Fatigue in Two Chronic Illness Populations

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RUNNING HEAD: Fatigue

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Chapter 1

Introduction

Fatigue, so it would seem, has no place in our American society that strives for productivity, energy, and fitness. Yet fatigue is a common complaint of many individuals including the chronically ill. Some of the healthy adult populations that have been cited in the literature as experiencing fatigue include women (Riddle, 1982) and the elderly (Mitchell, 1986). Patient populations include multiple sclerosis patients (Frell, Kraft & Coryell, 1984), post-surgical patients (Rose & King, 1978), cancer patients (Britton, 1983), and cardiac surgery patients (Jillings, 1978). What remains unclear, however, is whether these populations experience the same type of fatigue or if their descriptions of fatigue vary. A description of the variation between types of fatigue could be helpful in the development and testing of specific interventions that would help patients manage their fatigue.

The purpose of this study was to describe the sensations of fatigue experienced by the post coronary artery bypass (CABG) patient and the oncology patient receiving radiation therapy. As the concept of fatigue is defined utilizing patients' perspectives, it should become more apparent whether or not

fatigue can be described by a universal definition, or if fatigue experiences are unique sensations depending upon the disease process.

Review of the Literature

Conceptualizations of Fatigue

Many conceptualizations of fatigue have been offered in the literature. Bartley (1967), a psychologist, developed a schema for viewing fatigue including the terminology of impairment, disorganization, discomfort, and decreased activity. According to this schema, impairment occurs at the cellular level and is seen as an inability of the cells to carry out their normal function. Disorganization is viewed as occurring at the systemic level when the body system integrates the cellular functions. Impairment and disorganization can be both physiological, as in the inability of the respiratory system to compensate for lung tissue damage due to chronic obstructive lung disease, or psychological, as when anxiety decreases a person's ability to think clearly. Discomfort is the subjective experience, and the decrease in activity the objective experience of fatigue. He viewed fatigue as beginning at either level, -- impairment or disorganization -- and eventually encompassing both levels in generalized fatigue.

Grandjean (1970) attempted to provide a clear definition of "general fatigue". He focused on the physiological aspects of fatigue and considered the central nervous system as controlling the state of fatigue by the antagonistic activity of the inhibitory and activating system of the brain stem. According to his definition, environmental stimuli, humoral factors, and the conscious part of the brain could all act on the activating system to influence feelings of fatigue. He defined fatigue as a subjective experience characterized by a decreased level of endurance. Fatigue is seen as a protective mechanism which would force the body to avoid further stress and allow recovery to take place.

Morris (1982) reviewed fatigue differentiating between normal fatigue and pathological fatigue. Normal fatigue includes the recognition of tiredness with the ability to mobilize energy through sleep or rest to return to a normal state. The conceptual definition of pathological fatigue included a feeling of inability to mobilize the energy to continue activities. This lack of ability might stem from physical incapacities, environmental deprivations, or psychological failures. The identification of people at risk and how to assess symptoms of fatigue were reviewed. Patient

populations cited as being at risk for fatigue include; individuals with heart disease, endocrine disorders, nutritional deficiencies, neoplasia, neuromuscular defects and liver disease. Assessment of fatigue was based on the three concepts of (1) biochemical and physiological changes (2) behavioral changes and (3) subjective feelings of dissatisfaction and tiredness. Hart and Freel (1982) reviewed the literature making the distinction between acute fatigue, chronic fatigue, and muscle fatigue. They noted that fatigue may be precipitated by physiological, psychological or pathophysiological stressors. They concluded that although fatigue is still not well understood or clearly delineated, it can be conceptualized as a "state of increased discomfort and decreased efficiency resulting from expenditure of energy" (pg. 259).

Chronic fatigue was also reviewed by Potempa, Lopez, Reid and Lawson (1986) and a model of fatigue proposed. Chronic fatigue is defined as a decreased capacity for physical and mental work that persists over time and interferes with daily life. Contributing factors to the perception of fatigue included both physiological and psychological mechanisms. Mitchell (1986) explored fatigue and the elderly. He defines

fatigue as "an abnormal rate of exhaustion following activity, physical, mental, or emotional" (pg. 19).

Kellum (1985) defined fatigue as "the perception of tiredness, lack of energy, and an inability to continue" (pg. 103). She described fatigue as having pathophysiologic, situational, and psychological factors. The fatigue experience is viewed as a person's evaluation of their feelings of fatigue in relation to these factors and how they influence daily tasks.

While several conceptualizations of fatigue have been offered, a universal understanding of this concept remains uncertain. However, several researchers have acknowledged the multicausational factors of fatigue including physical, psychological and situational dimensions. In addition, the definitions offered often involve a self-perception of the fatigue. Further clarification is needed to provide a clearer understanding of this concept, and to assist in focusing future research.

Research on Fatigue

Despite a clear definition of fatigue, some attempts have been made to research this concept in both healthy and pathological populations. Yoshitake (1971) investigated

fatigue in industrial workers. Defining fatigue as an overall unpleasantness experienced by workers, a 30-item subjective fatigue symptom checklist was developed and tested on bank and broadcasting workers. He found that the more numerous the symptoms, the greater the level of fatigue. He also noted that it was rare to have physical symptoms of fatigue that were not accompanied by mental symptoms.

Kashiwagi (1971) attempted to use the Yoshitake scale to evaluate objective findings of fatigue. He interpreted this scale as having three dimensions: weakened activation, weakened motivation, and physical disintegration. He found that the component of weakened activation was the best objective indicator of a person's level of fatigue.

Putt (1975) researched the effects of noise on fatigue in sixty healthy adults utilizing physiological and subjective measures of fatigue. No significant differences in fatigue ratings were noted between subjects receiving and those not receiving monotonous noise at 65 decibels.

Overall, little research has been conducted regarding the concept of fatigue. In addition, available studies have tended to focus on normal populations which makes extrapolation of these findings to chronic illness populations difficult.

Fatigue and the Surgical Patient

Rose and King (1978) state in their review of postoperative fatigue that despite a clear link between preoperative and intraoperative events "the postoperative fatigue syndrome is well known" (pg. 97). Fatigue has been studied in other surgical patient populations, but little attention has been devoted to fatigue in the CABG patient. In a study done in Denmark, Christensen, Bendix, and Kehlet (1982) found an increase in subjective fatigue ratings at 10, 20, and 30 days postoperatively ($p<0.01$), and a decreased postoperative oxygen consumption at equal work loads (bicycle ergometry) ($p<0.01$). Fatigue was subjectively measured by a vertical scale with end points of 1=Fit to 10=Fatigued and mid points of 4=Slightly tired and 7=Tired. In a more recent study, Christensen, Hougard and Kehlet (1985) compare postoperative fatigue levels in 52 abdominal and 15 minor otological surgical patients using the same subjective fatigue rating scale. Fatigue measured on postoperative days 10, 20, and 30 was significantly increased ($p.0<001$) for the abdominal surgery patients, but did not change in the minor otological patients despite similar anesthesia agents and mean duration of surgery time in both groups. The authors concluded that fatigue may be

related to magnitude of trauma rather than mean duration of anesthesia.

In a study of patient's preoperative anxiety and postoperative fatigue done by Christensen, Hjortso, Mortensen, Riis-Hansen and Kehlet (1986) fatigue was subjectively rated by a sample of seven women and eight men undergoing uncomplicated abdominal surgery. Fatigue measured on postoperative days 10 and 30 increased significantly from preoperative levels. State-anxiety decreased postoperatively while trait-anxiety remained unchanged as measured by the State-Trait-Anxiety Inventory. No correlations were found between preoperative measures of state and trait anxiety and postoperative fatigue. The authors conclude that anxiety may not be a causal factor in postoperative fatigue.

Rhoten (1982) developed an observational checklist and a subjective fatigue scale to clarify fatigue in the post-operative patient. She divided the checklist into four general categories (general appearance, communication, activity, attitude) which are based on data collected from objective observations and interviews of postoperative abdominal surgery patients. In using the subjective fatigue scale, subjects marked their level of fatigue on a continuum ranging from 0=not

tired, full of energy, peppy, to 10=total exhaustion. An initial research study of five abdominal surgery patients found a general correlation (no numerical value is reported) between the rankings made by patients on the subjective scale and objective ratings obtained by interviewers.

The only study found that mentioned fatigue in relation to the CABG patient was done by Jillings (1978). In a grounded theory study, Jillings described three phases of recovery in twenty CABG patients. Many symptoms occurring in the recovery phases of the CABG patient are described including fatigue. An initial somatic phase immediately followed surgery and included the patient's time spent in the intensive care unit. Patients were self-focused and were described as experiencing discomfort and fatigue. Fatigue continued into the second phase of transition as the patient moved to the cardiac surgery floor and began a regimen of increased activity. Patients entered the resolution phase as they began to get ready for discharge. This phase included physical and emotional recovery, resolution or partial resolution of conflicts and problems, and an increased independence. Although this study noted that postoperative CABG patients experienced fatigue, no definition

of the fatigue experience or distinction between fatigue and similar concepts such as tired and malaise were given.

Fatigue and Cancer

Until recently, little has been written about the specific topic of fatigue in relation to cancer patients. When fatigue was mentioned it was usually in connection with other concepts such as sleep disruption (Britton, 1983), cachexia (Lindsey, 1986), anemia (Maxwell, 1984), and treatments such as interferon (Davis, 1984) and chemotherapy (Nerenz, Leventhal & Love, 1982). In the past year, three articles have appeared on fatigue and cancer patients. Piper, Lindsey, and Dodd (1987) developed a conceptual framework for fatigue in an attempt to help multiple disciplines communicate their perspectives, definitions, and theories regarding fatigue. Several potential mechanisms of fatigue are offered, while emphasizing the lack of actual knowledge regarding the causes of fatigue. Piper et. al stress that it is unclear how subjective and objective indicators correlate, and that presently the best way to measure fatigue is through the person's own perceptions. Their working definition of fatigue emphasized the subjective nature of this phenomena.

The second article published recently, by Aister (1987), examined fatigue in a conceptual approach. She defined fatigue as a "subjective feeling of generalized weariness, weakness, exhaustion, and lack of energy resulting from prolonged stress that is directly or indirectly attributed to the disease process" (pg. 25). She also believed that this subjective feeling may be attributed to physiological, psychological, and situational factors. She offered guidelines for intervention that include stress reduction and energy conservation.

The most recently published article, by Nail and King (1987), was an overview of the concept of fatigue in relation to the cancer patient. In defining fatigue they implied a voluntary component to this experience. Fatigue is seen as the "self-recognized phenomenon involving how the individual feels and how this feeling influences the activities in which one chooses to engage" (pg. 257). These authors reviewed physical and psychological problems associated with fatigue. They discussed the difficulty of measuring fatigue, some of the available instruments for measurement, and offered other possible avenues for collecting information regarding a patient's fatigue. There was a brief review of the standard nursing interventions that are used to relieve fatigue.

In the past twenty years only two articles have been written specifically about fatigue as it relates to radiotherapy. In 1979, Haylock and Hart undertook a study to document the post radiation fatigue that patients reported. They also attempted to establish if physiologic indicators of the fatigue levels could be isolated. Thirty cancer patients receiving radiation were surveyed regarding fatigue. Fatigue was measured using two instruments: the Pearson Byars Fatigue Feeling Checklist, and the Yoshitake Fatigue Symptom Checklist of the Japanese Association of Industrial Health. A potential physiological indicator was measured by sampling patient's urine for traces of free hemoglobin. Results of the study indicated that no levels of hemoglobin could be detected in the urine of the patients, thus excluding anemia as a potential cause of the fatigue. Fatigue symptoms were directly correlated with the radiation treatment as seen by a decrease in fatigue over the weekend when no radiotherapy was given. Other factors that contributed to fatigue included length of radiation exposure, decreased weight of patient, and shorter length of time since surgery. The emphasis of this study was on the physiological component of fatigue. Therefore, fatigue was defined as "subjective self-evaluation of sensations associated with

discomfort, decrease in motor and mental skill, and increased task aversion" (pg. 461). Some limitations of this study included a small sample size and varying tumor sites, extent of disease, and radiation therapy doses as variables. Another limitation included the inability to determine the level of psychological distress that cancer patients have and how it relates to fatigue. However, this study is one of the first to document that patients receiving radiation therapy experience fatigue.

Not until 1985 did the second study on fatigue and radiotherapy appear in the literature. Kobashi-Shoot et al. (1985), attempted to quantify fatigue feelings as a component of general malaise. Indications of general malaise included a feeling of tiredness and weakness and the inability to accomplish tasks. Their population included 106 patients receiving radiotherapy for cancer of the uterus, breast, bladder, or lymphoma. A questionnaire was administered six times over a period of three weeks. The questionnaire contained six sections: a subjective symptom test, a checklist for cancer patients, visual analogue scales, ill-well dimension, hours of rest during the day, and daily activities. Results supported the findings of Haylock and Hart, that

feelings of fatigue increased as radiation treatment progressed. It was noted that patients with lymphoma and uterine cancer experienced decreased fatigue over the weekend when radiation was not given. This was not true for the patients with breast or bladder cancer receiving therapy. It was hypothesized that this was due to the differences in radiation dosages. Other results indicated that the amount of rest during the day that patients received was only moderately correlated to feelings of physical fatigue. Limitations to this study included the inability to determine the level of psychological distress that cancer patients have and how it relates to fatigue. Also, the daily activity list was not conclusive in predicting how physical fatigue related to the ability to carry out daily tasks.

The present state of the literature on fatigue is lacking both a clear conceptualization and a universal definition. Further research that defines and describes the universal components of fatigue and the components that vary among different health and disease states is needed.

Conceptual Framework

A conceptual framework for this study has been adapted from Kellum (1985) and Aistars (1987) (see Figure 1). The framework includes the interaction of the physiological, psychological, and situational fatigue factors. The outcome of the interaction of these factors may be fatigue. Patients' perceptions and manifestations of fatigue are thought to be observable and measurable components of the concept.

The actual mechanisms that cause fatigue in cardiac and cancer patients are unknown, yet factors that may be influential are psychological, physiological and situational in nature (Aistars, 1987, Kellum, 1985). Psychological factors may include such patterns as depression, anxiety, and grief (Aistars, 1987 ; Kellum, 1985). Physiological factors may include accumulation of metabolites; hypermetabolic states associated with active tumor growth, infection, or fever; decreased nutrition; pain; and impairment of aerobic energy metabolism (Aistars, 1987; Kellum, 1985). Situational influences include sensory deprivation, immobility, crisis, problems with relationships, drugs, sleep deprivation, diagnostic tests, loss (Aistars, 1987), as well as lack of

social support. All of these factors may contribute to a patient's fatigue either simultaneously or independently.

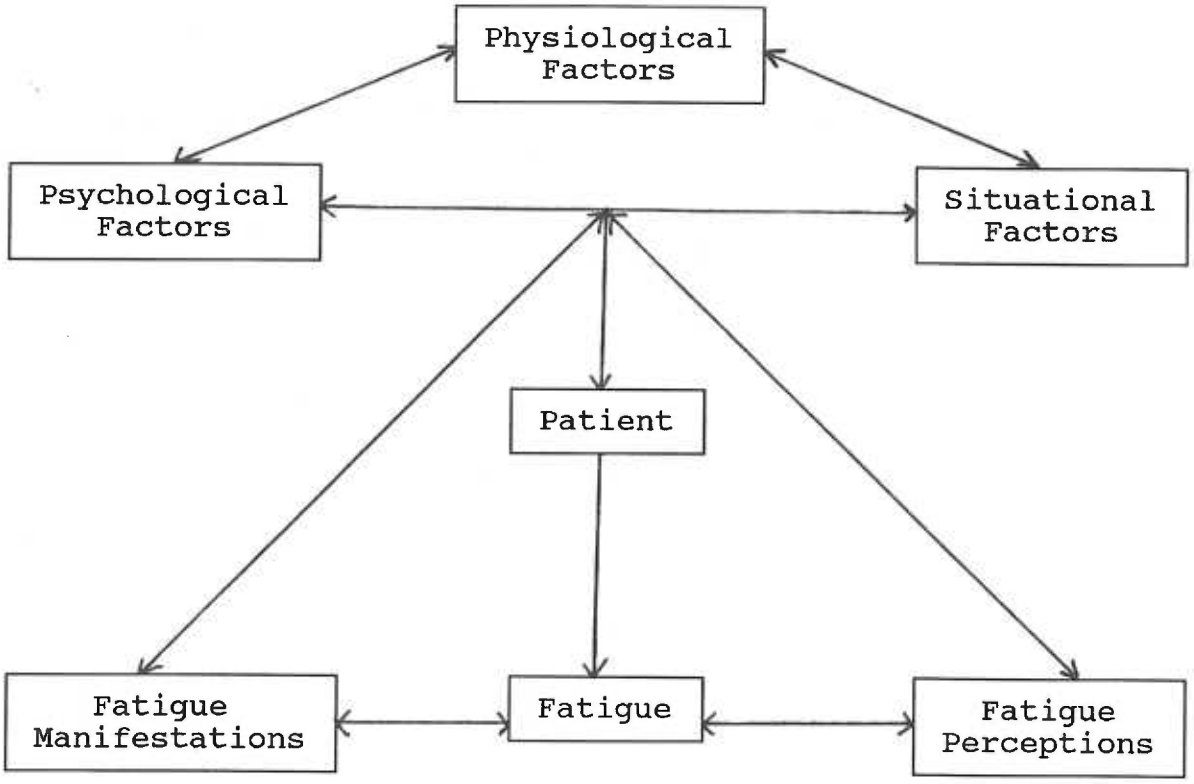

Figure 1: A Fatigue Model
Adapted from Kellum (1985) & Aistars (1987)

Research Question

The research question for this study was derived from practice based on informal interviews and observations in the clinic setting. The initial question of how does fatigue differ between patient populations was refined after reviewing the literature. Specifically, the study attempted to answer the following question: What are the characteristics of fatigue as described by the post-operative CABG patient and the oncology patient receiving radiation therapy?

Chapter 2

Methods

In order to obtain information about the patient perception of fatigue, post CABG and radiation oncology patients were asked to describe their perceptions of fatigue, using a semi-structured interview format and the Subjective Rhoten Fatigue Scale. In addition, objective data was obtained by researcher's evaluation of patients' fatigue using the Rhoten Objective Fatigue Scale. A qualitative descriptive study format was chosen based on the status of current fatigue literature. Since little is known regarding fatigue in the CABG and cancer patient, it was appropriate to use a descriptive design which allowed for the collection of data that may add to existing knowledge or theory.

Sample

A convenience sample of twenty CABG patients was selected from a local non-profit hospital. The twenty radiation oncology patients were obtained from a hospital based outpatient treatment center. By use of a convenience sample, generalizabilty of the research findings are limited because of the possibility of misrepresentation of variables found

included or lacking in the sample used (Polit & Hungler, pg. 209). Although the target population is postoperative CABG patients and oncology patients receiving radiation therapy, extrapolation of results are limited to patients of the specific sample settings.

Inclusion criteria consisted of the following: male and female patients; between the ages of 30 and 85 yrs; cancer patients currently receiving radiation or cardiac patients who are post CABG surgery; subjectively stating that they are experiencing fatigue; able to speak and understand English; and willing to participate in the research study. Patients stating that they were not currently experiencing fatigue were excluded from the sample. This exclusion criteria ensured that patients were drawing on an existing feeling, rather than on recall of an experience. CABG patients were not excluded based on number of grafts, length of surgery, or length of time spent in the coronary care unit. No cancer patients were excluded based on cancer site, location of radiation treatment, dosage, length of treatment or other cancer treatments. In addition no exclusion was made for either group based on medications or other chronic illnesses.

Data Collection Methods

A semi-structured interview was conducted while the cardiac participants were in their hospital rooms following transfer from the coronary care unit; the oncology patients were interviewed in the radiation oncology department. Interview questions were asked as they appeared in Appendix 1. The initial three questions were used to screen subjects to ensure that they were currently experiencing fatigue. The remaining questions elicited responses regarding the subject's experience of fatigue. The semi-structured nature of the interview provided some direction to the questioning, but allowed the subject to expand upon the concept. This method limited the amount of data collected which might bias the descriptions obtained; however, it gave the subject direction in how to describe a feeling that was difficult to put into words. Accuracy of the information was maintained by tape recording the interview. Although use of a tape recorder may inhibit initial subject's responses, it was felt that overall accuracy of data was not effected.

The Rhoten Fatigue Sale was developed to measure fatigue in pre/postoperative patients (Rhoten, 1982). The scale included both an objective and subjective component. The patient

completed the subjective scale by marking their perceived level of fatigue on a continuum from 0=not tired, full of energy, peppy, to 10=total exhaustion (See Appendix 2). The objective scale included a list of adjectives which the researcher checked off as they observed the patient during the initial fifteen minutes of the interview process while demographic data and informed consent were obtained (See Appendix 3). This ensured that items checked on the objective scale were not influenced by fatigue descriptions discussed during the interview process. Face and content validity for both components of the Rhoten fatigue scale have been reported in the literature (Rhoten, 1982).

Data collection was carried out in two phases. The first phase consisted of a pilot study in which six radiation oncology patients were interviewed. This tested the interview questions for clarity, biases, and ability of subjects to respond. In addition, researchers observed the other's interviewing style to achieve a more consistent interviewing approach. Corrections and additions of the questions were made based on the outcome of these interviews. Corrections included changing of the wording of question number eight from "Describe the feeling of fatigue" to "Describe how your body feels

physically when you are feeling fatigue?". It was found that this helped to elaborate on the physical feelings of subjects. In addition, the interview was concluded with the open ended question of "Is there anything else about fatigue that you would like to let us know?" This allowed subjects to elaborate on areas that may or may not of been elicited in the semi-structured interview questions. A second phase of the pilot study included establishment of inter-rater reliability of Objective Rhoten Fatigue Scale. Ten multiple sclerosis patients were observed in an outpatient setting by both researchers. This patient population was chosen because of the chronic nature of the disease and to prevent bias in observing selected study populations. Independent scoring was completed and results compared for similarity of objective observations resulting in an inter-rater reliability of 97 percent.

Demographic data, history of disease, and social factors were collected by a questionnaire and chart review (see Appendix 4). This information was used to compare populations and describe the sample characteristics.

Procedure

Post CABG patients being transferred from CCU and patients entering the radiation oncology unit were approached regarding

purpose and involvement in the study. Patients were given a brief description of the research study. This included the purpose, use of an interview to collect perceptual information, questionnaire/chart review to collect demographic data, and a projected participation time of thirty minutes. If the patient was willing to participate, the researcher witnessed the signing of a written informed consent document (See Appendix 5). After completion of the initial demographic data/informed consent, subjects were asked to complete the Rhoten Subjective Fatigue Scale. In addition researchers completed the Rhoten Objective Fatigue checklist during this fifteen minute period. The interview was conducted by the researcher in a private room. Interview questions were asked in the order shown (Appendix 1). Subjects responses were tape recorded at the time of the interview. Data from the demographic information (See Appendix 4) was verified from subject's medical records to confirm accurate information regarding medical diagnosis, medications, and treatment. Anonymity was maintained by assigning each subject a research number from one to twenty with differentiation between oncology and cardiac populations. Names and addresses of those subjects desiring results of the study were kept separate from

identifying code numbers. This information was obtained so that subjects could be sent a summary of the study at its conclusion. All addresses and tape recordings were destroyed at the end of the study.

Analysis

Demographic data were analyzed using appropriate descriptive statistics such as mean, median, range and standard deviations. Other demographic information not amenable to analysis by the above statistics was reported by description and frequency counts. Side effects of medications were reviewed in the 1988 Physician Desk Reference noting potential for fatigue. Medications subjects were currently taking were then recorded and classified as causing or not causing fatigue.

Scores from the Subjective and Objective Rhoten Fatigue Scales were analyzed. Mean, standard deviation and range were reported for each population and compared between the two groups using t-tests. Results of the Objective Rhoten Fatigue Scale were totaled by adding together the number of overall objective observations noted for each subject. Individual categories of physical appearance, coloring, breathing, eyes, facial expression, speech, ambulation, posture and attitude were also subtotaled for each population. Similarities and

differences between oncology and cardiac groups in these categories were tabulated and compared. Correlation between the Subjective and Objective Rhoten Fatigue Scales were completed using Pearson's r within and between populations.

Transcription of the interview data was completed and accuracy checked by review of the typed dialogue with the recorded interview. Descriptions of fatigue were coded and themes derived from transcription of the interviews by the following process:

1) Transcribed interviews were read and descriptions for questions four through nine were high-lighted.
2) Descriptions were then tabulated for each question.
3) Initial categories were formed by the clumping of descriptors for each question.
4) Final codes for each question were derived by the collapsing, expanding and re-defining the initial categories.
5) Interviews were reviewed and high-lighted descriptions were tabulated by final codes.

After coding was completed, responses from questions four and eight were noted to be similar in nature. Therefore, answers to these questions were analyzed together. Deviation

from the above coding process was necessary after the combining of questions four and eight in order to maintain subject's descriptors of fatigue. Rather than collapsing specific descriptions, they were listed and tabulation of frequencies reported.

Tabulation and analysis of contributing factors to fatigue was noted in question five. Factors were clustered under psychological, physiological and situational factors as described in the conceptual framework.

CHAPTER 3

Results

A non-experimental descriptive study of 20 radiation oncology patients and 20 post-CABG patients was conducted to explore the characteristics of fatigue as described by these two chronic illness populations. This section includes sample characteristics and research findings.

Sample Characteristics

Thirty post-CABG patients were approached for inclusion in the study. Of these, twenty met the inclusion criteria of currently experiencing fatigue. The ten remaining subjects reported that they were not currently experiencing fatigue and were therefore excluded from the study. Radiation oncology patients were screened by the radiation technicians and therefore data regarding patients not currently experiencing fatigue was not available.

Twenty post-CABG patients were interviewed, 17 males and 3 females. Ages ranged from 49 to 74 with a mean of 62.85. Of the twenty radiation oncology patients, 11 were males and 9 were females. Ages ranged from 32 to 82 with a mean of 62.00. Additional demographic information is listed in Table 1.

Table 1

Sample Demographics

Characteristic	Cardiac %	Oncology %	Total %
Sex			
Male	85%	55%	70.0%
Female	15%	45%	30.0%
Marital Status			
Never Married	0%	0%	0.0%
Married	85%	85%	85.0%
Separated	5%	5%	5.0%
Divorced	10%	0%	5.0%
Widowed	0%	10%	5.0%
Occupation			
Retired	55%	50%	52.5%
White Collar	20%	15%	17.5%
Blue Collar	25%	35%	30.0%
Children			
0-2	40%	40%	40.0%
3-5	45%	50%	47.5%
6-8	10%	10%	10.0%
9-11	5%	0%	2.5%

Table 1 (cont.)

Characteristic	Cardiac %	Oncology %	Total %
Living Arrangement			
Home	90%	95%	92.5%
Apartment	10%	5%	7.5%
Lives With			
Spouse	70%	65%	65.0%
Children	0%	10%	5.0%
Grandchildren	0%	0%	0.0%
Alone	10%	10%	10.0%
Other	5%	0%	2.5%
Spouse and Children	10%	15%	12.5%
Spouse, Children, Grandchildren	5%	5%	5.0%

Specific characteristics in relation to each chronic illness were also obtained and are included in Tables 2 and 3. In addition, information regarding current medications and other chronic illnesses were obtained and are included in Table 4. Although this study did not seek to correlate these variables with subject's descriptions or levels of fatigue, information was obtained in order to describe extraneous variables which could provide alternative explanations for fatigue.

Table 2

Cardiac Specific Characteristics

Characteristic	
Number of Bypasses	Percentage
1-2	40.0%
3-4	50.0%
5-6	10.0%
Complications	Percentage
None	28.6%
Arrythmia	25.0%
Post-operative bleeding	14.3%
Infection/Fever	7.1%
Other	25.0%
Length of Surgical Procedure	
Mean	299.50 minutes
Range	180 to 440 minutes
Length of Stay in CCU	
Mean	65.10 hours
Range	40 to 120 hours

Table 3

Oncology Specific Characteristics

Characteristic	Percentage	Characteristic	Percentage
Radiation Site			
Abd/Pelvis	30%	Head	5%
Chest	30%	Mantle	5%
Breast	10%	Shoulder & Hip	5%
Back	10%	Chest & Head	5%
Number of Treatments Completed			
0-10	10%	41-50	0%
11-20	35%	51-60	0%
21-30	35%	61-70	0%
31-40	15%	71-80	5%
Cumulative Radiation Received			
1000-2000	10%	4001-5000	20%
2001-3000	20%	5001-6000	20%
3001-4000	25%	6001-7000	5%
Side Effects (Stated by Subject)			
None	13.2%	Nocturia	2.6%
Fatigue	13.2%	Urinary Changes	2.6%
Skin rash	10.5%	Chest Pain	2.6%
Nausea/Vomiting	10.5%	Dysphagia	2.6%
Throat irritated	10.5%	Gas	2.6%
Anorexia	7.9%	Hot Flashes	2.6%
Diarrhea	5.4%	Anal Soreness	2.6%
Bowel changes	5.4%	Headache	2.6%
		Abd Cramps	2.6%

Table 4

Medication and Other Chronic Illness Characteristics

Characteristic	Cardiac %	Oncology %	Total %
Medications			
None	0%	10%	5.0%
Fatigue causing	100%	65%	82.5%
No fatigue causing	0%	25%	12.5%
Other Chronic Illnesses			
None	36%	20.0%	
Hypertension	40%	17.1%	
Diabetes	24%	11.4%	
Pulmonary	0%	5.8%	
Cancer (Secondary Cancer)	0%	8.6%	
Arthritis	0%	20.0%	
Heart disease	0%	17.1%	

Rhoten Fatigue Scale Scores

Rhoten Subjective Fatigue Scale scores were compared for the two chronic illness populations using a frequency polygram (Figure 1). Mean scores were very similar with the oncology population mean being 5.825, with a standard deviation of 1.633. The cardiac population mean was 5.875, with a standard deviation of 2.438.

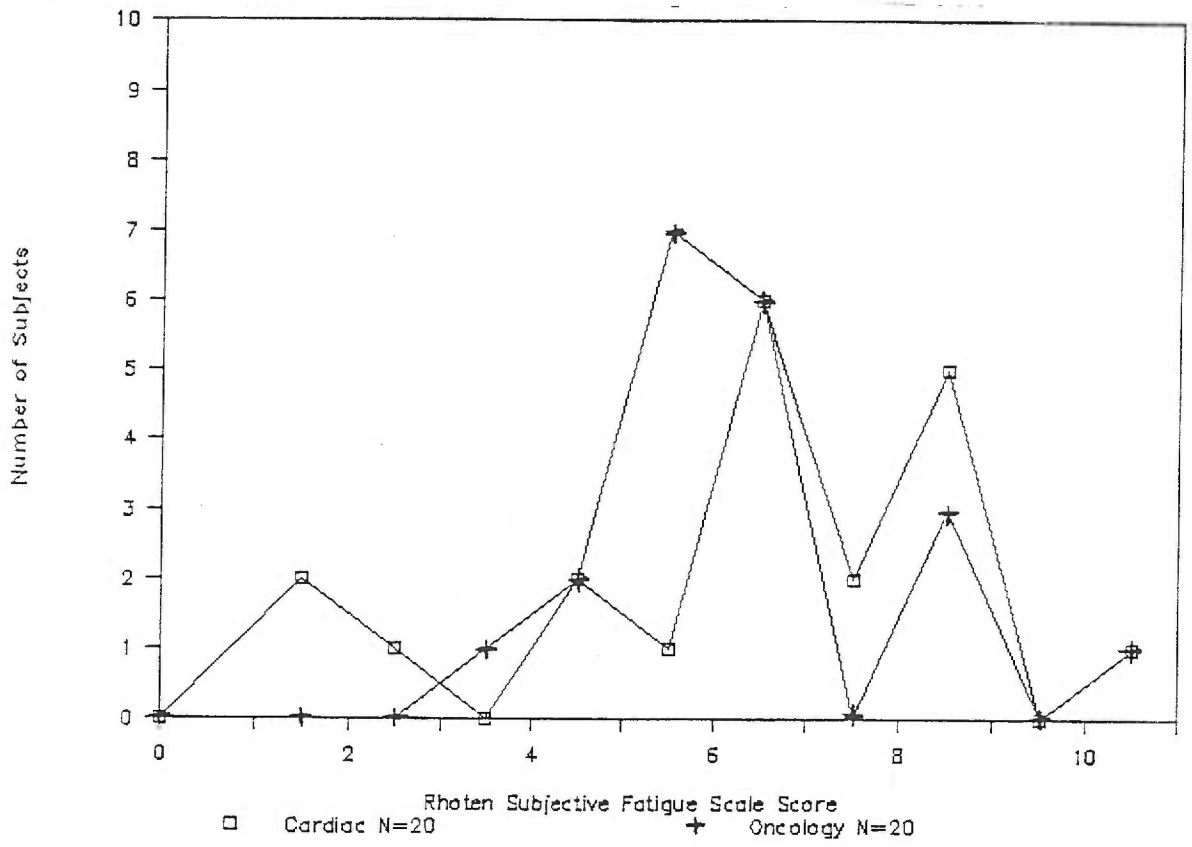

Figure 2: Rhoten Subjective Fatigue Scale Scores

The Rhoten Objective Fatigue Scale produced dissimilar results when comparing the two populations. The total observations noted for the cardiac population (mean 18.30, SD=2.155) was greater then for the oncology population (mean 14.55, SD=1.234). Statistical significance at the $p \leq .001$ level was achieved when the two groups were compared in relation to the total Rhoten Objective Fatigue Scores.

Table 5

Rhoten Objective Fatigue Scale

Category/Observation	Number of Observations Oncology	Cardiac
Physical Appearance		
Alert	18	18
Awake	17	14
Drowsy	2	7
Disheveled	0	3
Quiet	0	4
TOTAL	37	46
Coloring		
Flushed	0	0
Pink	17	11
Pale	3	11
Ashen	0	0
TOTAL	20	22
Breathing		
Normal rate (12-24 bpm)	19	20
Rapid (>24 bpm)	2	0
Slow (<12 bpm)	0	0
Regular	18	20
Irregular	0	0
Shallow	0	3
Deep	0	0
Sighs	1	0
TOTAL	40	43

Table 5 (cont.)
Rhoten Objective Fatigue Scale

Category/Observation	Number of Observations Oncology	Cardiac
Eyes		
Wide open	13	6
Closed	0	3
Eye contact present	19	19
Eye lids droopy	2	4
Fixed starring	0	0
Look vacant	0	0
TOTAL	32	32
Facial Expression		
Grimacing	0	0
Eyes rolling	0	0
Brow wrinkling	0	2
Mouth open	2	3
Jaw tight	1	0
Smiling	9	14
Muscle relaxed	14	20
Yawning frequent	0	0
TOTAL	26	39
Speech		
Sentences-complete	20	20
Sentences-incomplete	0	0
Short answers	0	5
Frequent pauses	0	0
Slow responses	1	4
Rapid responses	0	0
Clear tone	18	17
Soft tone	4	13
Loud tone	0	0
Slurred, mumbled	0	0
Stated fatigue	4	4
TOTAL	47	63

Table 5 (cont.)

Rhoten Objective Fatigue Scale

Category/Observation	Number of Observations Oncology	Cardiac
Ambulation		
Slow pace with assistance	4	8
Slow pace alone	15	12
Fast pace	1	0
Shuffles feet	0	0
TOTAL	20	20
Posture		
Upright posture	19	6
Shoulders slumped	1	14
Head hanging	0	8
Leans to one side	0	3
TOTAL	20	31
Attitude		
Interested	19	15
Easily aroused	0	16
Cooperative	20	20
Apathetic	0	1
Hard to arouse	0	0
Irritable	0	0
Sleep seeking	1	0
Emotional outburst	0	1
Somatic complaints	4	7
Flat affect	2	3
Indecisive	0	0
TOTAL	46	63

Correlation of Rhoten Fatigue Scale Scores

The Rhoten Objective and Subjective Fatigue Scales were then correlated using Pearson's r. This statistical test was appropriate in comparing the two components of the Rhoten Fatigue Scale as interval level data was obtained. Use of Pearson's r allowed a measurement of whether a relationship existed between the two parts of the fatigue scale in these chronic illness populations. Results demonstrated a non-significant correlation for each separate group as well as total sample scores (See Table 6).

Table 6

Correlation between Rhoten Objective and Rhoten Subjective Fatigue Scales

Statistical Test	Oncology	Cardiac	Total
Pearson's r	.3893	.1378	.2071
p value	.0893	.5624	.2121

p= 0.05 for significance of two tailed test

Interview Results

Subject's responses from the semistructured interviews were tabulated under final codes and described in Tables 7 through 10. Question number 5 (Table 7) asked subjects to respond to the question "What factors do you feel contribute your feelings of fatigue?" This question was designed from the conceptual framework of fatigue. Responses were elicited and grouped under physiological, psychological and situational factors. The codes of age, nutrition, other illnesses, decreased physical activity and side effects of radiation and surgery were included under physiological factors. Emotional impact of disease was the only code under psychological factors. External conditions or those imposed upon the body were included in situational factors. These included change of normal routine, environmental factors (ie. travel time to and from radiation treatment center, weather) and treatments (radiation, surgery, medications). Responses of both groups were tabulated for each of the three factor areas. Percentages of 29.4% for physiological, 11.8% for psychological and 57.4% for situational were obtained.

Questions number 6 and 7 were formulated in order to obtain information about fatigue manifestations experienced by

patients. Results of question number 6 "How has fatigue altered your normal daily routine?" and question number 7 "How does fatigue effect your thinking ability?" are listed in Tables 8 and 9.

Answers from questions number 4 and 8 were solicited to further delineate fatigue perceptions experienced in these populations. Because of similar responses to "Describe to me how it feels to experience fatigue?" (question 4) and "Describe to me how your body feels physically when you are experiencing fatigue?"(question 8) these answers were analyzed together. Results are included in Table 10.

Table 7

Results of Question #5: CONTRIBUTING FACTORS

Code	Oncology # of responses/%	Cardiac # of responses/%	Total %
Age	3 (7.5%)	1 (3.6%)	5.9
Nutrition	6 (15.0%)	1 (3.6%)	10.3
Other Chronic Illness	2 (5.0%)	2 (7.1%)	5.9
Decreased Physical Activity	1 (2.5%)	1 (3.6%)	2.9
Side Effects (Rad/Surg/Med)	1 (2.5%)	2 (7.1%)	4.4
Emotional Impact of Disease	4 (10.0%)	5 (17.8%)	13.2
Altered Normal Routine	1 (2.5%)	3 (10.7%)	5.9
Environmental Factors	3 (7.5%)	1 (3.6%)	5.9
Treatments (Rad/Surg/Med)	19 (47.5%)	12 (42.9%)	45.6
TOTAL	40 (100%)	28 (100%)	100

Table 8

Results of Question # 6: DAILY ROUTINE

Code	Oncology # of responses/%	Cardiac # of responses/%	Total %
No Change	0 (0.0%)	5 (18.5%)	7.4
Not Normal Routine Can't Compare	0 (0.0%)	7 (25.9%)	10.4
Altered Socialization	5 (12.5%)	4 (14.8%)	13.4
Unable to do Hobbies	2 (5.0%)	1 (3.7%)	4.5
Need to Prioritize Adjust Goals	7 (17.5%)	4 (14.8%)	16.5
Unable to Complete Tasks	2 (5.0%)	0 (0.0%)	2.9
Longer Time to Complete Tasks	2 (5.0%)	1 (3.7%)	4.5
Decreased or no Activity	14 (35.0%)	2 (7.4%)	23.9
Increased need for Rest	8 (20.0%)	3 (11.2%)	16.5
TOTAL	40 (100%)	27 (100%)	100

Table 9

Results to Question # 7: THINKING

Code	Oncology # of responses/%	Cardiac # of responses/%	Total %
Does not Affect	13 (61.9%)	9 (37.5%)	48.9
Slows Down Thought Process	3 (14.3%)	6 (25.0%)	20.0
Impaired Memory	4 (19.0%)	4 (16.7%)	17.8
Difficulty Concentrating	1 (4.8%)	5 (20.8%)	13.3
TOTAL	21 (100%)	24 (100%)	100

Table 10

Results of Questions # 4 and # 8: DESCRIPTIONS OF FATIGUE

Code	Oncology # of Responses/%	Cardiac # of Responses/%	Total %
Tired/No Energy	16 (20.7%)	14 (25.9%)	22.8
Sleep	11 (14.3%)	3 (5.6%)	10.7
Want to Relax/Rest	9 (11.7%)	6 (11.1%)	11.4
Lack Motivation	6 (7.8%)	3 (5.6%)	6.9
Motivated but Unable to do Physical Task	4 (5.2%)	4 (7.4%)	6.2
Mentally Fatigued	0 (0.0%)	1 (1.9%)	0.8
Specific Body Complaints	9 (11.7%)	8 (14.8%)	13.0
Drug Out	3 (3.9%)	0 (0.0%)	2.2
Exhausted	2 (2.6%)	1 (1.9%)	2.2
Drained	3 (3.9%)	0 (0.0%)	2.2
Knocked Out	0 (0.0%)	1 (1.9%)	0.8
Let Down	0 (0.0%)	1 (1.9%)	0.8
Worn Out	0 (0.0%)	2 (3.6%)	1.5
Washed Out	0 (0.0%)	1 (1.9%)	0.8
Weak	4 (5.2%)	2 (3.6%)	4.6
Wiped Out	0 (0.0%)	1 (1.9%)	0.8
Done Hard Days Work Want to Lie Down	2 (2.6%)	2 (3.6%)	3.1
Body has had all it can Take	1 (1.3%)	0 (0.0%)	0.8
Run Down	0 (0.0%)	2 (3.6%)	1.5
Just Beat	0 (0.0%)	1 (1.9%)	0.8
Not To Snappy	1 (1.3%)	0 (0.0%)	0.8
Droopy	1 (1.3%)	0 (0.0%)	0.8
Weary	1 (1.3%)	0 (0.0%)	0.8
Cold/Flu Like/Achy	2 (2.6%)	1 (1.9%)	2.2
Slumped	1 (1.3%)	0 (0.0%)	0.8
Empty	1 (1.3%)	0 (0.0%)	0.8
TOTAL	77 (100%)	54 (100%)	100

Chapter 4

Discussion

The results of this study will be discussed in relation to the research question and the literature. The research question was "What are the characteristics of fatigue as described by the post-operative CABG patient and the oncology patient receiving radiation therapy?" The results will be discussed in the order they were presented in the previous chapter. The limitations of the study will be discussed at the end of the chapter.

Demographic Data

The two groups were similar in age, marital status, occupation, education, number of children, and living arrangement. The differences in gender distribution in this study seem appropriate with the known incidences of these diseases in males and females. A larger proportion of males is expected in the cardiac population while the general oncology population would be more evenly distributed between males and females.

One interesting finding is that the oncology population had a larger variance in the number and types of other chronic illnesses reported while the cardiac population noted only

hypertension and diabetes. Oncology subjects most frequently reported arthritis followed by hypertension, heart disease and diabetes. Pulmonary diseases and secondary cancer were also cited by this group. Additionally only 20% of the oncology group described themselves as having no other chronic illness besides the primary diagnosis of cancer while 36% of the cardiac group stated no other chronic illnesses.

Rhoten Fatigue Scale

Results from the Rhoten Subjective Fatigue Scale were similar between the two groups (oncology mean = 5.825, cardiac mean = 5.875). Although the mechanisms of fatigue in these populations may differ, it is interesting to note that both populations have reported similar fatigue levels using a visual analogue scale. No conclusions can be drawn from this limited study, but perhaps different chronic illness populations experience similar levels of fatigue despite the differing causes.

Total scores from the Rhoten Objective Fatigue Scale were significantly different between the two populations (oncology mean = 14.55, cardiac mean = 18.3, $p < .001$). While specific reasons for the differences in scores can not be drawn from this study, several speculations may be made based on the

results of this scale. One speculation may be that the fatigue experienced by hospitalized cardiac patients is more easily observable by this scale than fatigue in ambulatory cancer patients. Perhaps these observations are a reflection of the ability and the desire of the patient to maintain their personal appearance rather than a measure of observable fatigue. It may also reflect the fact that all cardiac patients were on fatigue producing medications. Additionally, because an abdominal surgical population was used in the development of the Rhoten Fatigue Scale (Rhoten, 1985), it lends itself more towards the surgical cardiac population than the ambulatory cancer population.

Another speculation is that the scale may not be sensitive in areas specific to chronic illness. Fatigue may be manifested in chronic illness populations in ways that are not directly observable in a short time period, but rather in the overall changes in activity.

When the Rhoten Subjective and Objective Fatigue Scales were correlated no relationship was found in the oncology ($r=.3893$, $p\leq .0893$) or the cardiac ($r= .1378$, $p\leq .5624$) populations. This contradicts the findings of Rhoten (1985) who stated that the Objective Fatigue Scale observations are

congruent with the perceived level of fatigue as experienced by patients. The findings of this study do not support this premise and are suggestive that the use of this fatigue scale may not accurately measure fatigue as experienced by chronic illness populations.

It is interesting to note that when each individual category within the Rhoten Objective Fatigue Scale was totaled, similar total observation scores were found in the categories of coloring, breathing, eyes and ambulation. Differences in totals were noted in the categories of physical appearance, facial expression, speech, posture and attitude. This may be attributed to the setting and treatment circumstances. For example under the category of attitude, 16 cardiac patients were observed as being easily aroused, while no oncology patients were scored with this item. This was due to the researcher needing to arouse or waken the hospitalized patient. While breakdown of the categories of observation was not the intent of the scale or study, it allows for further delineation of observational differences between the two groups.

Interview Findings

The interview process was structured to obtain information regarding factors influencing fatigue, changes in activities of

daily living, changes in thinking ability and patient's descriptions of fatigue. Comparison of findings from this study to those found in the literature will be described, but are limited because of a lack of research in this area.

Question # 5 in the interview obtained information about factors influencing fatigue. Overall 68 responses were obtained from analysis of the interviews with 40 responses from the oncology group and the remainder from cardiac subjects. The most frequently reported factors of the oncology group included treatment (47.5%), nutrition (15.0%), and emotional impact of disease (10.0%). These findings are consistent with those reported in the literature. Radiation therapy for cancer has been well documented as a factor influencing fatigue (Kobashi-Shoot, et al., 1985; Haylock & Hart, 1979; Aisters, 1987). The literature to a lesser degree, reports nutrition and emotional impact of the disease as factors of fatigue (Piper, et al.; Nail & King, 1987). These results seem appropriate for this population, given that patients are usually instructed that radiation will cause fatigue and may cause changes in dietary habits (ie. anorexia and nausea and vomiting).

Treatments (42.9%), emotional impact of the disease (17.8%) and altered normal routine (10.7%) were the most frequent responses given by the cardiac group. In agreement with findings in the literature, surgical procedures (treatments) have been cited as causing fatigue (Rhoten, 1985; Christensen, Bendix & Kehlet, 1982; Christensen, Hougard & Kehlet, 1985; Christensen et al, 1986; Jillings, 1978). No literature regarding emotional impact of disease and altered normal routine was found in relation to cardiac patients.

Again these results appear to be congruent with this population as surgery of this magnitude would be expected to alter the patient's energy level. In addition, the changes in lifestyle (diet, exercise, acceptance of chronic illness, etc.) impact heavily on patients during the recuperation period. Because patients are in the hospital, normal routine would be altered and can be seen as a factor influencing fatigue.

Consistent with our conceptual model, factors that influence fatigue can be grouped into psychological, physiological and situational. This study yielded overall percentages of psychological factors-11.8%, physiological factors-29.4%, and situational factors-57.4% for combined populations. Although this study did not intend to identify causative factors of

fatigue, it is interesting to note that both oncology and cardiac populations cited situational factors as causing fatigue more frequently than other factors.

Alteration in daily routine was addressed by question number six. The results of this question were similar to stated changes in daily routine noted in the literature. While no research in this area has been completed, several authors state the need to address how fatigue alters patient's normal routines (Kellum, 1985; Nail & King, 1987; Piper, Lindsey & Dodd, 1987; Rhoten, 1985).

The oncology population more frequently cited four areas of altered daily routine. Decreased or no activity (35%) was the most commonly cited change followed by increased need for rest (20%), need to prioritize or adjust goals (17.5%), and altered socialization (12.5%). These results are important when considering the effect of radiation therapy on the cancer patient. Health professionals may underestimate the impact that fatigue may have on a patient's normal routine. Not only is there a need to change their routine to allow for more frequent rest, but there is an impact on their long range plans and ability to maintain social relationships outside of the home.

Cardiac patient's responses differed from the oncology group in that the codes of "no change" and "not normal routine" accounted for 44.4% of the responses due to the fact that subject's were in the hospital and not in their normal environment. A need to prioritize goals (14.8%), altered socialization (14.8%) and an increased need for rest (11.2%) were the next most frequently recorded codes. These three areas are similar to the oncology group although percentages differ. Again this is important when assessing the impact of fatigue on the cardiac patient during hospitalization.

Almost half of the subjects (48.9%) stated in response to question number seven, that their fatigue did not affect thinking ability. While this was a more prominent finding in the oncology population (61.9%), there were a few subjects who reported alterations including slowed thought processes and impaired memory. In contrast, changes in thinking ability were noted more often in the cardiac population. Slowed thought processes, impaired memory and difficulty concentrating accounted for 62.5% of the responses, while only 37.5% of the cardiac patients did not feel that fatigue had any affect on thinking.

The literature supports that alterations in thinking may include inability to deal with complex problems, inability to make decisions and impairment of memory (Morris, 1985; Freal, Kraft & Coryell, 1984). Although both populations experienced some of these alterations, approximately half of the subjects in this study did not cite this as a manifestation of their fatigue.

Descriptions of fatigue where obtained from questions four and eight. The literature reports varying definitions and descriptions of fatigue as supported previously in the literature review. Fatigue was most frequently described by subjects in this study as "tired or no energy" (22.8%). Specific body complaints (13.0%) was the next most frequent response. Examples of this code included subjects' reports of headaches, increased heart rate, shortness of breath, and blurry vision. Subjects also described the need to rest or relax as synonymous with fatigue (11.4%) and the need for sleep 10.7% of the time.

When comparing descriptions given by the two chronic illness populations, oncology and cardiac patients continued to use tired or no energy as the most common description of fatigue, 20.7% and 25.9% respectively. Sleep (14.3%) was the second

most common description by oncology subjects followed by the need to relax or rest (11.7%) and specific bodily complaints (11.7%). In contrast, cardiac subjects tended to use specific bodily complaints (14.8%) and need to relax or rest (11.1%) as descriptions of fatigue. Additional descriptors were elicited and are summarized in Table 10.

Overall during the interview process, it appeared that fatigue was a difficult concept for subjects to describe. Therefore, they tended to use a variety of terminology to describe their perception of fatigue. Perhaps this is why there is a wide variation of terminology in the literature and why scales developed to measure fatigue use colloquial phraseology. An example of this is the fatigue scale developed by Pearson and Byar (1956). This 10 item adjective scale defined fatigue on a continuum from ready to drop, extremely tired, petered out, fairly well pooped, slightly pooped, somewhat refreshed, quite refreshed, very refreshed, very lively, and extremely peppy. Other scales developed using healthy Japanese populations tend to use phraseology that may not be applicable or easily understood by American patients. Phrases such as "get tired of the whole body","feel heavy in the head", "stiff face", "spiritless eyes" and "feel the brain

hot or muddled" do not appear to be easily adapted to the chronic illness population (Kashiwagi, 1971; Yoshitake, 1978). Therefore, the use of these scales is limited and development of scales using patient's descriptions are necessary. Definitive conclusions about appropriate phrases or terms used in instruments for chronic illness populations cannot be drawn from this limited study. However, there is evidence that available scales may not be useful with their current terminology as evidenced by responses from subjects within this study. Perhaps fatigue scales aimed at chronic illness populations should include "tired", "no energy" or sleep seeking phrases as descriptors of fatigue, as these were found to be the most commonly used terms by this study.

Chapter 5

Summary

In this chapter of the research study, its limitations, and implications for nursing practice and research will be presented.

Research Summary

Fatigue is a common complaint of many individuals, including patients with chronic illness. Despite this, few research studies have been conducted in relation to fatigue in chronic illness populations and little attention has been given to defining the concept. The purpose of this study was to describe the sensations of fatigue experienced by the post-operative CABG patient and the oncology patient receiving radiation therapy.

Review of the general fatigue literature provides varying conceptualizations and descriptions of fatigue. In addition, literature addressing fatigue in the CABG patient is extremely limited in comparison to that available in relation to the cancer patient. However, several researchers have acknowledged the multicausational factors of fatigue including physical, psychological and situational dimensions. Another theme often stated is the importance of self-perception of fatigue.

The conceptual framework for this research study was adapted from conceptualizations offered by Kellum (1985) and Aisters (1987). It incorporates the interaction of physiological, psychological and situational factors and their effect on the patient's fatigue. In addition these factors may influence the patient's manifestations of fatigue as well as their perception of the sensations of fatigue.

The research question was: What are the characteristics of fatigue as described by the post-operative CABG patient and the oncology patient receiving radiation therapy? It was assumed that patients experiencing a chronic illness share similar descriptions of fatigue that differ from healthy populations. It remains unclear whether patients with varying types of chronic illness experience fatigue similarly, or if their descriptions of fatigue vary.

A descriptive study design was chosen in order to allow for collection of data regarding patient's descriptions of fatigue. The population targeted for the study was 20 post-operative CABG patients and 20 radiation oncology patients. Subjects were selected by a convenience sampling method. Exclusion criteria were employed to attempt to elicit descriptions from patients currently experiencing fatigue. Data was collected

during one-time semi-structured interviews, lasting one half hour, conducted by the researchers. In addition the Rhoten Fatigue Scale was administered in an attempt to quantify the level of fatigue. Pertinent demographic data was recorded at the onset of the interview to further describe populations studied and identify possible intervening variables.

Demographic data and the Rhoten Fatigue Scale were analyzed using descriptive statistics. Interviews were transcribed with categories and final codes being derived in the areas of fatigue factors, change in daily routine, changes in thinking ability, and descriptions of fatigue.

From this study it can be concluded that post-operative CABG patients and cancer patients receiving radiation therapy experience similar levels of fatigue as self-reported on a visual analogue scale. When implementing the Objective Rhoten Fatigue Scale, cardiac subjects were found to score higher than oncology patients. Because a non-significant correlation was found between the Objective and Subjective Rhoten Fatigue Scale scores, the difference in the objective scores in these populations may not be clinically relevant. Situational factors were the most frequently reported cause of fatigue as perceived by the patient. While cardiac patients found it

difficult to compare the change in normal routine, overall, decreased or no activity, an increase need for rest, a need to prioritize goals and altered socialization were experienced by both populations. In addition approximately fifty percent of the subjects in this study experienced an alteration in thinking ability in response to their fatigue. Descriptions of fatigue between the two groups were similar with the most common use of the term "tired or no energy". Additional descriptions were varied among the two populations.

Limitations

The present study has several limitations which are common to studies of this type. First, the sample was not randomly selected and small in size; therefore the sample may not be representative of post-operative CABG and radiation oncology patients. This lack of random sampling and small n does not allow the results to be generalized to other CABG and radiation oncology patient populations. A second limitation was the self-reported levels and descriptions of fatigue. Subjects may not have accurately reported their responses for fear of choosing what they considered an undesirable answer.

Implications for Nursing Practice

This study is based on the general fatigue literature as well as literature addressing fatigue in patient populations. The results of this study added to the knowledge of the concept of fatigue and specifically the fatigue of post-operative CABG and cancer patients receiving radiation. This study described the experience of fatigue from the patient's perspective, and offered some potential factors that may contribute to the experience of fatigue. Findings from these areas may guide nursing assessment of the patient experiencing fatigue. While fatigue is difficult to physically assess it is also equally difficult for the patient to report accurately. Nurses should be aware that other terminology may be used by patients for describing their experience of fatigue. An instrument that may be helpful in assessing fatigue and is clinically useful is the visual analogue scale. Nurses must become more cognizant of the impact that fatigue has on patient's lives by altering their normal daily routine, thinking ability, and socialization.

Implications for Further Research

From this study other research can begin to explore the descriptions from different patient populations and how they

compare. Clearer descriptions of fatigue caused by different diseases may lead to the identification of "types" of fatigue. It may also lead to a better understanding of fatigue mechanisms. A clearer concept of fatigue and a better understanding of its mechanisms should lead to the development of more accurate assessment instruments. These instruments could be constructed by using definitions that relate to specific patient populations' experience of fatigue. In addition, instruments need to address situational as well as physical and psychological factors that influence fatigue. As the descriptions, assessment, and more refined instrumentation develop, we can begin to document the effectiveness of our interventions. To date, the interventions that are currently used for the symptoms of fatigue have not been scientifically shown to be beneficial. Fatigue is a symptom that is experienced by several patient populations. Further refinement of the concept is needed for nurses to impact upon this symptom.

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Appendix 1

Interview Questions

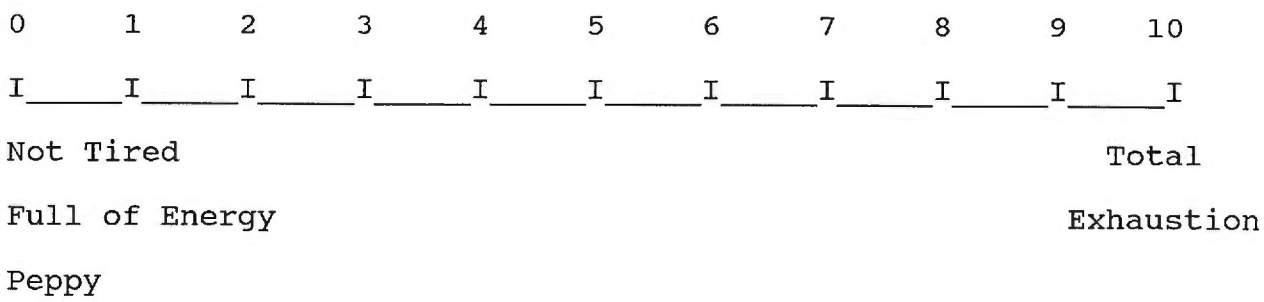
1. How are you feeling today?
2. What is different about how you feel today, compared to how you felt prior to surgery/starting radiation therapy?
3. Are you presently experiencing fatigue?
4. Describe to me how it feels to experience fatigue.
5. What factors do you feel contribute to your feelings of fatigue?
6. How has fatigue altered your normal, daily routine?
7. How does your fatigue effect your thinking ability?
8. Describe how your body feels physically when you are experiencing fatigue.
9. Is there anything else about fatigue that you would like to let us know?

Probe Questions

1. Tell me more about _____?
2. Is there anything else ?
3. What does _____ feel like?
4. What makes _____ feel better or worse?
5. Give me a specific example?

Appendix 2

Rhoten Subjective Fatigue Scale



Appendix 3 Rhoten Objective Fatigue Scale

GENERAL APPEARANCE

Physical Appearance

1. Alert
2. Awake
3. Drowsy
4. Discheveled
5. Quiet

Coloring

1. Flushed
2. Pink
3. Pale
4. Ashen

Breathing

1. Normal rate
2. Rapid
3. Slow
4. Regular
5. Irregular
6. Shallow
7. Deep
8. Sighs

COMMUNICATION

Eyes

1. Wide Open
2. Closed
3. Eye contact present
4. Eyelids droopy
5. Fixed staring
6. Look vacant

Facial Expression

1. Grimacing
2. Eyes rolling
3. Brow wrinkling
4. Mouth open
5. Jaw tight
6. Smiling
7. Muscles relaxed
8. Yawning frequent

Speech

1. Sentences-complete
2. Sentences-incompl.
3. Short answers
4. Frequent pauses
5. Slow responses
6. Rapid responses
7. Clear tone
8. Soft tone
9. Loud tone
10. Slurred,mumbled
11. Stated fatigue

ACTIVITY

Ambulation

1. Slow pace with assistance
2. Slow pace alone
3. Fast pace
4. Shuffles feet

Posture

1. Upright posture
2. Shoulders slumped
3. Head hanging
4. Leans to one side

ATTITUDE

1. Interested
2. Easily aroused
3. Cooperative
4. Apathetic
5. Hard to arouse
6. Irritable
7. Sleep-seeking
8. Emotional outbursts
9. Somatic complaints
10. Flat affect
11. Indecisive

Appendix 4: Demographic Data

Demographics: Subject Research Number:_____

1. Age ___
2. Gender ___
3. Diagnosis _____
4. Duration of Dx. _____
5. Marital Status _____
6. Number of Children _____
7. Occupation_____
8. Last grade completed_____
9. Living arrangement _____
10. Medications currently taking _____
11. Radiation treatment site _____
12. Number of tx _____
13. Estimated # of tx _____
14. Dose of radiation _____
15. Current side effects _____
16. Surgical procedure_____
17. Length of surgical procedure_____
18. Length of stay in CCU_____
19. Complications of surgery/recovery _____

Appendix 5

Informed Consent

THE OREGON
HEALTH SCIENCES UNIVERSITY
3181 S.W. Sam Jackson Park Road, L226, Portland, Oregon 97201 (503) 279-7772

School of Medicine
Department of Neurology

Oregon Health Sciences University
Informed Consent

I,_____, agree to participate in an investigation entitled "Fatigue from two chronic illness populations" conducted by Becca Hawkins R.N., B.S.N. and Karen Osterberg R.N., B.S.N. under to supervision of Sharon Clark R.N., F.N.P. The purpose of the study is to learn more about patients' perceptions of fatigue.

I understand that my participation will involve spending approximately 30 minutes to one hour answering questions about my feelings of fatigue. In addition I will be asked to fill out a questionnaire relating to my feelings of fatigue.

My participation in the study may not benefit me directly but it may contribute to the knowledge about feelings of fatigue experienced by patients.

I understand that all information obtained through this study will be kept confidential. I will be identified only through a code number to protect my privacy. In addition the information will be reported in ways that do not associate me with my answers.

Ms. Hawkins [(503) 650-0890] and Mrs. Rydell [(503) 228-6614] have offered to answer any questions I have about my participation in this study and may be reached at the above phone numbers. I understand that I may refuse to participate, refuse to answer any questions that I do not wish to answer, or withdraw from this study at any time without affecting my relationship with, or treatment at Emmanuel Radiation Oncology Center, Merridian Park Radiation Center, Providence Medical Center or the Oregon Health Sciences University.

"The Oregon Health Sciences University, as an agency of the State, is covered by the State Liability Fund. If you should suffer any injury from the research project, compensation would be available to you only if you establish that the injury occurred through the fault of the University, its officers or employees. If you have further questions, please call Dr. Michael Baird at (503) 279-8014."

I have read the foregoing and agree to participate in this study.

Date:_____ Signature:_____

Date:_____ Witness:_____

Appendix 6

Committee on Human Subjects Communication

THE OREGON
HEALTH SCIENCES UNIVERSITY
3181 S.W. Sam Jackson Park Road, L106, Portland, Oregon 97201 (503) 279-7784/7887
Research Services

DATE: November 18, 1988

L456

TO: Becca A. Hawkins, BSN
Karen A. Osterberg, BSN

FROM: Nancy White, Administrative Assistant nwhite
Committee on Human Research, L-106

SUBJECT: Project Title: Fatigue in Two Chronic Illness Populations.

The above-entitled study falls under category #3 and is considered to be exempt from review by the Committee on Human Research. Therefore, this study has been put into our exempt files, and you will receive no further communication from the Committee concerning this study. If possible, please notify the Committee when this project has been completed.

If the involvement of human subjects in this study changes you should contact the Committee on Human Research to find out whether or not these changes should be reviewed.

If you have further questions regarding the status of this study, please call Nancy White at ext. 7887.

healthlink

EMANUEL HOSPITAL
& HEALTH CENTER

2801 N. Gantenbein Avenue
Portland, Oregon 97227
503/280-3200

November 8, 1988

Rebecca Hawkins
2190 Maple Terrace
West Linn, OR 997068

Dear Rebecca:

The Institutional Review Board at Emanuel Hospital & Health Center met on October 25, 1988 to review your study titled "A Descriptive Study of Patient's Perceptions of Fatigue".

After reviewing the supporting materials and discussing the project with you the Board voted in support of your project.

FDA regulations require an interim report of your study in six months. You will receive a form for this purpose.

Thank you for your time.

Sincerely,

Martin Lees, M.D.
Acting Chairman
Institutional Review Board

PROVIDENCE MEDICAL CENTER
4805 NORTHEAST GLISAN STREET
PORTLAND, OREGON 97213-2967
PHONE: (503) 230-1111

SISTERS OF PROVIDENCE
SERVING IN THE WEST SINCE 1856

February 10, 1989

Karen Rydell, R.N., B.S.N.
Becca Hawkins, R.N., B.S.N.
Oregon Health Sciences University
3181 S.W. Sam Jackson Park Road
Portland, Oregon 97201

SUBJECT: FATIGUE FROM TWO CHRONIC ILLNESS POPULATIONS (89-15)

Dear Ms. Rydell and Ms. Hawkins:

The protocol and consent form for the study listed above have been approved by expedited review and have been found to be acceptable as a viable, continuing study through February 10, 1990.

You are reminded that a progress report is to be submitted to the Institutional Review Board for annual review by January 1990 or at the conclusion of your study. Forms are attached for your convenience.

Federal and State regulations require that the Institutional Review Board be informed of any changes or untoward patient occurrences.

Thank you for allowing us to review this material.

Sincerely,

Craig S. Fausel

Craig S. Fausel, M.D.
Chairman
Institutional Review Board

cc: Institutional Review Board

AN ABSTRACT OF THE THESIS OF

REBECCA HAWKINS AND KAREN RYDALL

For the MASTER OF SCIENCE IN NURSING

Date of Receiving this Degree: June 9, 1989

Title: FATIGUE IN TWO CHRONIC ILLNESS POPULATIONS

APPROVED: [redacted]

Sharon Clark, MN, FNP, Thesis Advisor

Fatigue is a common complaint of many individuals, including patients with chronic illness. However, little attention has been given to defining the concept. Therefore, the purpose of this study was to describe the sensations of fatigue experienced by twenty post coronary artery bypass (CABG) patients and twenty oncology patients receiving radiation therapy.

Subjects were asked to describe their perceptions of fatigue, using taped semi-structured interviews and the Subjective Rhoten Fatigue Scale. In addition, objective data was obtained by the researcher's evaluation of patients' fatigue using the Rhoten Objective Fatigue Scale.

Demographic data, history of disease, and social factors were collected by questionnaire and chart review.

While subjects experienced similar levels of fatigue as reported on the Subjective Rhoten Fatigue scale, cardiac subjects were found to score higher then oncology patients on the Objective Rhoten Fatigue Scale. Because a non-significant correlation was found between the Objective and Subjective Rhoten Fatigue Scale scores, the difference in the objective scores in these populations may not be clinically relevant. Descriptions of fatigue were coded and themes derived from transcription of the interviews with the most commonly occurring description being "tired/no energy". In addition, situational factors were the most frequently reported cause of fatigue as perceived by the patient. While cardiac patients found it difficult to compare the change in normal routine, overall, decreased or no activity, an increased need for rest, a need to prioritize goals and altered socialization were experienced by both popualtions. It was also noted that approximately fifty percent of the subjects in this study experienced an alteration in thinking ability in response to their fatigue.