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EFFECTS OF RELAXATION ON SYMPTOM DISTRESS AND PERSONAL
CONTROL EXPERIENCED BY ADULTS WITH CANCER

by

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ABSTRACT

The use of behavioral therapies, such as relaxation therapy, is well documented in the literature as an intervention which may control some of the symptoms and symptom distress associated with the use of chemotherapy within the experience of cancer. However, over 50% of individuals with cancer are also treated with radiation therapy, either alone or in combination with chemotherapy. Individuals being treated with radiation therapy experience symptoms and related distress similar to those associated with chemotherapy as well as a loss of personal control.

The purpose of this study was to determine the effect of relaxation therapy on symptom distress and personal control as perceived by adults receiving abdominal/pelvic external radiation treatment for a diagnosis of cancer. A quasiexperimental design, the nonequivalent control-group, was used to achieve the purpose of this study. It was hypothesized that the daily use of relaxation therapy by individuals receiving radiation therapy would decrease the amount of symptom distress and increase the amount of personal control perceived.

The sample consisted of twenty eight individuals, fourteen in the control group and fourteen in the intervention group. Data were gathered by interview, two

sets of questionnaires, and written diaries. The interview was done before the participants began their radiation treatment. The questionnaires were also completed at this time and then again three weeks after the treatment began. A diary was kept by those in the intervention group who were also taught a specific relaxation technique and asked to record the number of times they used the technique and any comments.

To answer the two hypotheses, summary statistics were used. The results indicated that individuals who used relaxation therapy perceived a decreased amount of symptom distress than those in the control group. The Mann-Whitney U Test indicated that this difference was at the .05 level of significance. On this basis the first hypothesis was accepted. The results also indicated that there was no significant difference between the groups in the amount of perceived personal control. On this basis, the second hypothesis was not accepted.

A recommendation based on this research study was for nurses to become knowledgeable in the use of relaxation techniques. Further research to better understand the cancer experience in relation to personal control was also recommended to enable nurses to provide appropriate and effective care to these individuals.

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CHAPTER ONE

Introduction

Context of the Problem

In Canada, it is estimated that over one hundred thousand new cases of cancer were diagnosed in 1989 and that one in three Canadians will develop some form of cancer during their lifetime (Canadian Cancer Statistics, 1990). Cancer remains one of the most feared diseases despite reports of increased survival rates (Benner & Wrubel, 1989).

Radiation therapy is one method used to treat the disease. Over 50% of individuals with a diagnosis of cancer are treated with radiation therapy at some point in their illness (Yasko, 1982). Many individuals who receive this type of treatment, particularly to the abdominal/pelvic area, experience symptoms which can interfere with their daily functioning. Radiation therapy can affect the ability of individuals to meet their basic human needs due to its destructive physiological effect on both cancer cells and on normal body cells (Yasko, 1982), as well as its psychological impact including anxiety, depression, and fear (Barsevick & McCarthy, 1987; Benner & Wrubel, 1989; Peck & Boland, 1977).

The intensive demands associated with the side effects of radiation therapy may require individuals to

concentrate primarily on ways to manage these symptoms which may change their normal activities and remove them from their usual methods or patterns of coping (Benner & Wrubel, 1989). Individuals who are treated with radiation therapy often associate the experience of being alone with the immense radiation treatment machine with the loneliness and isolation of the cancer experience itself (Strohl, 1988). This sense of isolation from "normal life" is often accompanied by the feelings of helplessness and loss of personal control (Gottesman & Lewis, 1982; Taylor, Lichtman, & Wood, 1984).

Although cancer and its treatment are variables which cannot be directly manipulated by nurses, individuals can learn methods which may enable them to cope with both the physical and emotional reactions associated with the diagnosis and treatment of cancer. In recent years, there has been an increasing interest among health professionals in the use of relaxation therapy as a method to help individuals with cancer. Relaxation therapy is the most common behavioral training method used with adults with cancer because it is: 1) virtually void of side effects; 2) inexpensive; 3) easy to learn; and 4) usable in both hospital and home settings (Cotanch, 1983; Donovan, 1980; Zahourek, 1988).

Significance of the Problem

Radiation therapy is primarily given on an outpatient basis, therefore, it is important to identify effective methods which will assist individuals receiving this treatment therapy to gain the effective coping skills required to manage in the community. It is apparent in the literature that there is a link between the use of relaxation therapy and the amount of symptom distress experienced with cancer treatment. However, most of the research has studied the effect of relaxation therapy on the distress associated with the side effects of chemotherapy as opposed to radiation therapy (Burish & Lyles, 1981; Cotanch, 1983; Scott, Donahue, Mastrovito & Hakes, 1983). Further, any evidence which links the use of relaxation therapy to the amount of personal control perceived by individuals with cancer has been primarily anecdotal and has yet to be validated through research.

Statement of the Purpose

The purpose of this study was to determine the effect of relaxation therapy on symptom distress and personal control as perceived by adults receiving abdominal/pelvic external radiation treatment for a diagnosis of cancer.

Conceptual Framework

The following conceptual framework has been developed to present the concepts that are used in this study and to suggest the ways in which they are related. The purpose of this framework is: 1) to provide an overview of the problem under investigation; and, 2) to provide direction for this study.

A diagnosis of cancer and its treatment with abdominal/pelvic radiation therapy are viewed within this conceptual framework as aversive events associated with a number of psychological and physical reactions (King, Nail, Kreamer, Strohl, & Johnson, 1985; Yasko, 1982). The experience of symptom distress and loss of personal control are identified as common reactions in individuals who receive abdominal/pelvic radiation therapy for a diagnosis of cancer (Gottesman & Lewis, 1982; McCorkle & Young, 1978; Taylor, Lichtman, & Wood, 1984). In the literature, relaxation therapy has been shown both to decrease the symptoms and symptom distress associated with chemotherapy and to increase the amount of personal control perceived by individuals (Burish & Lyles, 1981; Cotanch, 1983; Scott, Donahue, Mastrovito & Hakes, 1983). Although several authors assume that "symptom distress" is related to "personal control", the relationship between these two variables has yet to be defined and is beyond

the scope of this study. Therefore, in this study, the effect of relaxation therapy on the variables of symptom distress and personal control was examined separately.

Symptom Distress

In a study conducted by King, Nail, Kreamer, Strohl & Johnson (1985), over 50% of individuals receiving radiation therapy to the abdominal/pelvic area experienced symptoms including fatigue, diarrhea, nausea, and anorexia. Symptoms are subjective responses that are perceived and verified only by the individual who is experiencing an event such as radiation therapy (Rhodes & Watson, 1987). In some individuals, symptoms such as nausea, pain, and fatigue which are persistent are commonly associated with some degree of physical or mental suffering described as distress.

Symptom distress, associated with a disease and/or the effects of medical treatment, can be defined as the degree of mental, physical, and/or emotional discomfort reported by individuals in relation to their perception of the symptoms experienced (McCorkle & Young, 1978). This subjective perception of distress creates a need within individuals to alter their behavior in response to the symptoms experienced (Rhodes & Watson, 1987). An intervention which decreases the perceived amount of distress associated with a symptom or allows the

individual to successfully cope with the distress associated with it will be viewed as less problematic to the individual (Holroyd, Appel & Androsik, 1983; Leventhal & Nerenz, 1983; Nerenz, Leventhal & Love, 1982).

Personal Control

Individuals who are treated with radiation therapy also experience a loss in the amount of control they perceive they have over their bodies as well as over their lives in general (Leventhal, 1975). The perception of personal control provides individuals with an assurance that they will not face an event that is beyond their ability to endure (Miller, 1979). Individuals who perceive they have control over an aversive event attribute this control to a stable internal source: their own responses (Miller, 1979; Thompson, 1981).

Personal control is defined as the ability to endure the aversiveness of an event through a sense that one actively chooses or achieves mastery over somatic, affective, and cognitive processes (Coan & Fairchild, 1977; Miller, 1979; Thompson, 1981). It is a dynamic sensation within individuals, varying according to the individual's perception of a situation (Coan & Fairchild, 1977). Personal control needs only to be perceived or experienced by the individual in order to be effective, it

does not need to be observable to others (Coan & Fairchild, 1977; Miller, 1979; Thompson, 1981).

Relaxation Therapy

Relaxation therapy is identified as a cognitive-behavioral mode of therapy which affects visceral functions, skeletal muscle activity, and cerebral activities such as thoughts, perceptions and emotional states and enhances a sense of personal control (Hilgard, 1969; Mastrovito, 1989). It is easy to learn and has no documented adverse side effects (Mast, Meyers, Urbanski, 1987; Mastrovito, 1989). However, it has been suggested that individuals with a history of severe depression or psychosis should have physician approval prior to learning these techniques as it may enhance their symptoms (Donovan, 1980; Mast, Meyers, Urbanski, 1987; Mastrovito, 1989).

Relaxation therapy has been used successfully to decrease both the symptoms and perceived symptom distress in individuals receiving chemotherapy (Burish & Lyles, 1981; Cotanch, 1983; Scott, Donahue, Mastrovito & Hakes, 1983). It is suggested in the literature that the use of behavioral and cognitive therapies, such as relaxation therapy, may change the meaning of a situation for an individual. This change in meaning affects the amount of

personal control perceived by the individual (Miller, 1979; Taylor, 1983; Thompson, 1981). Thus, relaxation therapy may change the meaning of a situation by altering individuals' perception of their ability to endure. A situation initially perceived by an individual as potentially unendurable may be revised and viewed as one that is within the individual's abilities to endure.

There are a variety of techniques used in relaxation therapy including progressive muscle relaxation, passive muscle relaxation, breathing, visual imagery, and hypnosis (Hilgard, 1969; Mastrovito, 1989; Zahourek, 1988). Although the techniques are different, they all have a common goal to provide a restful, peaceful, and pleasant state called relaxation. Relaxation is a positively perceived learned response involving an active and conscious process which results in the relief of tension or strain (Sweeney, 1978; Zahourek, 1988).

Within this conceptual framework, abdominal/pelvic radiation therapy is viewed as causing symptom distress and a decrease in personal control perceived by individuals with cancer. Relaxation therapy is viewed as an intervention used to reduce symptom distress and increase the amount of personal control perceived by these individuals receiving radiation therapy.

Research Hypotheses

1. Individuals receiving abdominal/pelvic radiation therapy who practice relaxation therapy will experience a reduced amount of symptom distress as compared with those who do not practice relaxation therapy.

2. Individuals receiving abdominal/pelvic radiation therapy who practice relaxation therapy will experience a higher level of personal control as compared with those who do not practice relaxation therapy.

Definition of Terms

1. **Symptom Distress**: Symptom distress is defined as the degree of mental, physical, and/or emotional discomfort reported by individuals receiving abdominal/pelvic radiation therapy in relation to their perception of the symptoms experienced. The individuals report on the presence and intensity of nausea, pain, insomnia, fatigue, and cough and, any changes in bowel pattern, concentration, appearance, outlook, and breathing. Symptom distress is operationally defined using the Symptom Distress Scale (McCorkle & Young, 1978; Appendix G).

2. Personal Control: Personal control is defined as the ability to endure the aversiveness of an event through a sense that one actively chooses or achieves mastery over somatic, affective, and cognitive processes (Coan & Fairchild, 1977). Personal control is operationally defined using the Self-Control Subscale of the Personal Opinion Survey (Coan & Fairchild, 1977, Appendix H).
3. Relaxation therapy: Relaxation therapy is defined as the use of deep breathing and progressive relaxation based on the techniques described by Mast, Meyers and Urbanski (1987) (Appendix E).
 - a) Deep Breathing: Deep breathing is the use of controlled and systematic respirations that can lead to a deeply relaxed and calm state (Mast, Meyers & Urbanski, 1987). This term is operationally defined by a record of the number of times the participant uses the technique over a three-week period.
 - b) Progressive relaxation: Progressive relaxation is a passive procedure involving the sequential release of tension of one body part at a time, consciously allowing each part to become as relaxed as possible (Mast, Meyers, & Urbanski, 1987). This term is operationally defined by a record of the number of

times the participant used the technique over a three-week period.

4. External radiation treatment: External radiation treatment is classified as teletherapy which is the use of ionizing radiation given from a source at a distance from the body (Hilderley, 1987). This term will be operationally defined as the abdominal/pelvic area of the body being treated by radiation therapy, the length of the course of treatment, and the amount of radiation received.

Assumptions

The following assumptions have been made in relation to this research study.

1. The diagnosis of cancer is an unexpected and aversive event.
2. Individuals with cancer experience some degree of distress related to the cancer experience.
3. Participants in the intervention group will be honest in recording the number of times they use the relaxation method.
4. There is no difference between the use of written material ("hand-outs") and audiotapes to reinforce the learning process related to the relaxation response.

Limitations

Three factors limit the generalizability of the results of this study. First, a convenience method of sampling was used. A truly representative sample of the population may not be obtained by this method. Second, the effect which a specific diagnosis has in relation to the amount of personal control perceived by individuals is an unknown factor. In this study, this variable was not controlled since the participants have a variety of diagnoses of cancer. Third, the validity and reliability of the instrument, The Personal Opinion Survey (Coan & Fairchild, 1977), is based on studies done only with college students.

CHAPTER TWO

Review of Related Literature

Introduction

This literature review is organized to present what is known about the concepts used in this study, symptom distress, personal control, and relaxation therapy in relation to individuals who are receiving treatment for a diagnosis of cancer.

Symptom Distress

Very few studies have been found which describe both the symptoms experienced by individuals receiving radiation therapy for a diagnosis of cancer and the distress associated with these symptoms. However, the findings in the following studies suggest that most individuals experience an increase in symptoms and related distress over the course of treatment.

Peck and Boland (1977) conducted an exploratory study to learn: 1) what information patients are given when radiotherapy is prescribed; 2) patients' attitudes toward the treatment; and, 3) how patients' attitudes are affected by the experience of receiving radiation therapy. Fifty subjects with varying diagnoses of cancer were randomly selected and interviewed over an 18 month period. Structured interviews were conducted by a psychiatrist

before the radiation therapy started and again within one week of the completion of treatment.

Results showed that while 60% of the subjects were assessed as having a significant degree of anxiety prior to treatment, 80% did so by the time of the second interview. The authors described a "significant degree of anxiety" (seen in 33 patients) as a preoccupation with their disease and the side effects of treatment, and having doubts about the relief of symptoms and about their survival. In addition to anxiety, all but one subject reported physical side effects including fatigue, anorexia, nausea and vomiting which began with their first treatment and increased over the course of their treatment. All of the subjects were aware that they had cancer and were to receive radiation treatment, however most of them reported that they had received little or no information about radiation reactions before the treatment started. Although the variables of anxiety and physical symptoms both seemed to increase over the course of radiation therapy, a possible relationship between the two variables was not addressed. The researchers attributed the subjects' anxiety to the lack of information about their disease and treatment.

The results of this exploratory study indicated that individuals experienced some degree of anxiety and various

physical symptoms related to radiation therapy. However, these results were based on data which had been subjectively interpreted by a psychiatrist. The individuals' perceptions of these symptoms was not addressed.

King, Nail, Kreamer, Strohl, and Johnson (1985) conducted a descriptive study to identify and describe symptoms experienced by individuals receiving radiation therapy. A convenience sample of 96 individuals who were to receive radiation treatment was obtained. Subjects were divided into four groups based on their treatment site: chest ($n = 15$); head and neck ($n = 25$); male pelvis ($n = 26$); and, female pelvis ($n = 30$). Each participant was interviewed weekly during treatment and then monthly for three months following the completion of treatment.

The Symptom Profile was developed by one of the researchers to be used during each interview to document the presence of symptoms during the previous week. A list of thirteen symptoms was compiled of possible side effects experienced during radiation therapy. This list included: sleep difficulties; fatigue; skin changes; anorexia, nausea; vomiting; indigestion; diarrhea; constipation; sore throat; cough, difficulty swallowing; changes in saliva; and, a miscellaneous category for other symptoms reported. This original list was revised after examining

early responses to the "miscellaneous category" and two more symptoms were added, pain and urinary frequency. If any symptoms were reported by the participant, information concerning the time of onset, frequency, severity, and duration of each symptom, as well as factors that exacerbated or relieved each symptom were collected. A Likert-type scale was used to determine the severity of each reported symptom (not bad; a little bad; moderately bad; quite bad; extremely bad).

Approximately 50% of individuals who received abdominal/pelvic radiation therapy, (male and female pelvis groups) reported diarrhea and fatigue. In both groups, the incidence of diarrhea increased over the first two weeks and peaked during the third and fourth weeks of treatment. The incidence of fatigue also increased steadily to peak during the fourth and fifth week of treatment with 65% of males and 72% of females reporting this symptom during this time period. In both male and female subjects, diarrhea and fatigue were rated as a little to moderately bad during the third and subsequent weeks of treatment. It is important to note that these symptoms were also reported by some of the subjects three months later, although the severity of the symptoms was not reported.

Approximately 50% of the females also experienced nausea and anorexia. The incidence of nausea and anorexia peaked at the fourth week of treatment and was rated as moderately bad. A sharp decrease in the incidence of both of these symptoms was reported once treatment had ended. Based on the latter finding, the authors suggested that nausea and anorexia could have resulted from the physical effects of radiation treatment or from psychological factors related to the treatment.

Participants were also asked to identify some of the interventions they used to cope with their symptoms and the effectiveness of the interventions they used. Interventions such as medications, low residue diet, and increased rest were reported. However, the data related to interventions was anecdotal and the effectiveness of the interventions used by the participants, although collected, was not evaluated.

Generalization of this study's results is limited primarily due to the lack of any formal assessment of the reliability and validity of the Symptom Profile instrument. However, this is the only study found which has attempted to identify symptoms related to radiation therapy as well as describe the severity of each symptom as perceived by those receiving the treatment.

The findings of these two studies suggest that individuals receiving radiation therapy for a diagnosis of cancer experience an increase in symptoms and related distress over the course of treatment. Although some interventions were identified within these studies which may have an effect on the symptoms experienced, their effectiveness is unknown due to the lack of evaluative analysis.

Personal Control

Results from various studies suggest that assisting individuals to gain cognitive/behavioral control when faced with threatening situations will enhance their psychological well-being (Auerbach, Martelli, Mercuri, 1983; Johnson, Rice, Fuller, Endress, 1978; Padilla, et al, 1981). However, few studies have been found which identify and evaluate the strategies used by individuals to gain control during the cancer experience.

Taylor (1983) conducted a qualitative study on the experience of women ($N = 78$) in relation to how they coped with the diagnosis and treatment of breast cancer. One of the themes that evolved from the data was "gaining a sense of mastery" which involved gaining a feeling of control over the threatening event in order to manage it or keep it from happening again.

In the analysis of the interview data, two-thirds of the women believed they had at least some control over the course of their cancer or its recurrence. Of this group of women, 37% believed they had a lot of control. Some of the remaining one-third believed that although they themselves had no control, their doctor or the treatment would control the disease. Taylor (1983) concluded that women who either believed in their own ability to control the disease or those who believed that the doctor or treatment would control the disease tended to be strongly associated with an overall positive adjustment although this is not clearly indicated from the results of this study.

Six different methods were identified as being used alone or in various combinations by these women in order to gain a sense of mastery. Five out of the six methods used by the women involved directly affecting or controlling the cancer including: medical treatment; a positive attitude; removing the believed initial cause (i.e. stress); behavioral changes (49% changed diet); and, gaining information. The sixth method involved the use of strategies to control the side effects of the treatment or disease. These included imaging, self-hypnosis, distraction, and meditation. It is important to note that over 90% of women who received chemotherapy treatment used

one or more of these strategies (imaging, self-hypnosis, distraction, meditation) in an attempt to control the side effects. Similar efforts were reported by women receiving radiation treatment.

Taylor (1982) concluded that a sense of mastery can be achieved by believing that one can use strategies to control the cancer or by assuming control over the related effects of the disease and/or treatment. The experiences of the women interviewed for this study suggest that self-generated feelings of control can enhance one's ability to cope with aversive events. Taylor's conclusion is congruent with current literature (Miller, 1979; Thompson, 1981). However, it is still unknown as to which of the strategies identified in this study were most effective and whether personal control can be increased by assisting individuals to use these strategies.

Brockopp, Hayko, Davenport and Winscott (1989) conducted a correlational study to examine the relationship between "the need for hope and information" and "perceived personal control" in adults with cancer. A convenience sample of 56 individuals assessed as experiencing the middle phase of a life-threatening diagnosis of cancer (middle phase = six or more weeks postdiagnosis to a point when emphasis on cure changes to an emphasis on palliation) were obtained. Subjects were

asked to respond to three instruments: a demographic sheet; the Spheres of Control Scale (Paulhus, 1983); and, the items related to hope and information from the Needs Assessment Inventory (Brockopp, 1982).

Data analysis yielded statistically significant but weak correlations between personal control and hoping that pleasurable experiences remained ($\underline{r} = .36$, $\underline{p} = .004$), as well as wanting to share what has been learned during the illness with others ($\underline{r} = .25$, $\underline{p} = .034$). Although their results were statistically significant, Brockopp, Hayko, Davenport and Winscott (1989) doubted the clinical significance of these results and concluded that an individual's sense of personal control is not influenced by the needs for hope and information. They stated that the need for personal control is highly individual and must be assessed on an individual basis until association with other psychological constructs are known.

Although a theoretical definition for perceived personal control was not provided in this study, personal control was operationally defined by the Spheres of Control Scale. The Spheres of Control Scale was designed to provide a control profile, a pattern of expectancies that an individual has in facing the world. Based on this scale, an individual's control profile is fairly static, it is considered a trait of the person (Paulhus, 1983).

This definition is in conflict with many of the current definitions of personal control in the literature which describe it as a dynamic sensation (Coan & Fairchild, 1977; Thompson, 1981). Descriptive accounts by individuals with cancer support the idea that the concept of personal control has dynamic properties as evidenced by the enhancement in feelings of personal control through the use of methods such as relaxation therapy (Burish Lyles, 1981; Cotanch, 1983; Scott, Donahue, Mastrovito & Hakes, 1983).

In summary, the need for control in individuals with a life-threatening illness is acknowledged in these studies and strategies which may affect the level of perceived personal control are discussed. The findings in these studies also convey the ambiguity surrounding the concept of personal control. However, it is clear that how current interventions used by health care professionals affect an individual's perception of personal control has yet to be fully investigated.

Relaxation Therapy

This section of the literature review explores what is known about the use of relaxation therapy as it relates to symptom distress and personal control within the cancer experience.

Scott, Donahue, Mastrovito and Hakes (1983) conducted an exploratory pilot study to examine the clinical feasibility and antiemetic effect of clinical relaxation on patients diagnosed with ovarian cancer who were receiving a highly emetic chemotherapeutic regimen. This study was initiated at the request of clinicians working with these patients who saw the need for an effective, safe, and clinically useful antiemetic behavioral protocol.

A convenience sample of ten women were recruited to receive the intervention. There was no control group. The relaxation protocol included pretreatment patient education and counselling, Slow Stroke Back Massage, guided imagery, and progressive relaxation. Participants were recruited on the day of hospitalization, one day prior to their chemotherapy treatment. On that same day, participants received: pretreatment counselling designed to increase their knowledge about chemotherapy; experience with guided imagery and progressive relaxation; and, encouragement to ask questions. Participants were then asked to practice the guided imagery and progressive relaxation before dinner and at bedtime.

On the day of treatment, participants were seen prior to drug administration and again coached through guided imagery and progressive relaxation by the investigator.

Following drug administration, participants received four to six hours of coaching and were also observed. Measures of frequency and amount of emesis as well as the duration of active emetic response were noted by the investigator during this time. After this time period, the recording of measurements were done by unit nursing staff. It was not stated how or if the method of Slow Stroke Back Massage was used.

The investigators stated that "overall" the results indicated a reduction in duration, frequency and intensity of nausea and vomiting and a reduction in the volume of diarrhea. The investigators also interviewed the participants the day after their chemotherapy treatment to collect anecdotal information. During these interviews, participants stated that their fear of the treatment was decreased and that they had a greater sense of control over their body processes.

There are three areas in this study which weaken the conclusions noted by the investigators. First, it is unclear as to which of the four interventions used in this study were effective. All participants received education and counseling, continuous support and attention of the investigator, guided imagery, and progressive relaxation (and, perhaps also Slow Stroke Back Massage). These are all very different interventions which makes it impossible

to conclude that the outcomes were related to the relaxation techniques used. Second, there is a question of the reliability of the results. The results of this study were dependent on the subjective view of the investigator and the unit staff nurses who recorded the data. The question of inter-rater reliability was not addressed nor were there any criteria mentioned in order to measure the variables studied. A final weakness of this study was the limited amount of time the participants had to learn the intervention. Participants were taught the relaxation techniques the day before and were given three additional opportunities to practice. However, relaxation is a learned response (Benson, 1975; Zahourek, 1988). It is currently recommended that relaxation be practiced once daily over a period of at least two weeks for its effects to become known (Zahourek, 1988).

Although several weaknesses were noted in the study by Scott, Donahue, Mastrovito and Hakes (1983), it appeared that the interventions were successful. However, the need to know which interventions were responsible for the outcomes remains.

Cotanch (1983) attempted to clarify some of the questions raised in the previous study through an initial experimental test of the use of progressive muscle relaxation in reducing nausea and vomiting and

psychological averseness associated with chemotherapy. Cotanch viewed relaxation both as a response and as a coping skill. As a response, the use of relaxation can decrease the effects of an activated fight or flight reaction. As a coping skill, relaxation can affect how an individual views a potentially threatening situation.

The participants ($N = 12$) in this study had recurrent cancer following conventional cancer chemotherapy and were receiving more aggressive, experimental treatment. All had experienced refractory nausea and vomiting during their previous course of chemotherapy as defined by the Duke's descriptive scale (Cotanch, 1983). Participants served as their own control. Data collection involved: the use of the Spielberger's state-trait anxiety inventory (STAI); physiological measurements (pulse, respirations, blood pressure); the quality and quantity of nausea and vomiting experienced using Duke's descriptive scale; and, a calorie count (a food diary of all foods and fluids taken by mouth for two days following chemotherapy).

Data were collected over a course of therapy which included seven treatments of chemotherapy, each treatment occurring every four to six weeks. Baseline data collected prior to each chemotherapy treatment included total body weight, pulse, respirations, blood pressure, and state-STAI. Post-treatment data were collected two

days following each treatment and consisted of the amount and quality of nausea and vomiting, oral caloric intake, type and quantity of antiemetics, and the trait-STAI.

Data were collected during the first treatment without the use of the intervention, progressive muscle relaxation. All participants were then given personal instruction in the use of progressive muscle relaxation by the investigator at some point between their first and second chemotherapy treatment. It is unclear as to when this instruction occurred. Participants were told that relaxation was a skill that needed to be learned and could only be learned through practice. They were each given a booklet and an audiotape as reinforcement of the instruction and told to practice twice a day as well as during their subsequent chemotherapy treatments. A weekly schedule card was provided to record their practice sessions.

Data analysis was obtained by measuring a straight percent change comparing the baseline data collection to subsequent data collection. After the second course of treatment, a decrease in the amount of nausea and vomiting was experienced in nine out of twelve participants based on the Duke's descriptive scale and remained fairly stable after subsequent treatments. There was also a significant decrease in the total trait-STAI (\bar{X} = 20%) but not in the

state-STAI. All participants improved in caloric intake during the 48 hours following treatment. Caloric intake increased from 950 calories after the initial treatment to 1700 calories after the seventh treatment. Physiological measurements showed a significant decrease in pulse rate (\bar{X} = 14%) and respiration rate (\bar{X} = 20%). Systolic and diastolic blood pressure did not change significantly. Anecdotally, all patients verbally reported that the relaxation training increased their feelings of "comfort" and of "being in control".

Although the results of this study suggested that the use of relaxation was effective, it is unclear as to whether the anxiety was decreased due to relaxation or because the participants, having been through the first treatment, with what was described as experimental and aggressive medications, were now aware of what the experience of this treatment involved. In order to avoid this variable, Burish and Lyles (1981) conducted an experimental study using patients who were already receiving chemotherapy treatments and had exhibited anticipatory anxiety, nausea, and/or vomiting during these treatments to study the use of progressive muscle relaxation followed by guided imagery in reducing these adverse reactions to chemotherapy.

A convenience sample was recruited, with sixteen patients randomly assigned to either an intervention or to a control group. Each patient participated in five consecutive sessions: one pretraining, two training, and two posttraining sessions which corresponded with their scheduled chemotherapy treatments. The average length of time between treatments was 15 days.

The pretraining session was the same for all patients. Its purpose was to obtain baseline information before and after one chemotherapy treatment. The information collected by the investigator before the session included physiological measures of arousal (blood pressure and pulse rate) and the patient's feelings of anxiety, anger or hostility, and depression obtained through the use of the Multiple Affect Adjective Check List. The chemotherapy treatment was then given by a nurse. After the session, these measurements were repeated. Post-treatment rating scales were also administered to assess the extent which patients felt anxious or nauseated during treatment. The posttreatment rating scales measured anxiety and nausea and were 7-point rating scales ranging from "not at all" to "extremely" which both the patient and the nurse completed. There was no report on the validity and reliability of any of the

measures used. No other interventions occurred during the pretraining session.

The two training sessions for the relaxation group consisted of the investigator: collecting pretreatment data; assisting patients in the relaxation group in the use of progressive muscle relaxation and guided imagery while chemotherapy was being administered by a nurse; and, collecting posttreatment data. Approximately 45 minutes before the chemotherapy was scheduled to begin, each patient in the intervention group was seated in a recliner chair. Data were collected which included physiological measurements and the patient's feelings of anxiety, anger or hostility, and depression through the use of the Multiple Affect Adjective Check List. The investigator then explained the intervention and assisted the patient through the progressive muscle relaxation exercise and then guided imagery. Shortly after the guided imagery instructions began, the nurse began the chemotherapy. The investigator continued the guided imagery for the duration of the treatment and then for about five minutes after the chemotherapy was completed. Physiological measures were again collected as well as the self-report measures (Multiple Affect Adjective Check List and the two rating scales which measured anxiety and nausea). Each patient was given written instructions on how to do the exercises

at home and asked to practice once a day. Although written records were not kept, most patients reported practicing four to five times a week.

During the two posttraining sessions, patients in the relaxation group were asked to relax on their own by applying the procedures the investigator had assisted them with during the two previous sessions. The format for these sessions was identical to the training sessions except that the investigator was not present to assist the patients.

During the four sessions after the pretraining session, the patients in the control group were also brought into the treatment room approximately 45 minutes prior to their chemotherapy treatment. During this time period, their pulse and blood pressures were recorded by the investigator, they completed the Multiple Affect Adjective Check List, and then were asked to relax and rest quietly until their treatment began. They then completed the same measures after their treatment as did the intervention group.

The results obtained during the pretraining session suggested no differences existed between the relaxation group and the control group. The results obtained during the training sessions showed patients in the relaxation

group as feeling significantly less anxious ($p = .003$), angry ($p = .02$), and depressed ($p < .03$) than patients in the control group as measured by the Multiple Affect Adjective Check List. Based on the patient and nurse rating scales, patients reported feeling less anxious ($p = .003$) and nauseated ($p = .006$) and the nurses subjectively reported similar findings. The analysis of the nurses' recording of vomiting during chemotherapy indicated that only two patients in each condition vomited during one or both of the training sessions, resulting in a nonsignificant difference ($\chi^2 < 1.0$). The physiological measures showed very little difference throughout the study.

The results obtained during the posttraining sessions showed patients in the relaxation group as feeling significantly less anxious ($p = .001$), angry ($p < .02$), and depressed ($p < .02$) than patients in the control group as measured by the Multiple Affect Adjective Check List. Based on the patient and nurse rating scales, patients reported feeling less anxious ($p < .04$) and nauseated ($p = .006$) and the nurses subjectively reported similar findings. The analysis of the nurses' recording of vomiting during chemotherapy was similar to the training sessions.

Burish and Lyles (1981) reported that their subjects showed an increased improvement in these measurements over the course of the study although their reported results do not reflect this finding. Both the relaxation group and the control group reported fairly stable ratings of anxiety and nausea over the course of the five treatments. The authors further suggested that the improvement of the patients over time may have been due to increased feelings of self-sufficiency and personal control many of the patients appeared to have developed over the course of the study as compared with the control group. However, the variables of self-sufficiency and personal control were neither defined nor measured in this study.

The results from the above three studies support the belief that relaxation therapy may be an effective adjunctive treatment in managing the adverse emotional and physical side effects associated with chemotherapy treatment. The following study provides information on the use of relaxation therapy in individuals receiving radiation therapy for a diagnosis of cancer.

Bridge, Benson, Pietroni and Priest (1988) conducted a controlled randomized trial of women with breast cancer ($N = 154$) being treated with radiation therapy on an outpatient basis. The purpose of this study was to determine whether stress could be alleviated in these

women. Stress was operationally defined by the Leeds general scales and the Profile of Moods States. The Leeds general scales measure the severity of depressive and anxiety symptoms. The Profile of Moods States yields scores for tension, depression, vigour, fatigue, anger, and confusion. The total score on this scale indicates the individual's overall level of mood disturbance, a high score indicates a high level of mood disturbance.

The sample was divided into three groups: a counselling group who were encouraged to talk about themselves; a relaxation group who received passive muscle relaxation; and, a second relaxation group who received passive muscle relaxation and guided imagery.

Participants in both relaxation groups were taught a breathing exercise and their specific relaxation technique during an initial thirty minute session after having received at least one session of radiation therapy.

Participants were also given an audiotape which repeated the breathing instructions and the passive muscle relaxation or passive muscle relaxation and imaging exercise and were asked to practice it at home for at least 15 minutes per day during the six weeks on the study. Both measurement tools were completed at this time by all three groups and again in six weeks.

The initial and six week scores on the Leeds general scales and the Profile of Moods States were compared by analysis of covariance (controlling for the initial scores) to test for the effects of the interventions. The Leeds general scores showed no significant differences ($p < .05$) in any of the three groups. The subscales of the Profile of Moods States also did not show any statistically significant differences among the three groups. However, the total mood disturbance, measured by the total score of the Profile of Moods States, differed significantly in the predicted way ($p < .036$). At the end of the treatment period, the intervention groups had improved in total mood disturbance, reflected by a decrease in their total score, whereas the counselling group, overall, had become worse.

The researchers also looked at the single item "relaxed" which is part of the subscale for tension in the Profile of Moods States. An ANCOVA based on this single item was done. At the end of three weeks, the women trained in passive muscle relaxation plus guided imagery were more relaxed than those in the passive muscle relaxation only group who were noted to be more relaxed than the women in the counselling group ($p < .025$).

In this study, there are three areas of concern. First, although the counselling group was regarded by the

investigators as the control group, counselling is an intervention. Therefore, the results reflect differences between the interventions used in this study which may be one of the reasons for the nonsignificant results obtained. Second, the use of a single item from a subscale of the Profile of Mood States to conclude that patients were more relaxed is inadequate. The concept "relaxed" is one of several interrelated concepts which define tension within the Profile of Moods Scales. It is not a concept which has been defined within this study and, therefore, is not measurable. Third, stress was not clearly defined and, judging by the results, the measurement tools used to operationally define stress did not prove sufficient. Although the concepts of tension, depression, vigour, fatigue, anger, confusion, and anxiety may be manifestations of stress, they do not necessarily define stress. The results suggest that the participants in this study may have been experiencing something other than stress.

Summary

This literature review has explored what is known about the concepts used in this study, symptom distress, personal control, and relaxation therapy in relation to individuals who are receiving treatment for a diagnosis of cancer. Although the majority of the literature

described in this review focused on individuals with cancer receiving chemotherapy, it is apparent that radiation therapy causes similar reactions including symptoms distress and a loss of control.

It is also apparent from this review that individuals with cancer use several strategies to cope with the reactions related to their disease and the treatment. Relaxation therapy has been widely recognized by health care professionals as a strategy used by individuals with cancer (Donovan 1980; Mast, Meyers, & Urbanski, 1987; Mastrovito, 1989; Taylor, 1985). The studies discussed in this literature review support the belief that relaxation therapy may be an effective adjunctive treatment in managing the adverse emotional and physical side effects associated with chemotherapy treatment.

Although anecdotal information exists, there is a noticeable absence of studies using relaxation therapy in individuals receiving radiation therapy and its effect on personal control and symptom distress. This study was designed to add to the current knowledge of the effects of relaxation therapy in individuals receiving radiation therapy for a diagnosis of cancer.

CHAPTER THREE

Methodology

Introduction

A quasiexperimental design, the nonequivalent control-group, was used in this study. The research hypotheses guiding the study methodology were: 1) Individuals receiving abdominal/pelvic radiation therapy who practice relaxation therapy will experience a reduced amount of symptom distress as compared with those who do not practice relaxation therapy; 2) Individuals receiving abdominal/pelvic radiation therapy who practice relaxation therapy will experience a higher level of personal control as compared with those who do not practice relaxation therapy. This chapter will discuss the process utilized for obtaining study participants, the instruments used in the study, and the methods of data analysis. Ethical considerations and the methods used to protect human rights will also be presented.

Sample

Thirty adults who met the following criteria comprised the convenience sample for this study. This sample size was chosen for manageability reasons at this level of research. The participants were recruited from a local cancer agency. The first 15 participants comprised

the control group. The remaining 15 participants received the intervention of relaxation therapy.

The criteria for participant selection included men and women who were:

- 1) between 25 and 75 years of age;
- 2) receiving abdominal/pelvic external radiation therapy for a diagnosis of cancer;
- 3) receiving a total radiation dose between 3000 and 5000 rads;
- 4) not receiving concurrent chemotherapy for a diagnosis of cancer;
- 5) free from cognitive deficits secondary to their disease or treatment;
- 6) able to read and speak English;
- 7) not receiving psychotropic medications; and,
- 8) residing in the local area during their course of treatment.

Data Collection Procedure

Initial contact with potential participants was made through the agency where clients received radiation therapy. Suitable candidates for the study were identified by the researcher with assistance from agency staff, specifically the Radiation Technologists. After the staff had gained consent from these individuals for the researcher to approach them, potential subjects were given a verbal and a written explanation of the study (Appendix A or B) by the researcher. Those who wished to

participate signed a Consent to Participate form at this time (Appendix C or D). Once consent was given, a copy of the consent with the researcher's name and number was given to each participant in the event of further questions.

Data Collection

Data were collected on two occasions from each of the participants: before the start of their course of radiation therapy, and at the end of a three week period during which they were receiving radiation therapy. The methods of data collection included face-to-face interviews to gather demographic and current treatment data (Appendix F), and the completion of two paper and pencil scales for the measurement of symptom distress and personal control. The intervention group also kept a diary to record the number of times they used the relaxation therapy and any comments they wished to make. During the second interview, the researcher also asked participants in the control group if they had used any type of relaxation technique during the past three weeks.

In the intervention group, the researcher guided each participant through the relaxation therapy, as defined in this study. Each participant was then given a written description and/or an audiotape of the relaxation therapy

to use as a reminder to perform the exercises (Appendix E). A weekly schedule (diary) was provided to each participant to record the number of times the method was used each day. It was reinforced that it was necessary for the participants to record only the number of times they used the method. It was acknowledged that they might not use it every day and that this was important information to collect. The participants were also asked to record any comments they had about how they felt or about the technique itself. A time was set for the researcher to contact the participants at the clinic once a week for the following two weeks to assist participants with any problems or concerns they had in using the method or in keeping the diary.

Data Collection Instruments

There were two questionnaires and an interview used in this study. The interview provided an opportunity to collect demographic data, an oncological history, the type and length of radiation therapy prescribed, and the participant's current methods of coping and use of relaxation therapy. The first questionnaire collected data on symptom distress and the second questionnaire collected data on personal control.

The Symptom Distress Scale

To measure symptom distress, the Symptom Distress Scale (SDS) designed by McCorkle & Young (1978) was used (Appendix G). This scale measures the degree of discomfort experienced by individuals with cancer in relation to their perception of the symptom being experienced. It takes approximately five to ten minutes to complete. Higher scores indicate greater levels of symptom distress.

Internal consistency was established in a study of individuals with a chronic illness ($N = 60$). McCorkle and Young (1978) found that the Cronbach's alpha was .82. In another study, stability of the scale was established with a test-retest (three months between testing) correlation of .78 (McCorkle & Quint-Benoliel, 1983).

Content and face validity were established during a pilot study where the major concerns of cancer patients ($N = 26$) receiving chemotherapy and radiation therapy were identified (McCorkle & Young, 1978). The types of symptoms identified in their study were congruent with those reported in the literature (Schneider, 1976). However, it was noted that newly diagnosed cancer patients were more concerned with problems related to the acceptance of their disease and anxiety of the future. Long term cancer patients were more concerned with

physical discomforts that interfered with their daily living (McCorkle & Young, 1978). Convergent validity was established by the correlation of .90 obtained between Ware's health perception questionnaire and the SDS (McCorkle, 1987). Although this evidence supports the validity of the tool, further research is needed to establish construct validity which is directly concerned with what a tool actually measures (Frank-Stromberg, 1988).

Self-Control Subscale

To measure personal control, the Self-Control (SC) Subscale of the Personal Opinion Survey (POS) designed by Coan & Fairchild (1977) was used (Appendix H). The Personal Opinion Survey is a multidimensional scale designed to assess seven major components of the experience of control. The Self-Control subscale consists of 19 statements used to measure how much control individuals perceive they have over their internal processes which include somatic, affective, and cognitive processes. The data are collected as either "true" or "false" and a key provided by the author (Appendix I) is used to quantify the data. Data is collected at a rank level. A high score indicates a higher rank on the self-control scale. The original study population for this scale included 525 college students. The results from

that study supported the hypothesis that there is not a general control dimension (Rotter, 1966) but that the experience of control is multidimensional.

Coan & Fairchild (1977) conducted reliability tests on the present revised scale. To measure stability, a test-retest was done. Subjects ($N = 105$) completed the questionnaire at three different times over a three month period resulting in correlations ranging from .61 to .87 with the SC subscale at .75. Factor analysis yielded an internal consistency within each subscale with Kuder-Richardson coefficients ranging from .67 to .83 with the SC subscale at .73 indicating moderate to high correlations. These results for reliability are at an acceptable level for a tool in the early stages of development (Frank-Stromberg, 1988).

Content validity was obtained through the use of the literature in an attempt to capture more of the variation in the way individuals experience control or the lack of control (Coan & Fairchild, 1977). In a study of psychologists ($N = 90$), the POS and the Sixteen Personality Factor Questionnaire were used to establish convergent validity. The authors summarized their findings by suggesting that "there is a tendency for factors of experienced control to be positively associated with variables that involve emotional control and

negatively associated with variables that suggest anxiety, distress, or emotional sensitivity" (Coan & Fairchild, 1977, p. 4).

Initial Interview Guide

The interview guide directed the collection of demographic, oncological history, the type and length of radiation therapy prescribed, and the participant's current coping methods and use of relaxation therapy (Appendix F).

Data Analysis

The demographic and current treatment data gathered from the interviews were used to describe the characteristics of the sample. For both hypotheses, the Self-Control Subscale and the Symptom Distress Scale were calculated and examined for frequency distribution, and measures of central tendency and variability.

The Symptom Distress Scale and the Personal Opinion Survey yield scores at an ordinal level. Therefore, nonparametric tests were used in the analysis.

The Mann-Whitney U Test was applied to the baseline scores obtained on both questionnaires to determine that no differences existed between the control group and the intervention group. The Mann-Whitney U Test was also used to test for any difference between symptom distress scores

and personal control scores of the intervention group as compared with the control group.

Human Rights and Ethical Considerations

The rights of participants were protected in the following manner:

1. Confidentiality was maintained. Each participant was given a code number which was then used in the analysis. The list with the names and codes were destroyed once data collection was completed. Data were reviewed only by the investigator and members of the thesis committee.

2. Informed consent was obtained prior to data collection. The letter of information described the study and the participant's role in the study. The study participant was given the opportunity to question the researcher about the study.

3. If at anytime the participant wished to withdraw from the study, she or he could do so. The subject was reminded that this would not jeopardize any health care being received at the time or in the future

Summary

The methodology used in this quasi-experimental study involved two data collection instruments and the use of an initial interview. The data collected was analyzed according to the statistical methods described. Ethical considerations and the methods used to protect human rights were also presented.

CHAPTER FOUR

Presentation and Discussion of the Findings

Introduction

This chapter is divided into four sections. The first section describes the characteristics of the study participants. The next two sections present an analysis of the data related to the two research hypotheses. The final section discusses the findings.

The Study Participants

The sample consisted of 30 individuals with a diagnosis of cancer being treated with abdominal/pelvic radiation therapy. A total of 30 individuals initially agreed to participate in the study. Of these thirty individuals, one individual in the control group used specific relaxation techniques during the time of participation in this study and, therefore, was excluded from the analysis. One individual withdrew from the intervention group after completing the initial questionnaires and using the relaxation method for three days. He stated that he was unable to breathe during the exercise which made him more anxious than he had been previously. Therefore, the analysis is based on the data collected from 28 subjects, 14 subjects in the control group and 14 subjects in the intervention group.

Age, Sex, Education and Diagnosis

The ages of the subjects ranged from 25 to 75 years of age. The median age in the control group was 58 years and in the intervention group was 51 years. In the control group, 29% of the subjects were male and 71% were female. In the intervention group, 71% of the subjects were male and 29% were female. As can be seen in Table 1, the high percentage of females in the control group accounts for the higher number of gynecological malignancies. Similarly, the high percentage of males in the intervention group accounts for the higher number of genito-urinary malignancies in this group.

In the control group, three (21%) subjects had completed an undergraduate degree and seven (50%) had either completed or attended high-school. Four (29%) of the subjects had attended grade school. In the intervention group, six (43%) had completed either graduate or undergraduate degrees, seven (50%) had either completed or attended high-school, and one (7%) had attended grade school.

All subjects had a diagnosis of cancer for which radiation treatment to the abdominal/pelvic area was given (see Table 1). Twenty-three subjects were treated for a primary malignancy with the intent to cure. Four subjects had local recurrent disease following previous surgery and

were also treated with the intent to cure. Only one subject in the intervention group received palliative radiation treatment for the control of her recurrent disease. The total dose of radiation received ranged between 3000 and 5000 rads over three to six weeks.

A Mann-Whitney U Test performed on the pre-scores obtained from both the measurement tools used in this study suggested that there were no significant differences between the control group and the intervention group in relation to the above variables (age, sex, education and diagnosis).

Table 1Number of Subjects Per Site of Malignancy

	Control	Intervention
Gastro-Intestinal Malignancies		
Colon	1	4
Rectal	2	1
Genito-Urinary Malignancies		
Bladder	0	2
Testicular (seminoma)	1	2
Prostate	2	3
Gynecological Malignancies		
Cervix	1	1
Endometrium	5	0
Ovarian	1	0
Non-Hodgkins Lymphoma	1	1
Total	14	14

Relaxation Intervention

All subjects in the intervention group were taught how to use the relaxation technique and given the choice of having written instructions and/or an audiotape to reinforce their learning. All subjects chose the audiotape. All but two subjects stated they used the tape each time they practiced relaxation. The two subjects who did not use the tape each time stated that by the third week they knew the technique and were able to use it "whenever they began to feel tense or upset".

Subjects in the intervention group were also asked to practice the relaxation technique once a day while receiving radiation therapy and to record the number of times they used the technique and any additional comments in a diary provided by the researcher. The range of times the technique was used by these subjects over the three week period was 15 to 60, with a median of 22 and a mean of 26. Approximately sixty-four percent (nine) of the subjects used the relaxation technique once per day. Twenty-one percent (three) of the subjects used it less than once per day and fourteen percent (two) used it twice a day or more.

Findings

Hypothesis 1: Individuals receiving abdominal/pelvic radiation therapy who practice relaxation therapy will experience a reduced amount of symptom distress as compared with those who do not practice relaxation therapy.

To determine the degree of symptom distress experienced by individuals receiving radiation therapy, the Symptom Distress Scale designed by McCorkle & Young (1978) was used. All subjects were asked to complete this questionnaire before the start of their course of radiation therapy and again at the end of a three week period during which they were receiving radiation therapy.

Descriptive statistics were used to examine the resulting scores. These scores were a measurement of symptom distress perceived by the subjects before starting radiation treatment and then three weeks after starting radiation treatment. Symptom distress scores obtained before the radiation treatment began ranged from 13 to 34 (Md = 20, M = 20.9, SD = 7.0) in the control group and from 14 to 41 (Md = 25, M = 23.9, SD = 15.21) in the intervention group. The symptom distress scores obtained three weeks after the radiation treatment had started

ranged from 15 to 47 (Md = 24, M = 27, SD = 10.2) in the control group and from 15 to 40 (Md = 21.5, M = 22.2, SD = 11.4) in the intervention group. The lowest score obtainable was 13, and the highest score attainable was 65. Using the Mann-Whitney U Test, a significant difference was found in the difference in the symptom distress scores between the two time intervals in the control group compared with the intervention group (U = 154; p < .05). Based on this result, the first hypothesis was accepted.

Discussion

The above results support the research in the literature related to symptom distress during radiation treatment (King, Nail, Kreamer, Strohl, and Johnson, 1985; Peck & Boland, 1977). The symptoms which were reported most frequently by the subjects were: diarrhea, fatigue, nausea and anorexia. Approximately 50% of individuals in this study who received abdominal/pelvic radiation treatment reported diarrhea and fatigue, similar to the results from the study done by King, Nail, Kreamer, Strohl, and Johnson (1985). Nausea (25%) and anorexia (32%) were reported less frequently by both male and female subjects. The other nine symptoms listed in the Symptom Distress Scale were mentioned as having occurred or being interfered with, but with much less frequency.

Unfortunately, a limitation noted with this scale is that it does not include an absolute number for "no distress" related to each symptom which forces subjects to choose "1" which could mean "no distress" or a "little distress". Therefore, it is impossible to determine which symptoms may not have been perceived as having any amount of distress associated with them.

The intervention of relaxation therapy did appear to decrease the overall symptom distress experienced by the subjects who used it when compared with those in the control group. Of the fourteen subjects in the intervention group, 50% wrote in their diaries that they used the relaxation technique to help them to sleep with some degree of assistance. One subject stated that "sometimes the tape helped me to sleep and sometimes it didn't. But the times when it made me feel warm all over were wonderful, and I was off to sleep".

According to McCorkle and Young (1978), experiences of symptom distress can be grouped into three categories: Low (score 1 or 2); Medium (score 3); or, High (score 4 or 5). Table 2 uses these categories to illustrate how relaxation therapy had an impact on the distress associated with the level of fatigue experienced by the subjects. Table 3 uses these same categories to

illustrate the distress associated with the changes in bowel function experienced by the subjects.

The results from several studies in the literature support the positive effects of using relaxation therapy in managing the adverse physical side effects associated with chemotherapy treatment (Burish & Lyles, 1981; Cotanch, 1983; Scott, Donahue, Mastrovito & Hakes, 1983). The results from this study add to the current knowledge of the positive effects of relaxation therapy in individuals receiving radiation treatment for a diagnosis of cancer.

Table 2

Distribution of Symptom Distress Scores (Fatigue and Bowel) Prior to Radiation Treatment and 3 weeks later

	Fatigue Score	
	First Score	Second Score
	Frequency/Percent	Frequency/Percent
<hr/>		
	Control group (<u>n</u> = 14)	
Low	12/86	2/14
Medium	1/7	5/36
High	1/5	7/50
<hr/>		
	Intervention group (<u>n</u> = 14)	
Low	8/57	8/57
Medium	5/36	3/21.5
High	1/7	3/21.5
<hr/>		

Note. Minimum score = 13. Maximum score = 65.

Table 3

Distribution of Symptom Distress Scores (Fatigue and Bowel) Prior to Radiation Treatment and 3 weeks later

	Bowel Score	
	First Score	Second Score
	Frequency/Percent	Frequency/Percent
<hr/>		
	Control group (<u>n</u> = 14)	
Low	13/93	5/36
Medium	0/0	0/0
High	1/7	9/64
<hr/>		
	Intervention group (<u>n</u> = 14)	
Low	10/72	7/50
Medium	3/21	4/29
High	1/7	3/21
<hr/>		

Note. Minimum score = 13. Maximum score = 65.

Hypothesis 2: Individuals receiving abdominal/pelvic radiation therapy who practice relaxation therapy will experience a higher level of personal control as compared with those who do not practice relaxation therapy.

To determine the level of personal control experienced by individuals receiving radiation therapy, the Self-Control Subscale of the Personal Opinion Survey designed by Coan & Fairchild (1977) was used. All subjects were asked to complete this questionnaire before the start of their course of radiation therapy and again at the end of a three week period during which they were receiving radiation.

Descriptive statistics were used to examine the resulting scores at two points in time. The first score results were a measurement of the level of control perceived by the subject before starting radiation therapy. The second score represents the level of personal control perceived three weeks after starting treatment. Personal control scores obtained before the radiation treatment ranged from 6 to 18 ($\underline{Md} = 12.5$, $\underline{M} = 12.1$, $\underline{SD} = 3.4$) in the control group and from 2 to 19 ($\underline{Md} = 13.5$, $\underline{M} = 13.1$, $\underline{SD} = 4.5$) in the intervention group. The personal control scores obtained three weeks after the radiation treatment had begun ranged from 10 to 19 ($\underline{Md} = 14$, $\underline{M} = 14.4$, $\underline{SD} = 2.9$)

in the control group and from 3 to 19 ($\underline{Md} = 17$, $\underline{M} = 14.8$, $\underline{SD} = 4.6$) in the intervention group. The lowest score obtainable was 0, and the highest score attainable was 19. Using the Mann-Whitney U Test, no significant difference was found between the two time intervals in the control group when compared with the intervention group ($\underline{U} = 189$). Based on this result, the second hypothesis was not accepted.

Discussion

The above results fail to support the anecdotal findings cited in the literature which propose that the use of relaxation techniques increases one's perception of personal control (Burish & Lyles, 1981; Cotanch, 1983; Scott, Donahue, Mastrovito & Hakes, 1983; Taylor, 1983). Possible explanations for the nonsignificant result include the small sample size and the use of a convenience sample. However, this author would argue that there are two other possible reasons for this result. First, the tool used to measure personal control was invalid for individuals with cancer, having only been used on healthy college students. Second, the concept of personal control has yet to be adequately defined.

Comments written in the diaries of a few of the subjects stated that they felt "better" at the end of the study. Four of the subjects in the intervention

group (29%) stated that they thought they were relaxed prior to using relaxation therapy. One subject stated "Although I feel I can usually relax, the tape seemed to help me ever more". At the end of the three weeks, this subject felt the technique had definitely made it easier for him "to rid myself of my tensions". Individuals who may not appear anxious or feel any tension often recognize previously unidentified tensions once they begin to use relaxation therapy (Donovan, 1980; Zahourek, 1988). However, the ability to identify one's tension and then to relax and, perceiving oneself as having personal control, are not necessarily related.

Only one subject's impression of how the relaxation techniques had helped her seemed to support this study's definition of personal control: "I never knew I was tense until I began these exercises. Now, if I get annoyed and I tense up, I just begin to breathe quietly and think about the exercise and I relax. I can deal with a situation that before would have just made me upset". Although this subject was not referring specifically to her radiation therapy but to events during her normal day, use of the exercises seemed to be an effective coping skill.

According to Thompson (1981), an aversive event that is associated with a highly desired outcome will be less

painful and/or less stressful. Although a diagnosis of cancer and receiving treatment with radiation may be aversive events, all but one subject in this study's sample were being treated with the intent to cure. Therefore, the results of this study support this assumption.

The one subject who received palliative treatment also received instruction in the relaxation technique. It is interesting to note that not only did she have the highest overall symptom distress score (40; maximum score = 65) of the entire sample at the end of the three week period but her personal control score had also increased by three points from her initial score. This subject felt and was very ill at the end of her treatment: "I am not sure I made the right decision to try the radiation. I feel so awful. Nothing seems to help and I can't do anything but sleep, it's very frustrating". Which leads this discussion back to the question of the validity of the tool used to measure personal control, specifically content validity. It is unclear as to whether this tool is actually measuring personal control given the results of this study.

Norris (1982) stated that habit makes it difficult to critically examine concepts used in nursing and to define them for use in scientific work. Yet, if critical

analysis is ignored, nursing will continue to use concepts, such as personal control, without knowing exactly what they mean. This has implications for all phases of the nursing process as well as nursing research.

The results from this study suggest that those subjects who were being treated for their cancer with the intent to cure did not have any change in their perception of personal control over the course of treatment, either positively or negatively. The results also suggest that relaxation therapy did not affect the level of perceived control in the intervention group. However, based on this discussion, the results from this study can also be interpreted to suggest that there is a need for further analysis related to the concept of control as it applies to situations encountered within the practice of nursing. This analysis would then give direction for the development of a measurement tool which would provide results to further direct nursing practice in the area of personal control.

Summary

This chapter began with a description of the study population. There were twenty eight individuals who were being treated with abdominal/pelvic radiation therapy for a diagnosis of cancer. Fourteen individuals comprised the control group and the rest were in the intervention group.

The intervention group used a defined relaxation technique for three weeks during their treatment.

The first hypothesis related to the effect of relaxation therapy on the amount of symptom distress experienced. It was found that there was a significant difference in the amount of symptom distress experienced between the two groups. The intervention group experienced a lower overall amount of symptom distress compared with the control group. This result was comparable with other studies done with individuals receiving chemotherapy for a diagnosis of cancer.

The second hypothesis related to the effect of a relaxation technique on the amount of personal control experienced. It was found that there was no significant difference in the amount of personal control experienced between the control and intervention group. Although this result does not support the literature, the validity of the tool used to measure personal control and the need for a clear and measurable definition of this concept within nursing was discussed.

CHAPTER FIVE

Summary, Recommendations for Nursing

Education, Practice, and Research

Introduction

This chapter concludes the presentation of this study. A summary of the study and its findings begin the chapter. Recommendations for nursing education and practice follow. Finally, recommendations for nursing research are made.

Summary of the Study

This quasiexperimental study was designed to determine the effect of relaxation therapy on symptom distress and personal control as perceived by adults receiving abdominal/pelvic external radiation treatment for a diagnosis of cancer. The sample consisted of twenty eight individuals, fourteen in the control group and fourteen in the intervention group. The sample participants were initially approached by staff members in the radiation department of a local cancer agency to obtain their consent to participate. All participants were asked to complete a total of four questionnaires. Those individuals in the intervention group were also taught a specified relaxation technique and asked to practice it at least once a day while on the study. The

number of times the technique was used and any comments were recorded in a diary provided by the researcher.

It was identified in the literature that individuals being treated with radiation therapy not only experience physiological and psychological side effects but also feelings of helplessness and a loss of personal control. Relaxation therapy was identified as the independent variable in this study which affects the dependent variables of symptom distress and personal control. It was hypothesized that the daily use of relaxation therapy by individuals receiving radiation therapy would decrease the amount of symptom distress and increase the amount of personal control perceived.

Data were gathered by interview, two sets of questionnaires and written diaries. The interview was completed before the participants began their radiation treatment. The questionnaires were also completed at this time and then again three weeks after the treatment began. A diary was kept by those in the intervention group to record the number of times relaxation was used and any comments.

To answer the two hypotheses, summary statistics were used. The results indicated that individuals who used relaxation therapy perceived a decreased amount of symptom

distress than those in the control group. The Mann-Whitney U Test indicated that this difference was at the $p < .05$ level of significance. On this basis the hypothesis was accepted. The results of the second hypothesis indicate that there was no significant difference between the groups in the amount of perceived personal control. On this basis the hypothesis was not accepted.

Recommendations for Nursing Education and Practice

As stated earlier, it is estimated that one in three Canadians develop some form of cancer during their lifetime (Canadian Cancer Statistics, 1990). Over 50% of these individuals are treated with radiation therapy, primarily on an outpatient basis, at some point in their illness (Yasko, 1982). Many of these individuals experience both psychological and physiological side effects despite medical interventions. The results of this study can direct nursing education and nursing practice in this area.

Based on this study, the recommendation for nursing education is to incorporate the use of relaxation techniques as a nursing intervention in caring for individuals receiving treatment for a diagnosis of cancer within the basic nursing education curriculum. Students

should learn to use interventions such as passive muscle relaxation and breathing techniques within their practice.

Nursing students would begin by learning the theory related to the effectiveness of relaxation therapy. They would then learn how to use basic relaxation techniques, utilizing the theory within their practice. The methods used to teach the students would include those that would then be used by the students to teach their patients.

Within their assessment, nursing students must be taught to be aware of how the patient perceives relaxation. Some of the individuals who refused to participate in this study stated they did not believe it would help them. They felt that the doctor would be able to help should they develop any side effects. Nurses need to offer individuals the choice of whether they wish to learn the use of relaxation therapy.

Although the implication is not derived specifically from this study, the nursing students must also know of those circumstances where it may be inappropriate to use relaxation therapy. Individuals who have a severe depression or psychosis should be assessed by a physician prior to the use of relaxation (Donovan, 1980; Mast, Meyers, Urbanski, 1987; Mastrovito, 1989).

The recommendation for nursing practice is to apply the knowledge and skills in relaxation therapy acquired

within nursing education to prevent or decrease the amount of symptom distress experienced. The results from this study not only support previous studies which indicate that symptom distress experienced by individuals increases over the treatment course of radiation (King, Nail, Kreamer, Strohl, Johnson, 1985, Peck & Boland, 1977), but also suggest that the use of relaxation therapy decreases the distress associated with the side effects of the treatment. As previously stated, the majority of individuals receive their radiation treatments as outpatients and, therefore, are seen by nurses within the cancer agency, at home, or in a community hospital. Nurses are in an ideal position to use interventions, such as relaxation therapy, to decrease the symptom distress associated with the treatment and/or the disease.

Recommendations for Nursing Research

Although the results of this study did show that the use of relaxation therapy decreased perceived symptom distress within a specific group of individuals, the generalizability of these results is limited due to a number of factors. Specifically, the number of study participants in this study was small and subjects were recruited by a convenience sampling. Additionally, not all cancer sites were represented. Increasing the number of participants and the variety of their diagnoses of

cancer would provide a stronger argument as to the significance of the results. If symptom distress was again significantly decreased in such a study, it would be interesting to note if there were any differences between male and female subjects and if there were any differences between individuals being treated for different types of cancers.

King, Nail Kreamer, Strohl, and Johnson (1985) noted that more than 30% of the subjects in their study ($n = 96$) who were receiving radiation treatments to the chest, head and neck, and pelvis experienced the persistence of at least one symptom through the third month after treatment was completed. A longitudinal study could be done to determine if symptom distress was also decreased over time.

As previously stated, the need for control in individuals with a life-threatening illness is acknowledged in the literature. However, very few studies have been found which attempt to describe the concept of personal control. The majority of studies found in the literature primarily involve laboratory experiments (Miller, 1979; Thompson, 1981). How individuals perceive control and how it differs given certain conditions need to be determined to provide relevant information to guide health care professionals. Qualitative research would be

appropriate and useful to answer questions such as: What does having control mean? Is personal control perceived differently for individuals who are free from disease than for those who have cancer? Is personal control perceived differently by individuals with cancer who are being treated with the intent to cure versus those who were in a palliative situation?

Although the results from this study indicated that the use of one relaxation technique was ineffective in relation to personal control, the need to look at the effectiveness of other techniques is necessary. At this time, it is not clear if one relaxation technique may be more effective than another. Further, there is little direction within the literature as to which technique may be most effective in certain situations or with certain conditions. According to the literature, individuals who are experiencing fatigue may not benefit from progressive muscle relaxation or from guided imagery as they may be very tiring (Kaempfer, 1982; McCaffery & Beebe, 1989). Although this may be true, there is no research to confirm this observation nor to suggest alternative techniques which may be used in these situations.

Finally, it is unclear as to which individuals benefit the most from this type of intervention and in what ways. It is stated in the literature that

individuals who have sleep disturbances or are aware that they need to relax benefit more than those who are extremely anxious (McCaffery & Beebe, 1989). However, there is no research to support these claims nor is how individuals "benefit" from relaxation therapy described.

Summary

Individuals who receive abdominal/pelvic radiation treatment experience symptom distress related to the side effects of the treatment. To enhance the nursing care provided to these individuals, nurses should become knowledgeable in the use of relaxation techniques which may be used by these individuals in order to decrease perceived symptom distress. Further research to better understand this experience in relation to personal control is required to enable nurses to provide appropriate and effective care to these individuals.

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Appendix A

Introductory Letter for Participants in Control Group

University of British Columbia

My name is Linda Yearwood and I am a Registered Nurse currently completing my Master of Science in Nursing Degree at the University of British Columbia. I am doing a study to find out more about the effect a coping technique has on the experience of individuals receiving radiation therapy for a diagnosis of cancer.

Participating in this study includes completing four questionnaires: two at the beginning and two at the end of a three week period during which you are receiving treatment. Although you will not learn the technique at the time of the study, the information gained from your participation will assist nurses to help individuals cope with radiation therapy in the future. Further, you will have the opportunity to learn the technique during a 30 - minute teaching session at the end of your participation in the study.

At a time convenient for you, I will visit you, have you complete the questionnaires and answer a few questions related to your treatment. At this time, I will arrange a date and a time for a second meeting in three weeks to have you complete the same two questionnaires again. Each visit should take no longer than 30 minutes.

Appendix B

Introductory Letter for Participants

Effects of Relaxation Therapy on Symptom Distress and Personal Control Experienced by Adults with Cancer

My name is Linda Yearwood and I am a Registered Nurse currently completing my Master of Science in Nursing Degree at the University of British Columbia. I am doing a study to find out more about the use of relaxation therapy on the experience of individuals receiving radiation therapy for a diagnosis of cancer.

Participating in this study includes completing four questionnaires: two at the beginning and two at the end of a three week period during which you are receiving treatment as well as using a structured method of relaxation therapy on a daily basis during this time. This method should take no longer than 10 minutes per day to do. I will provide you with a diary in which I will ask you to record the number of times you used this method each day.

At a time convenient for you, I will visit you, have you complete the questionnaires and answer a few questions related your treatment. At this time, I will also be teaching you how to use a method of relaxation therapy. This visit should take no longer than 60 minutes. I will

Appendix E

Relaxation Technique

Deep Breathing

1. Close your eyes or pick a point on the ceiling to look at while you relax. Remember that relaxation isn't so much something that you do, as it is a state of "not doing". During this exercise you will passively relax your muscles, giving away your tension or areas of pain as you breathe. Scan your body for areas of tension and relax quietly, let the chair support your body comfortably as you relax your muscles.
2. Inhale slowly and deeply through your nose ... and exhale through your mouth, blowing the breath out easily ... (Repeat). Continue to inhale deeply and peacefully ... and as you exhale, think "relax" ... (Repeat). Let your lungs fill quietly and completely ... and then blow the air out easily.
3. As you inhale, imagine that you are sending healing air to the parts of your body that you feel are tense or painful ... and blowing away the pain or tension as you exhale quietly and think "relax". Inhale deeply, sending healing air through your body ... and blowing away the tension as you exhale quietly.
4. As you inhale, the muscles in your shoulders and neck unclench ... and as you exhale you allow these muscles to relax. The muscles in the areas you feel tension or discomfort become increasingly more comfortable as you breathe quietly and peacefully.
5. As you continue to breathe quietly and calmly, you can feel your body becoming warm and comfortable.
6. Notice how calm and relaxed you have become. Continue to breathe calmly and quietly.

Reference: Mast, D., Meyers, J. & Urbanski, A. (1987).

Relaxation techniques: A self-learning module for

nurses: Unit III. Cancer Nursing, 10, (5), 279-285.

Passive Muscle Relaxation

1. Breathe calmly and evenly as you think about your muscles one by one. Begin with the muscles in your forehead and scalp, letting the tension flow away ... Now think about the muscles around your eyes ... Relax the muscles around your eyes so they lie quietly closed ... Think about the muscles in your face and jaw .. in your mouth and tongue ... let your muscles go as you begin to relax deeper and deeper ...
2. Notice any tension in the muscles in your neck and relax the muscles in your neck, letting the tension flow away ...
3. Now think about the muscles in your shoulders and upper back. Let the tension flow away as you relax deeper and deeper ... Moving down to your arms, relax the muscles in your arms ... Think about your hands, allowing feelings of relaxation to flow down your arms to your hands, leaving them completely relaxed .. Let the tension flow out through your fingertips, like sand through an hourglass as you think "relax".
4. Notice any tension or tightness in your chest and inhale calmly, relaxing the muscles in your chest ... and blow the tension away as your exhale ... Think about the muscles in your stomach ... let them go ...
5. Relax the muscles of your lower back, allowing your lower back to rest more comfortably against the bed .. Your breathing is peaceful and relaxed as you focus on the muscles in your buttocks and your legs ... relax your thighs ... your calves ... and your feet, as feelings of warmth and comfort flow right down to your toes ... Your body is warm and calm and relaxed ... Your breathing is calm and easy ...

Mast, D., Meyers, J. & Urbanski, A. (1987). Relaxation techniques: A self-learning module for nurses:

Unit III. Cancer Nursing, 10, (5), 279-285.

Appendix F**Initial Interview Guide**

Coding _____

Date _____

Demographic and Health Data

1. Age: _____
2. Sex: _____
3. Education:
 - _____ 1. grade school completed
 - _____ 2. high school completed
 - _____ 3. post secondary education
 - _____ 4. university education
4. Oncology History:
 - a. Initial diagnosis: _____
 - b. Date of initial diagnosis: _____
 - c. Any recurrences: _____ Yes _____ No If yes, when and where?
5. Current History:
 - a. Present diagnosis: _____
 - b. Treatment plan: _____
6. What are your current methods of coping with your diagnosis and the treatment?
7. Are you currently using any method of relaxation?

Appendix G

Questionnaire

Symptom Distress Scale
(McCorkle & Young, 1978)

Coding _____

Date _____

SYMPTOM DISTRESS QUESTIONNAIRE

Each of the following sections lists 5 different numbered statements. Think about what each statement says, then place a circle around the one statement that most closely indicates how you have been feeling during the past week including today. The statements under each section are ranked from 1 to 5, where number 1 indicates no problem and number 5 indicates the maximum amount of problems. Numbers 2 through 4 indicate you feel somewhere in between these two extremes. Please circle one number under each section.

1. NAUSEA (1)

1	2	3	4	5
I seldom feel any nausea if at all	I am nauseous once in a while	I am often nauseous	I am usually nauseous	I suffer from nausea almost continually

2. NAUSEA (2)

1	2	3	4	5
When I do have nausea, it is very mild	When I do have nausea, it is mildly distressing	When I have nausea, I feel pretty sick	When I have nausea, I feel very sick	When I have nausea, I am as sick as I could possibly be

3. APPETITE

1	2	3	4	5
I have my normal appetite	My appetite is usually, but not always, pretty good	I don't really enjoy my food like I used to	I have to force myself to eat my food	I cannot stand the thought of food

4. INSOMNIA

1	2	3	4	5
I sleep as well as I always have	I have occasional spells of sleeplessness	I frequently have trouble getting to sleep and staying asleep	I have difficulty sleeping almost every night	It is almost impossible for me to get a decent night's sleep

5. PAIN (1)

1	2	3	4	5
I almost never have pain	I have pain once in a while	I frequently have pain--several times a week	I am usually in some degree of pain	I am in some degree of pain almost constantly

6. PAIN (2)

1	2	3	4	5
When I do have pain, it is very mild	When I do have pain, it is mildly distressing	The pain I do have is usually fairly intense	The pain I have is usually very intense	The pain I have is almost unbearable

7. FATIGUE

1	2	3	4	5
I usually am not tired at all	I am occasionally rather tired	There are frequently periods when I am quite tired	I am usually very tired	Most of the time, I feel exhausted

8. BOWEL

1	2	3	4	5
I have my normal bowel pattern	My bowel pattern occasionally causes me some discomfort	I frequently have discomfort from my present bowel pattern	I am usually in discomfort because of my present bowel pattern	My present bowel pattern has drastically changed from what was normal for me

9. CONCENTRATION

1	2	3	4	5
I have my normal ability to concentrate	I occasionally have trouble concentrating	I often have trouble concentrating	I usually have at least some difficulty concentrating	I just cannot seem to concentrate at all

10. APPEARANCE

1	2	3	4	5
My appearance has basically not changed	My appearance has gotten a little worse	My appearance is definitely worse than it used to be, but I am not greatly concerned about it	My appearance is definitely worse than it used to be, and I am concerned about it	My appearance has changed drastically from what it was

11. BREATHING

1	2	3	4	5
I usually breathe normally	I occasionally have trouble breathing	I often have trouble breathing	I can hardly ever breathe as easily as I want	I almost always have severe trouble with my breathing

12. OUTLOOK

1	2	3	4	5
I am not fearful or worried	I am a little worried about things	I am quite worried, but not afraid	I am worried and a little frightened about things	I am worried an scared about things

13. COUGH

1	2	3	4	5
I seldom cough	I have an occasional cough	I often cough	I often cough, and occasionally have severe coughing spells	I often have persistent and severe coughing spells

Appendix H

Questionnaire

The Personal Opinion Survey

Self-Control Subscale

(Coan & Fairchild, 1977)

Coding _____

Date _____

PERSONAL OPINION SURVEYSELF-CONTROL SUBSCALE

These 19 statements are about your own feelings about yourself, or matters of health. There are no absolutely "right" or "wrong" answer. Think about what each statement says, then place a circle around the answer that indicates how you have been feeling during the past week including today.

For each item, circle one of the choices. If the item is true, circle the T. If the item is false, circle the F.

- T F 1. I almost always understand why I feel and react as I do.
- T F 2. I have sometimes felt that difficulties were piling up so high that I could not overcome them.
- T F 3. I seldom cry.
- T F 4. I sometimes have trouble with my muscles twitching or tightening up.
- T F 5. I can hide my feelings very well.
- T F 6. At times, I have been so angry that I just couldn't help doing or saying things I wouldn't ordinarily do or say.
- T F 7. I don't let things bother me the way some people do.
- T F 8. Sometimes an idea runs through my mind and I can't stop thinking about it no matter how hard I try.
- T F 9. I almost always keep control of my emotions.
- T F 10. My moods swing back and forth a lot from high to low.
- T F 11. I seldom have trouble with muscle spasms or cramps.
- T F 12. I often have trouble getting to sleep at night.

- T F 13. I am seldom bothered by headaches.
- T F 14. Sometimes I worry about something that is not really important.
- T F 15. It takes a lot to hurt my feelings.
- T F 16. I don't like to waste time feeling sorry for myself.
- T F 17. I know how to relax for a few minutes when I'm getting tense and then go back to what I was doing.
- T F 18. I seldom have nightmares.
- T F 19. When I'm upset over something, I usually know why and what to do about it.

Appendix I**Scoring the Personal Opinion Survey Questionnaire**

The raw score on each scale is simply the number of responses that agree with the following key.

Factor 5: Internal Self-Control Scale

1. T	10. F	19 . T
2. F	11. T	
3. T	12. F	
4. F	13. T	
5. T	14. T	
6. F	15. T	
7. T	16. T	
8. F	17. T	
9. T	18. T	