the rigors of hospitalization, the patient possesses a large body of misinformation about the

nature and role of the various modes utilized to treat cancer. The nurse's interactions with the patient will provide the opportunity for assessing the possibility of misinterpretation or distortion of information given to him by other members of the health care team. Under the stressful conditions of the diagnosis of cancer, patients may recall only small components or deny the entire explanation of treatment. Included in the patient education process should be teaching patients with the objective to revise misconceptions, inappropriate attitudes, and develop understanding of the prescribed treatment regimen.

Nursing journals abound with literature regarding anxiety in patient care. The review of literature reveals that much of the published nursing research concerned with anxiety is focused on the surgical patient. With the prevalence of cancer in our society today, nurses are challenged to develop concrete methods to measure anxiety as well as methods to help patients constructively deal with anxiety. Through nursing research in this relatively new area, nursing will benefit by developing new methods to more effectively deal with the holistic approach to cancer patient care.

Recommendations

Based upon the findings of this study, the following recommendations are suggested:

1. Replication of this study with patients scheduled for other treatments for cancer such as chemotherapy
2. Replication of this study with collection and evaluation of demographic data
3. Replication of this study utilizing a larger sample to provide data for a more reliable statistical evaluation
4. Replication of this study using a different methodology
5. Replication of this study measuring the nurse's perception of the patient's anxiety level pre-radiation therapy
6. Replication of this study using small groups of patients rather than individual patient instruction
7. Replication of this study administering the STAI A-State after the completion of the treatment series in addition to the pre-instruction and immediate pre-radiation therapy testing
8. Conduct research to determine nurses' attitudes and beliefs about radiation treatment

9. Conduct research concerning the value nurses place upon teaching pre-radiation therapy patients and what they view as pertinent content for teaching

APPENDIX A

Self-Evaluation Questionnaire

Developed by C. D. Spielberger, R. L. Gorsuch, and R. Lushene and copyrighted in 1968 by Charles D. Spielberger can be obtained from:

Consulting Psychologists Press
577 College Avenue
Palo Alto, California 94306

APPENDIX B

The script for the audiotape and slide pre-radiation treatment instructional program was as follows:

Pre-radiation Treatment Instruction
Program

So you are to receive radiation therapy. We're sure that you have a few questions about this treatment. We hope that this program will help explain some of the things you may be wondering about. During the program, we will answer the following questions:

1. What is radiation therapy?
2. How does radiation therapy work?
3. Who is on the radiation therapy team?
4. What is the treatment routine?
5. Are there any rules to abide by while receiving radiation therapy? Now, let's begin

What is Radiation Therapy?

The form of radiation therapy you will be receiving is cobalt. The cobalt utilized for radiation therapy is a radioactive isotope. The cobalt in the treatment machine is a small pellet about the size of a lipstick. It is encased in lead and located at the back of the head of the treatment machine. When the treatment is

being given, the pellet moves forward over the opening in the head of the machine and the rays emerge.

How Does Radiation Therapy Work?

The radiation given off by a radioactive source is destructive to body tissues. The diseased cells are much more sensitive to radiation and can, therefore, be destroyed with very little harm to the normal tissue. Diseased cells are more rapidly growing and dividing than normal cells, making them more radiosensitive.

Now, Let's Introduce You to the Radiation Therapy Team

Dr. Locke is the chief radiotherapist in charge of radiation therapy at Decatur Memorial Hospital. He has spent three years of specialized training in the field of radiation oncology following medical school and internship. For more than ten years he has been responsible for the radiation therapy department and equipment we have at Decatur Memorial Hospital.

Sheryl is a registered nurse and radiotherapy technician with ten years experience in radiotherapy. She is responsible for the supervision of the general department, interviewing each new patient, and assisting with positioning and preparing the patient in the treatment room.

Steve is the physicist who calculates treatment dosages and special treatment techniques under Dr. Locke's direction. He holds a Master of Science degree in Medical Radiation Dosemetry and has six years experience with radiation therapy.

Sonya, with four years experience in radiation therapy, is a diagnostic technician. She attends regular inservice education classes to keep abreast of new diagnostic and treatment techniques. The remaining staff includes: Karen, the receptionist; Anna and Rene, the technicians; and Carol and Joyce, staff aides.

Now, About your Treatment

There is no special preparation required for radiation therapy. You may eat regular meals as usual and maintain your daily activities as you desire. Unless otherwise restricted by your own physician, you should carry on with regular activities. All activities should be in moderation. Some persons notice fatigue during a treatment series. This is to be expected.

You will have a scheduled time for your radiation treatment daily. If you are a hospital patient, someone from radiation therapy will come to your room and take you to the radiation therapy department in a wheelchair.

If you are an outpatient (staying outside of the hospital) you will come to the hospital at the assigned time daily. You will register at the desk in the Kirkland Diagnostic and Treatment Center. You will again register at the desk as you arrive in the radiation therapy department. You will then wait in the patient waiting area for a short time until the team is ready for you.

Prior to your first radiation treatment, you will meet with Sheryl for a pre-treatment nursing interview to help Dr. Locke and the staff know you better. You will then have a conference with Dr. Locke, at which time he will explain what is to be achieved with the treatment. He has previously determined and explains the total treatment dose to be given, and divides the series into a daily dose. Remember: the originally determined number of treatments is subject to change by Dr. Locke, depending upon dose calculations and patient tolerance.

After meeting with Dr. Locke, you will be asked to sign a special permit giving your permission for the staff to administer the radiation therapy to you. When it is time for your first treatment, you will enter the treatment room with a staff member. You will then lie on the treatment table. You will see the treatment machine above you.

At this time, Dr. Locke, or the technologist, will place purple ink-like marks on your skin to mark what is called "the port" of entry. This area has been carefully calculated by Dr. Locke based upon his knowledge of your history and past diagnostic studies. Steve will then take the necessary measurements to be utilized in calculating the prescribed radiation dose. These marks should not be removed for the duration of your treatment series.

The machine is movable so that it can change position to insure that the radiation rays will be focused toward the port of entry. The surrounding tissue is shielded by lead blocks attached to the machine. You may see the therapist adjust the lead blocks. You are now ready to receive the treatment. You will be asked to remain still after being positioned on the table. This is very important, as the technician has positioned you so that the radiation treatment is directed over the port of entry. It is not necessary to hold your breath as with diagnostic X-Ray procedures.

The staff will leave the room. You will be in the room alone during the treatment, as the machine is operated at the control desk outside of the treatment room. Many patients ask why the doctor and technician

leave the room during the treatment. This can best be explained by realizing that they give approximately fifty treatments per day, five days a week. If they were to receive a small portion of radiation during each treatment, it would accumulate to a harmful amount of radiation. It is like taking a prescribed medicine, one or two tablets at a time is fine, but a week's supply at one time would be harmful.

Although the staff leaves the room, the patient is never left alone during the treatment. The technician is constantly watching through the television monitor, and an intercom system makes it possible to hear and talk to the patient. If necessary, the treatment can be stopped at any time and the doctor and technician can be at the patient's side within seconds.

The duration of the actual single treatment may vary from two to five minutes, depending upon the part of the body being treated, the dosage being given, and the size of the patient. When the actual treatment is given, you will always hear a "hiss" followed by a "hard knock" sound coming from the machine. This sound is heard twice during the treatment. The sound occurs as the cobalt pellet moves forward and backward in the head of the machine. You may also hear the sound of a large motor

running sometimes during the treatment, although this is not always heard. Any of the described sounds are normal.

You will not feel any pain or discomfort during the treatment. You cannot see or feel the radiation penetrate body tissues. As soon as the treatment is finished, the radiation is gone from the body and only the effects remain. You ARE NOT radioactive.

After the treatment is completed, the technician will enter the room and assist you off the table. You may then return home or to your hospital room by wheelchair.

Let's Take a Few Minutes to Summarize at this Point:

1. The form of radiation therapy you will be receiving is cobalt.
2. Radiation therapy works by destroying diseased body cells.
3. You have now been introduced to the radiation therapy team members.
4. You are aware of the treatment routine.

During your series of radiation treatments, there are a few general rules you are advised to abide by:

1. Maintain normal activities with rest periods during the day.

2. Maintain an adequate, balanced diet that is high in protein and caloric content. You may supplement your diet with Ensure or Sego to guarantee high protein content if you so desire.
3. Take one multivitamin with iron pill daily if you are unable to eat normally.
4. Treat the skin over the "port of entry" as you would treat a baby's skin:
 - (a) do not use soap or rub the area within the marks.
 - (b) do not use any lotions, powders, deodorants, or alcohol inside the port of entry.
 - (c) do not use heating pads, hot water bottles, or expose the area to excessive sunlight for prolonged periods of time.
 - (d) avoid rubbing irritation by clothing.
 - (e) keep the area dry.
 - (f) use creams only as prescribed by the physician.
5. Try to keep the original skin marking for the duration of the treatment.

Remember: If you have any questions about the treatment or your condition, please ask the radiation therapy professional staff. Learn to rely on them--they are here to help.

APPENDIX C

The script for the standard verbal pre-radiation treatment instructional program was as follows:

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• Program

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After meeting with Dr. Locke, you will be asked to sign a special permit giving your permission for the staff to administer the radiation therapy to you. When it is time for your first treatment, you will enter the treatment room with a staff member. You will then lie on the treatment table. You will see the treatment machine above you.

At this time, Dr. Locke, or the technologist, will place purple ink-like marks on your skin to mark what is called "the port" of entry. This area has been carefully calculated by Dr. Locke based upon his knowledge of your history and past diagnostic studies. Steve will then take the necessary measurements to be utilized in calculating the prescribed radiation dose. These marks should not be removed for the duration of your treatment series.

The machine is movable so that it can change position to insure that the radiation rays will be focused toward the port of entry. The surrounding tissue is shielded by lead blocks attached to the machine. You may see the therapist adjust the lead blocks. You are now ready to receive the treatment. You will be asked to remain still after being positioned on the table. This is very important, as the technician has positioned you so that the radiation treatment is directed over the port of entry. It is not necessary to hold your breath as with diagnostic X-Ray procedures.

The staff will leave the room. You will be in the room alone during the treatment, as the machine is operated at the control desk outside of the treatment room. Many patients ask why the doctor and technician

leave the room during the treatment. This can best be explained by realizing that they give approximately fifty treatments per day, five days a week. If they were to receive a small portion of radiation during each treatment, it would accumulate to a harmful amount of radiation. It is like taking a prescribed medicine, one or two tablets at a time is fine, but a week's supply at one time would be harmful.

Although the staff leaves the room, the patient is never left alone during the treatment. The technician is constantly watching through the television monitor, and an intercom system makes it possible to hear and talk to the patient. If necessary, the treatment can be stopped at any time and the doctor and technician can be at the patient's side within seconds.

The duration of the actual single treatment may vary from two to five minutes, depending upon the part of the body being treated, the dosage being given, and the size of the patient. When the actual treatment is given, you will always hear a "hiss" followed by a "hard knock" sound coming from the machine. This sound is heard twice during the treatment. The sound occurs as the cobalt pellet moves forward and backward in the head of the machine. You may also hear the sound of a large motor

running sometimes during the treatment, although this is not always heard. Any of the described sounds are normal.

You will not feel any pain or discomfort during the treatment. You cannot see or feel the radiation penetrate body tissues. As soon as the treatment is finished, the radiation is gone from the body and only the effects remain. You ARE NOT radioactive.

After the treatment is completed, the technician will enter the room and assist you off the table. You may then return home or to your hospital room by wheelchair.

Let's Take a Few Minutes to Summarize at this Point:

1. The form of radiation therapy you will be receiving is cobalt.
2. Radiation therapy works by destroying diseased body cells.
3. You have now been introduced to the radiation therapy team members.
4. You are aware of the treatment routine.

During your series of radiation treatments, there are a few general rules you are advised to abide by:

1. Maintain normal activities with rest periods during the day.

2. Maintain an adequate, balanced diet that is high in protein and caloric content. You may supplement your diet with Ensure or Sego to guarantee high protein content if you so desire.
3. Take one multivitamin with iron pill daily if you are unable to eat normally.
4. Treat the skin over the "port of entry" as you would treat a baby's skin:
 - (a) do not use soap or rub the area within the marks.
 - (b) do not use any lotions, powders, deodorants, or alcohol inside the port of entry.
 - (c) do not use heating pads, hot water bottles, or expose the area to excessive sunlight for prolonged periods of time.
 - (d) avoid rubbing irritation by clothing.
 - (e) keep the area dry.
 - (f) use creams only as prescribed by the physician.
5. Try to keep the original skin marking for the duration of the treatment.

Remember: If you have any questions about the treatment or your condition, please ask the radiation therapy professional staff. Learn to rely on them--they are here to help.

APPENDIX D

TEXAS WOMAN'S UNIVERSITY
Human Research Committee

Name of Investigator: Mary Jane Linton Center: Dallas
Address: 2498 W. Main Date: 5/15/79
Decatur, Illinois 62522

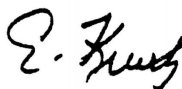
Dear Ms. Linton:

Your study entitled Anxiety Reduction in Adult Cancer Patients Receiving Radiation Therapy has been reviewed by a committee of the Human Research Review Committee and it appears to meet our requirements in regard to protection of the individual's rights.

Please be reminded that both the University and the Department of Health, Education and Welfare regulations require that written consents must be obtained from all human subjects in your studies. These forms must be kept on file by you.

Furthermore, should your project change, another review by the Committee is required, according to DHEW regulations.

Sincerely,



Chairman, Human Research
Review Committee

at Dallas.

APPENDIX E

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS 76204

DALLAS CENTER
1810 INWOOD ROAD
DALLAS, TEXAS 75235

HOUSTON CENTER
1130 M. D. ANDERSON BLVD.
HOUSTON, TEXAS 77025

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Decatur Memorial Hospital

GRANTS TO Mary Jane Linton

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

When pre-instruction state anxiety scores are controlled, do adult cancer patients who receive audiovisual instruction and department tour before their first radiation treatment experience significantly different state anxiety scores than do adult cancer patients who receive standard verbal instruction?

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other _____

Date: April 18, 1979

Mary Jane Linton
Signature of Student

[Signature]
Signature of Agency Personnel

Helen A. Bush
Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows: Original-Student; First copy - agency; Second copy - TWU College of Nursing.

APPENDIX F

Consent Form

TEXAS WOMAN'S UNIVERSITY
HUMAN RESEARCH REVIEW COMMITTEE

(Form A--Written presentation to subject)

Consent to Act as a Subject for Research and Investigation

(The following information is to be read to or read by the subject):

1. I hereby authorize Mary Jane Linton
(name of person(s) who will
perform procedure(s) or in-
vestigation(s))

to perform the following procedure(s) or investiga-
tion(s): (Describe in detail)

The scoring of one questionnaire, Charles D.
Spielberger's State Anxiety Self-Evaluation
Questionnaire, before and after the teaching
program.

2. The procedure or investigation listed in Paragraph
1 has been explained to me by Mary Jane Linton
(name)
3. (a) I understand that the procedures or investiga-
tions described in Paragraph 1 involve the
following possible risks or discomforts:
(Describe in detail):
1. Possible loss of time
 2. Possible fatigue to subjects
 3. Possible personal inconvenience
- (b) I understand that the procedures and investiga-
tions described in Paragraph 1 have the following
potential benefits to myself and/or others:
1. To increase knowledge about the value of
teaching programs in patient care.
 2. The patient may increase his learning in the
area of radiation therapy.

(Form A--continuation)

4. An offer to answer all of my questions regarding the study has been made. If alternative procedures are more advantageous to me, they have been explained. I understand that I may terminate my participation in the study at any time.

Subject's Signature

Date

APPENDIX G

STANDARD APPROACH BY THE INVESTIGATOR

My name is Mary Jane Linton. I am a graduate student in nursing working on my Master's thesis at Texas Woman's University. I understand you are to begin radiation therapy tomorrow. I would appreciate your help in a study I am conducting to learn more about different teaching programs. Your participation in this study will involve answering some short questions concerning your feelings prior to radiation therapy. There is one page of questions which will take a few minutes of your time to complete. If you agree to participate, I will ask you to complete the questions before our discussion today. Immediately prior to your first radiation treatment, I will ask you to complete the same questions. Your physician and nurses will know if you are participating in this study, but the information you give to me and the questions you answer will be kept confidential. Whether you agree to participate in the study or not will in no way influence the care you will receive. If you agree to participate in this study, you will need to sign a consent form.

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