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The Effects of Systematic Relaxation on the Number of Times Pain Medication was Administered to Immobilized Traction Patients

Brenda Carol Armstrong

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THE EFFECTS OF SYSTEMATIC RELAXATION ON THE
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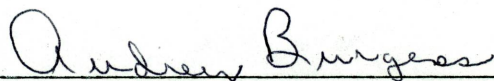
by

Brenda Carol Armstrong

A Research Project in Partial Fulfillment
of the Requirements for the Degree
Master of Science in the Field of Nursing

June 1977

The person whose signature appears below certifies that this research project in her opinion is adequate, in scope and quality, as a research project for the degree Master of Science.



Audrey Burgess, Associate Professor
of Nursing

ACKNOWLEDGMENTS

In appreciation I would like to thank the following individuals whose contributions have helped make this research and my education possible:

My family, for their support, love and patience throughout this educational endeavor;

Audrey Burgess, for her patience, support and direction through the study;

The Graduate Nursing Faculty of Loma Linda University for their guidance and direction;

The United States Department of Health, Education and Welfare for the financial assistance from the Traineeship Grant #5 ALL-NU00048-18 which made my graduate education possible.

Brenda Carol Armstrong

TABLE OF CONTENTS

Chapter		Page
1	FORMULATING AND DEFINING THE PROBLEM	1
	INTRODUCTION	1
	STATEMENT OF THE PROBLEM	2
	THEORETICAL FRAMEWORK	3
	DESIGN OF THE STUDY	6
	Purpose of the Study	6
	Hypothesis of the Study	6
	Definition of Terms	6
	Class A	6
	Class B	6
	Class C	7
	Contract	7
	Documentation	7
	Group one	7
	Group two	7
	Immobility	7
	Medical record	7
	Pain	7
	Pain medication	7
	Patient	7
	Systematic relaxation	8
	Tension	8
	The Method of the Study	8

Chapter		Page
2	REVIEW OF LITERATURE	9
3	METHODOLOGY	14
	SETTING OF THE STUDY	14
	CRITERIA FOR PATIENT SELECTION	14
	PROCEDURE OF THE STUDY	15
	COLLECTION OF DATA	17
4	PRESENTATION OF DATA	18
	RESULTS	18
	DISCUSSION	20
5	SUMMARY	23
	CONCLUSIONS	23
	RECOMMENDATIONS	23
	IMPLICATIONS FOR NURSING	24
	BIBLIOGRAPHY	31
	APPENDIXES	34

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Chapter 1

FORMULATING AND DEFINING THE PROBLEM

INTRODUCTION

Pain is one of the universal human experiences--expressions of pain know no language barrier. Yet pain defies satisfactory definition. In many ways pain remains a mystery. Through the years pain has been a subject of inquiry for almost every professional discipline (McCaffrey, 1972, p. 1).

Although a common phenomenon, pain is difficult to define to everyone's satisfaction, and even more difficult to describe as a personal experience. Perhaps this is because pain is a multidimensional experience. It involves not only the discriminative capacity to identify the onset, duration, location, intensity, and physical characteristics of the stimulus but also includes the motivational, affective, and cognitive functions leading to the experience of pain. This private experience of unpleasantness is interpreted in terms of present and past experiences (Casey and Malzack, 1967; Malzack and Casey, 1968).

Margo McCaffrey defines pain as "whatever the experiencing person says it is," and exists "whenever he says it does" (McCaffrey, 1972, p. 8). Although this definition is limited when viewed from the theoretical basis of pain, it exemplifies that pain is a personal experience and this experience affects the whole person. Pain is no respecter of persons, and is not unique to any given group of individuals. Pain accompanies

many physiological and psychological disorders. The scope of this study will deal with the orthopedic patient and his pain experience.

All orthopedic patients have two things in common: pain and the fear of pain. Orthopedic patients usually have an increased tension level due to the threat of the orthopedic disorder, the presence of pain, and the anticipation of future pain. The tension resulting from fear often increases the degree of pain (Twedt, 1975, pp. 39-40). There is convincing evidence that pain perception is not simply a function relating to degree of physical damage alone. Rather, it is also determined by expectation, suggestion, level of anxiety, the meaning of the situation in which the injury occurs, competing sensory stimuli and other psychological variables (Melzack and Perry, 1975, p. 453). Recorded experiences in working with orthopedic patients indicate that traumatic accident victims who are immobilized with skeletal traction experience pain (Twedt, 1975, p. 39). This phenomena was attributed to the injury itself and the tensions related to fear.

The nurse has a unique responsibility to the patient. It is her responsibility to assess and evaluate the patient's fears and pain. The nurse must also institute appropriate action to relieve the patient's fears and prevent or alleviate his pain. In the course of executing her responsibilities, the nurse must constantly assess the effectiveness of the comforting measures employed.

STATEMENT OF THE PROBLEM

The problem explored in this research project was to determine

the effects of systematic relaxation on the number of times pain medication was administered to immobilized traction patients who utilized systematic relaxation as compared with traction patients who did not use systematic relaxation.

THEORETICAL FRAMEWORK

Pain for the orthopedic patient is a real experience both physically and psychologically. Twedt exemplifies this in her statement, "all orthopedic patients, whatever their ages or conditions, have two problems in common, pain and the fear of pain" (Twedt, 1975, p. 39). Bone fracture has associated pain and the subsequent edema and muscle spasms can be very severe.

Bone fractures are followed within 10 to 40 minutes by flaccid muscles. When spasm occurs additional bone deformity and interference with the vascular and lymphatic circulation results, which adds to the severity of the pain (Twedt, 1975, p. 40).

Pain-inducing stimuli are modulated and interpreted by higher brain mechanisms. These mechanisms select and abstract this information from the total input. The words selected to describe the discomfort represent interpretations not only of sensory and effective qualities, but also of previous experiences (Rodbard, 1975, p. 84). Previous life experiences, emotions, level of anxiety, social mores, expectations, and the patient's interpretation of his pain are important in shaping the ultimate response to pain (Stravino, 1970, p. 37). Therefore, it is apparent that brain activity underlying these psychological processes plays an essential role in determining the quality and intensity of perceived pain (Melzack

and Perry, 1975, p. 453). Regardless of its cause, pain involves and affects the whole person--past, present, and future (Casey, 1973, p. 194; Melzack and Perry, 1975, pp. 452-453).

Present and past experiences associated with the perception of pain will serve to influence the expectations regarding the pain sensation. When anxiety is present, there is a tendency for the patient to perceive a greater intensity of pain, which in turn increases the tensions. This produces a spiraling process in which the patient experiences greater and greater pain (McCaffrey, 1972, p. 93). Tension has been found to be related to suffering and pain, and relaxation to abatement. It has also been shown that during pain there is an increase in muscle action potential. This then results in increased muscle contractions. Muscle contractions diminish when action potential is lowered, and the tension and pain are relieved (Jacobson, 1967, pp. 21-22). According to Jacobson, suffering and pain are forms of information processing in the nervous and muscular systems. Extreme relaxation abolishes this information processing (Jacobson, 1967, p. 22).

Pain and fear of pain often go hand in hand, and the nurse plays a significant role in the prevention and relief of both. Observation of the patient serves as the basis for judging the degree of his anxiety and suffering (Twedt, 1975, pp. 39-40). Observation will also assist the nurse in determining the treatment of choice. Historically, the treatment of choice has been the administration of pain medication. Through scientific research, there is developing evidence that nonmedicative methods such as systematic relaxation are also effective in relieving or diminishing pain. Systematic relaxation is an intervention technique

which can be used by nurses with minimal additional training. This method of relaxation prevails upon a conscious effort to reduce the tensions associated with muscle contractions thus reducing the pain associated with bone injury.

The phenomena of systematic relaxation can be explained by the theory of gate control. This theory was proposed by Melzack and Wall, and explains certain phenomenon which earlier theories of pain left unexplained. According to the gate control theory, the brain's central control mechanism serves to identify and modulate location and intensity of pain (Melzack and Wall, 1970, pp. 11-34). The gate control theory supports the hypothesis that pain is a complex perceptual experience in which sensory input is altered by a distinctive but interacting neural system, before that input evokes pain perception and response. The theory is clinically significant because it presents insight into various unexplained phenomena, such as why individuals react to pain differently, and why some experience no pain (Melzack and Wall, 1970, pp. 11-26). The individual meaning of a pain-producing situation, the person's unique history of pain, and his present state of mind not only influence reaction, but greatly affect perception of pain. These influences are explained by the gating mechanism and the central biasing and control mechanisms. Conditions that arouse anxiety and fear increase one's pain. The anticipation of pain also intensifies the pain perception (Siegle, 1974, p. 501). This control mechanism evaluates present and past experiences associated with pain. Pain associated with a fracture is subject to individual control through patient evaluation of his present situation. Systematic relaxation allows for conscious control of the pain experience and is

physiologically supported when viewed as a stimulation of the central control center.

Systematic relaxation is a learned behavior which can be used by the individual upon command. According to scientific data, systematic relaxation is applicable in a multiplicity of medical disorders, and appears an ideal method for the diminishing of pain.

The expressed purpose of systematic relaxation is to teach the individual relaxation with specific controlled suggestions until he becomes accustomed to the process and develops an awareness of a totally relaxed state. With practice this state of relaxation can be produced at command (Russell, 1976, p. 33).

DESIGN OF THE STUDY

Purpose of the Study

The purpose of this study was to compare the number of times pain medication was administered to a group of patients who used systematic relaxation with control group who did not use systematic relaxation.

Hypothesis of the Study

Pain medication will be administered a fewer number of times to patients in group one who participated in systematic relaxation than to the patients in group two who are not exposed to systematic relaxation.

Definition of Terms

Class A. Initial patient-investigator interaction.

Class B. Second patient-investigator interaction.

Class C. Third patient-investigator interaction.

Contract. A written agreement designed by the patient and the investigator specifying that the patient will listen to the tape recording on systematic relaxation a minimum of two times per day.

Documentation. A written record made by the nurse on the patient chart of medication received for pain.

Group one. Patients involved in direct study who utilized systematic relaxation.

Group two. Comparative group of patients with similar injuries selected from the medical records.

Immobility. A state in which the normal activities of the patient are altered as a result of traumatic injury, and the patient is confined to bed by traction.

Medical record. The medication sheet on the patient's chart.

Pain. A sensation in which the patient experiences discomfort, distress, or suffering, related to the tensions associated with his/her state of being.

Pain medication. Any drug administered to the patient for the purpose of relieving pain.

Patient. An individual hospitalized post traumatic accident resulting in traction immobility.

Systematic relaxation. A regular, orderly method of relaxation.

Tension. Muscular contraction, whether grossly visible or microscopic (Jacobson, 1967, p. 7).

The Method of the Study

Five patients immobilized in traction contracted to practice systematic relaxation from their seventh through their fourteenth day post injury. The number of pain medications they received during that time period was compared to the number received by a control group who did not practice systematic relaxation.

Chapter 2

REVIEW OF LITERATURE

Systematic relaxation has gained wide-spread interest in recent years within the field of medicine. However, this investigator was unable to find any research studying the effects of relaxation on the orthopedic patient.

Investigators have been concerned with the development of a systematic approach in coping with pain. Pavlov contributed to the advancement of this approach in his experiments related to the conditioned response. These experiments formulated a basis for explaining responses to pain and possible control for these reactions by reconditioning (Pavlov, 1960).

In 1938, Edmund Jacobson began to formulate a concept which he termed progressive relaxation. Before this time, the use of relaxation in the practice of medicine was for the most part scattered and occasional. Jacobson was convinced and subsequently substantiated through scientific study that an individual could lie on a couch apparently quiet for hours, yet remain sleepless, nervous and restless. He contended that an extreme state of relaxation was required in order to sleep. The ability to resolve residual tension became the essential characteristic of progressive relaxation. This method consists of voluntary continued reduction of contraction or activity of muscle groups. The investigator noted the interesting experience of observing the signs of excitement or distress diminish as the patient relaxed (Jacobson, 1938, pp. 28-33, 416, 417).

Relaxation methods cultivate self-confidence, emotional stability, and freedom of will. One of the better known methods of relaxation is that associated with childbirth. Grantley Dick-Read supported an educational approach in regard to his theory of the fear-tension-pain cycle associated with childbirth. His primary concept postulated that instructing women concerning the events of labor would eliminate fear and thus break this cycle. He later expanded his instructions to include passive relaxation combined with breathing exercises, after he found that knowledge of the childbirth process alone was not sufficient (Read, 1959, 298).

Erna Wright expanded the concept of relaxation in childbirth which included knowledge of the situation, as well as active relaxation. This method stressed that the woman remain in complete control by knowledge of what is to occur, utilizing concentration with controlled breathing and active relaxation combined with cognitive and motor activity. Psychoprophylactic methods utilizing relaxation during childbirth have been shown to be effective in reducing pain perception (Wright, 1968).

In 1959, Edmund Jacobson proposed that tensions were directly related to the pain of childbirth. The aim of his theory was to avert discomfort, fear and unnecessary pain. Jacobson adhered to the educational concept of enlightening the expectant mother, but concluded as did Grantley Dick-Read that the psychological approach is greatly enhanced by methods of physiological relaxation (Jacobson, 1959, pp. 10, 160-161).

Edmund Jacobson spent a lifetime developing and expanding the theory of systematic relaxation. He personally conducted numerous scientific experiments to confirm the tension-pain theory of relaxation. "The

mind is that function of the animal organism which programs its conduct" (Jacobson, 1967, p. 10). Over a period of thirty years Jacobson concluded that "tension-pain" was not a theory but rather a fact. A certain amount of tension is necessary, but excess tension becomes unhealthy. "Tension is physiologically related to suffering and pain, and relaxation to abatement" (Jacobson, 1967, pp. 11-13, 21).

Mulchay and Janz conducted a study to determine whether psychoprophylactic childbirth techniques would be effective in raising the pain perception threshold in males and females during induced pain. Ten males and ten females constituted the experimental group. The subjects experienced induced pain by the use of an inflated blood pressure cuff around the arm; the subjects then verbally indicated discomfort. The investigators concluded that males and females who apply psychoprophylactic techniques (relaxation and breathing exercises) during induced pain will raise their pain perception to a greater extent than those who did not apply the techniques (Mulchay and Janz, 1973, pp. 423-425).

In a study of ninety-two psychiatric patients, Yorkston and Sergeant utilized a simple method of relaxation. All but three patients were relaxed within two minutes. Fifty-eight of these patients later used the same method successfully to relax themselves. The patients had been diagnosed as anxiety neurosis, phobic neurosis, or stuttering; and nearly a third of those with anxiety neurosis had been depressed. The investigators determined that the relaxation method was effective with nearly every patient on whom it was tried. As previously indicated, fifty-eight of the patients proved relaxed enough for verbal desensitization (Yorkston and Sergeant, 1969, pp. 1319-1321).

French and Tupin reported the success of simple relaxation in the management of five patients with serious medical problems. The investigators clearly substantiated the usefulness of relaxation in the treatment of sleep disturbances and reported several cases where the method proved a useful adjunct in the management of anxiety states and pain of moderate severity (French and Tupin, 1974, pp. 282-287).

Malzack and Perry reported a study with twenty-four patients who sought relief of pain from various medical diagnoses. Instructions consisted of a sequence of extensive relaxation techniques, in which attention was focused upon relaxing each successive muscle group and controlled breathing. Data showed that a marked reduction in severe pain occurred. A substantial number of patients (58%) reported a significant reduction in pain by 33 per cent or greater (Melzack and Perry, 1975, pp. 452-466).

Aiken and Henrichs studied systematic relaxation as a nursing intervention technique with open heart surgery patients. The intent was to determine whether relaxation would reduce postoperative psychiatric complications, such as depression, disorientation, paranoid behavior, hallucinations and delusions. Fifteen male patients were trained in relaxation methods by a nursing specialist during the preoperative period. A control group was established for comparative purposes. Although less postoperative psychiatric complications were found in the group trained in relaxation, the investigators considered the findings to be inconclusive. However, the findings were considered to be very encouraging. The study presented an intervention technique accessible to nurses and most effectively used by the nurse. Secondly, the study provides an

alternative approach for patient management which may be prescribed by the nurse (Aiken and Henrichs, 1971, pp. 212-217).

"A person can learn to banish pain to the periphery of consciousness by creating a new center of concentration" (Stewart, 1976, p. 958). This author postulates that nurses tell patients to relax without giving much help in doing so. Conscious relaxation is safe, simple, practical, easy to teach, and always available. Besides diminishing pain, relaxation with rhythmical breathing promotes maximum benefit from rest and deeper sleep at night. It promotes a sense of control that is vital in coping with pain. With relaxation, the nurse can help any conscious person carry out the standard advice, "now just relax" (Stewart, 1976, pp. 958-959).

Chapter 3

METHODOLOGY

SETTING OF THE STUDY

The study setting was on general medical and surgical units at a selected medical center in Southern California.

Approval for this study was granted by the Committee on Ethics in Nursing Research of the Loma Linda University School of Nursing, Loma Linda, California. Permission was also obtained from appropriate authorities for the use of the facility.

CRITERIA FOR PATIENT SELECTION

Patients involved in this study met the following criteria:

1. Fracture of any body extremity (exception, neck injuries).
2. Immobilization in traction between the seventh and fourteenth days.
3. Understood and spoke English.
4. Ranged in age from 15-65.
5. Mentally alert and oriented to time, place, and person.

Group One consisted of five patients who were involved in the direct study. These patients were exposed to a selected method of systematic relaxation during the seventh to fourteenth days after the injury.

Group Two was comprised of five patients who were selected from medical records and matched to the patients in Group One as closely as

possible for age by plus or minus ten years, sex, type of accident, injury, and traction, in addition to other injuries. The patients in this group were not exposed to systematic relaxation after their injuries.

PROCEDURE OF THE STUDY

During the first week post injury, the patients in Group One selected from the traction department's log were approached by the investigator. After introduction to the investigator, the research project and systematic relaxation were presented. The selected tape recording of systematic relaxation was utilized as an introduction to the process of relaxation. After listening to the tape recording the patient was invited to participate in the proposed study. The patient participation involved formulating a contract between himself and the investigator to practice systematic relaxation a minimum of two times per day. Upon verbal consent the patient was given a written consent form to sign which assured him of confidentiality.

After obtaining written consent the investigator implemented three predesigned class sessions. The class sessions took place between the first and seventh days post trauma. Each session included practice exercises utilizing the relaxation tape recording. The class sessions were planned to assist the patient in achieving relaxation, and evaluation of his relaxed state.

Upon completion of the class sessions the investigator requested that the patient document the exact time of tape usage on a 3" x 5" card. The patient received instruction in evaluation of his relaxed state on a

scale of 0 to 5. In addition to time documentation, the patient rated his level of relaxation as no change (0), more relaxed than usual (1), heaviness (2), light(3), detached, floating or weightless (4), or complete, restful sleep (5). The investigator then left at the bedside a cassette tape recorder and a tape recording with the following systematic relaxation instructions:

As you begin this relaxation experience, remember to listen to each word. Position yourself as comfortably as possible. Let yourself relax with your legs slightly apart, and loosen any tight clothing. Begin by focusing your attention toward your breathing pattern. Empty your lungs completely and fill them to capacity--each breath should be a deep, regulated and sustained breath. Through your nose breathe--in...2...3...4...out...2...3...4...in...2...3...4...out...2...3...4...in...2...3...4...out...2...3...4...in...2...3...4...out...2...3...4. Continue to breathe slow and regular.

Let your mind and body relax. Inwardly you feel very quiet. Your mind says...I am beginning to feel quite relaxed...My forehead feels comfortable and smooth...I can feel the areas around my eyes letting go and relaxing.....My forehead, eyes, nose and mouth feel comfortable and relaxed.....I can feel all the tension in my neck letting go and relaxing....My head feels free.....I am quite relaxed...My shoulders, my arms, and my hands feel heavy, relaxed and comfortable....My back and the central portion of my body feel relaxed and quiet...My hips, my knees and my ankles feel heavy, relaxed and comfortable....My feet and my legs feel heavy and relaxed...My feet and legs feel quiet, comfortable and relaxed. My whole body feels quiet, heavy, comfortable and relaxed.....

I am quite relaxed...my arms and hands are heavy and warm...I feel very quiet.....My whole body is relaxed.....My feet and legs are warm and relaxed. Warmth is flowing into my legs; they are warm...I can feel the warmth flowing down my body into my legs and feet. My legs are warm and relaxed.

My whole body feels quiet, heavy, comfortable and relaxed... My mind is quiet...I withdraw my thoughts from the surroundings and I feel serene and still...My thoughts are turned inward and I am at ease...Deep within my mind I am relaxed, comfortable, and still...My mind is calm and quiet...I feel an inward quietness, and I am relaxed.....

(The relaxation tape was recorded to a backdrop of soothing music.)

COLLECTION OF DATA

The patient charts were reviewed, and data was collected to determine the number of times each patient received pain medication between the seventh and fourteenth days after the injury occurred.

A comparison was then made utilizing the Sign Test between Group One and Group Two to determine whether systematic relaxation had any effect on the number of times pain medication was administered during the period between the seventh and fourteenth days after the fracture was sustained. The .05 level of significance was assigned.

Chapter 4

PRESENTATION OF DATA

RESULTS

Five matched pairs of patients (Table 1) ranged in age from 14 to 37 years of age. Three of the pairs presented were males, and two pairs were females. The study subjects were immobilized in skeletal traction throughout with the exception of two male subjects. Subject B₂ sustained a left tibial plateau fracture which was treated surgically, and subject C₂ sustained a left humerus fracture which was treated with a hanging arm cast and balanced suspension.

The study subjects contracted with the researcher to listen and practice systematic relaxation a minimum of two times per day for seven days beginning on the seventh day post injury. All of the subjects listened to the tape the prescribed number of times with the exception of one female who participated only thirteen of the fourteen times. This is indicated in Table 2.

It was determined that four of the study participants actually required less pain medication than their matched counterparts who had not utilized systematic relaxation. Prior to the implementation of systematic relaxation, the researcher assisted subjects in Group One with three relaxation practice sessions. The subjects rated their level of relaxation on a scale of 0-5 (Table 5). During the seven day study period, all subjects reported some degree of relaxation, although no other measure

was utilized to determine degree or quality of relaxation. Subject E reported a greater degree of relaxation and in comparison received twenty-six pain medications to forty-two received by the subject matched to her. Subject A being the only one reporting sessions where no change in relaxation occurred required more pain medicine than his matched counterpart by a ratio of 9:1.

Even though clinically Group One required less pain medication than Group Two it was noted that four of the five subjects in Group One received more tranquilizing and sedative drugs than their counterparts in Group Two (Table 3). Although the effects of tranquilizers and sedatives was not a primary factor of this study, it was an interesting observation of the study.

Table 4 presents the sign of difference and the number of times pain medication was received by patients in Group One and Group Two. Four of the five subjects who participated in systematic relaxation between the seventh and fourteenth day after injury received a plus sign or less pain medication than those in Group Two. The directional hypothesis which stated that "pain medication will be administered a fewer number of times to the patients in Group One who participated in systematic relaxation than to the patients in Group Two who were not exposed to systematic relaxation" with the level of significance at .05, was accepted. The probability that four of the five subjects in Group One could have required less pain medication than those patients in Group Two was $p = .188$ (O'Toole, 1964, pp. 137-143). These findings were accepted as significant in determining the effects and value of systematic relaxation in decreasing the number of times pain medications were administered to

traction patients between the seventh and fourteenth days after their injuries.

DISCUSSION

The literature review disclosed several studies utilizing the systematic relaxation approach, and it was found to be valuable in reducing anxiety and pain in patients with other than orthopedic conditions. Since the theory of systematic relaxation was one of counter-acting muscle contraction, the researcher felt that the approach would benefit patients who sustained fractures resulting in muscle spasms.

The findings of the study were in the general direction predicted. Less pain medication was administered to Group One who utilized systematic relaxation than to Group Two who were not exposed to the relaxation method. Since no attempts were made to control other types of pain reducing measures, it was noted that Group One, the systematic relaxation group, received a greater number of sedative and tranquilizing drugs (Group One, 41, and Group Two, 32). When considering the action and effects of tranquilizers and sedatives, the researcher concluded that the ratio of difference received by Group One and Two was great enough to have influenced the results of the study.

It is important to note that all of the subjects in Group One reported a degree of success in achieving relaxation. Also of importance, all subjects technically fulfilled the terms of the contract. These two factors were considered to be of prime importance in determining the significance of this study.

The design of the study included matching the subjects according to age, sex, race, type of accident, injury and traction. The patients were matched as closely as possible to age by plus or minus ten years, sex, and traction. It was impossible to match exactly. Subject B, for example, was not immobilized by traction at all but was treated with surgical intervention. Also, subject C₂ was treated with a hanging arm cast and balanced suspension weights. Both subject B₂ and subject C₂ were members of Group Two who were not exposed to systematic relaxation.

The medical record survey extended from 1968 to 1976. All charts during this time period were reviewed in an effort to match and pair Group One with Group Two according to the criteria of selection. The investigator limited the time span to no earlier than 1968 because of the following reasons: a) advancement in the treatment of orthopedic injuries, b) change in sociocultural life patterns, c) physicians and philosophies change, and d) changes in available medications and methods of use. The researcher also operated on the assumption and premise that the use of drugs by society has increased over the last ten years.

The medical record survey proved futile in an attempt to match according to race. Ruth Wu states that race is an important variable which influences patient perception of illness (Wu, 1973, p. 39). "The culture in which a patient lives for the greater part of his life has a tremendous influence upon his attitudes toward pain and his manifestations of suffering" (McCaffrey, 1972, p. 44). Race being a part of socio-cultural background, the researcher felt the results of the study may have been more valid with a greater emphasis on these variables.

In other related research Aiken and Henrichs (1971) used systematic relaxation to reduce stress and psychiatric complications post-operatively in cardiac patients. Each subject in the study practiced relaxation four days prior to the stress producing event. (The subjects of this study practiced three days during the first seven days post injury.) The subjects actually exhibited less psychiatric complications post-operatively; therefore, the investigators concluded that systematic relaxation was indeed beneficial.

Like French and Tupin (1974), this researcher included breathing techniques with systematic relaxation to decrease perceived pain. French and Tupin utilized this approach to decrease moderately severe pain and insomnia.

Reflecting upon the results of this research study and other related studies involving systematic relaxation, the researcher concluded that the aforementioned method was effective in decreasing pain. The investigator recommends further research to be done with a larger sampling of traction patients using a modification of this study design.

Chapter 5

SUMMARY

CONCLUSIONS

With a small sample population of ten traction patients divided equally into two groups, the researcher investigated the effects of systematic relaxation on the number of times pain medication was administered to patients (Group One) who used systematic relaxation as compared with those who did not use systematic relaxation (Group Two).

The results of the study revealed that four out of the five patients in Group One who participated in systematic relaxation required a smaller number of pain medications (approximately 2:1) than their matched counterparts. The remaining patient in Group One received nine times as many doses as his counterpart.

RECOMMENDATIONS

The investigator recommends further study utilizing systematic relaxation as a method of decreasing pain in immobilized traction patients.

The following changes are recommended in the research design:

1. The sample population be increased in size.
2. The variables of socio-cultural background and race be included as part of the criteria of selection.
3. The systematic relaxation method include personal contact as well as a tape recording during the relaxation sessions. Margo McCaffrey

(1972, p. 23) states that frequently physical contact will assist in alleviating the patient's pain.

4. The systematic relaxation practice session be increased to five or seven times during the first week post injury.

5. The study to include a more detailed investigation of the effects of tranquilizing and sedative drugs on pain and systematic relaxation.

6. The systematic relaxation practice sessions to include bio-feedback measuring level of relaxation.

IMPLICATIONS FOR NURSING

Traditionally nurses ask patients to relax with little instruction as to how the patient is to accomplish such a feat. The results of this study, as well as the literature review, indicates that systematic relaxation is beneficial in decreasing pain and stress. Systematic relaxation methods are very accessible to nurses and require little time and preparation to learn, teach, or perform. The major goal of nursing being to alleviate the patient's pain and suffering, systematic relaxation appears to be a valuable nursing intervention technique.

The purpose of this study was to determine the effects of systematic relaxation on the number of times pain medication was administered to immobilized traction patients.

The literature review revealed that relaxation in medicine became prominent through the efforts of Edmund Jacobson. Since the beginning of his work in 1938, relaxation techniques have been used successfully to minimize pain and stress in a multiplicity of disorders. These disorders

range from insomnia, pain, childbirth and headaches to emotional disturbances.

This study examined five patients immobilized in traction due to a fracture of an extremity between the seventh and fourteenth days post injury. These five patients contracted to listen to a tape recording on systematic relaxation a minimum of two times per day for seven days. A medical record survey was then made for an additional five patients who did not use systematic relaxation. The two groups were matched as closely as possible for age, sex, injury and type of traction.

Data was collected from the chart regarding the number of times pain medication was administered between the seventh and fourteenth days post injury. Comparison of the two groups indicated that Group One received a fewer number of pain medications than Group Two. Level of significance was $p = .188$. The directional hypothesis was accepted.

Table 1

Summary of Selected Characteristics of Traction
Patients in Group One and Group Two

Patient	Age	Sex	Fracture	Traction
A ₁	15	Male	Proximal left humerus	Skin--balanced suspension
A ₂	14	Male	Proximal right humerus	Skin--balanced suspension
B ₁	29	Male	Left tibial plateau	Skeletal--balanced suspension
B ₂	37	Male	Left tibial plateau	None--surgery. Open reduction and internal fixation
C ₁	32	Male	Right humeral head with subluxation and left scapula	Skeletal--balanced suspension
C ₂	42	Male	Left humerus	Hanging case with balanced suspension
D ₁	28	Female	Left acetabulum, left iliac wing, left inferior pubic ramus	Skeletal--balanced suspension
D ₂	20	Female	Right acetabulum, right femur	Skeletal--balanced suspension
E ₁	35	Female	Open fracture and dislocation of pelvis; left comminuted tibia and fibula	Skeletal--balanced suspension
E ₂	25	Female	Right ileum, bilateral ischial-pubic rami, comminuted right tibia and fibula	Skeletal--balanced suspension

Table 2

Total Number of Times Pain Medication Was Administered
and Systematic Relaxation Practiced by Selected
Patients in Groups One and Two Between the
Seventh and Fourteenth Days Post Injury

Group One			Group Two		
Subjects	Total PM	Total SR	Subjects	Total PM	Total SR
A	18	14	A	2	0
B	14	14	B	23	0
C	17	14	C	21	0
D	10	13	D	44	0
E	26	14	E	42	0

PM = Pain medication

SR = Systematic relaxation

Table 3

Total Number of Times Tranquilizer or Sedative
Drugs were Administered to Selected Patients
in Groups One and Two Between the Seventh
and Fourteenth Days Post Injury

Subjects	Group One		Group Two	
	TD	SD	TD	SD
A	0	3	0	0
B	0	3	1	2
C	3	0	18	0
D	20	0	0	6
E	12	0	0	5

TS = Tranquilizer drugs

SD = Sedative drugs

Table 4

The Sign Test

Statistical Test Indicating the Number of Times
Pain Medication was Administered to Patients
in Group One and Group Two

Matched Pairs	Group One	Group Two	Difference Between Matched Pairs	Sign of Difference (+ indicates direction of hypothesis)
	No. of Times Pain Med. Was Given	No. of Times Pain Med. Was Given		
A ₁ A ₂	A ₁ = 18	A ₂ = 2	A ₂ - A ₁ = -16	-
B ₁ B ₂	B ₁ = 14	B ₂ = 23	B ₂ - B ₁ = + 9	+
C ₁ C ₂	C ₁ = 17	C ₂ = 21	C ₂ - C ₁ = + 4	+
D ₁ D ₂	D ₁ = 10	D ₂ = 44	D ₂ - D ₁ = +34	+
E ₁ E ₂	E ₁ = 26	E ₂ = 42	E ₂ - E ₁ = +16	+

N=5 subjects N₁=1 minus sign N₂=4 plus signs p=.188

Table 5
 Level of Relaxation Achieved as Related
 by the Five Selected Subjects

Day	A	B	C	D	E
1	FT = 3 ST = 4	FT = 2 ST = 2	FT = 4 ST = 1	FT = 1 ST = 1	FT = 3 ST = 3
2	FT = 3 ST = 4	FT = 2 ST = 2	FT = 1 ST = 3	FT = 2 ST = 1	FT = 5 ST = 5
3	FT = 2 ST = 4	FT = 2 ST = 2	FT = 2 ST = 3	FT = 3 ST = No session	FT = 5 ST = 5
4	FT = 3 ST = 0	FT = 2 ST = 2	FT = 3 ST = 3	FT = 3 ST = 4	FT = 5 ST = 5
5	FT = 0 ST = 4	FT = 2 ST = 2	FT = 1 ST = 2	FT = 3 ST = 2	FT = 5 ST = 5
6	FT = 4 ST = 0	FT = 2 ST = 2	FT = 3 ST = 2	FT = 2 ST = 4	FT = 5 ST = 5
7	FT = 2 ST = 4	FT = 2 ST = 2	FT = 3 ST = 3	FT = 3 ST = 4	FT = 5 ST = 5

Code: FT = First relaxation session each day
 ST = Second relaxation session each day

Relaxation scale: 0 = no change
 1 = more relaxed than usual
 2 = heaviness
 3 = light
 4 = detached, floating or weightless
 5 = complete, peaceful sleep

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STRETCHING OF PARCHMENT
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APPENDIX A

LOMA LINDA UNIVERSITY
Graduate Program in Nursing

35

Approval Date: January 20, 1976

Brenda Armstrong
22685 A Palm Avenue
Colton, California 92324

Dear Brenda:

The Ethics in Nursing Research Committee has reviewed the proposal you submitted for a research study to partially fulfill the School of Nursing requirements for a Master of Science degree from Loma Linda University.

The committee has voted that your study is:

Approved as submitted. providing the problem is the hypothesis and/or the central question.

Approved after the attached recommended changes have been made and a memo from your committee chairman to this effect has been received by the committee chairman.

Not approved as submitted to the committee. See the attached comments for recommended changes. Must be resubmitted prior to any data collection.

Deferred to: URACHE Major Advisor Research Chairman
 Other Advisor

Please see attached comments regarding this action.

Please contact the Chairman of the Ethics in Nursing Research Committee if you have questions related to the decision of the Committee. If any changes are made in the hypothesis, tool, consent form, or the procedure for data collection, this proposal must be resubmitted to this Committee.

We pray that the Lord will continue to bless your endeavors.

Sincerely,



Evelyn L. Elwell, Chairman
Ethics in Nursing Research Committee

ELE:lw

cc: Research Committee Chairman - L. Lewis, L. Sutton

LOMA LINDA UNIVERSITY

36

LOMA LINDA, CALIFORNIA 92354



Medical Center

December 7, 1976

Ms. Brenda Armstrong
2269 A Palm Avenue
Colton, California 92325

Dear Brenda:

I have received your request to do your research study at LLUMC.
You have my permission to conduct your study in Nursing Service here.

Since you will be working with patients, I am sure you understand that
you must obtain their permission.

It will be important for you to work closely with the Head Nurse of
the area where you choose your patients.

Good luck with your study.

A handwritten signature in cursive script that reads "Gertrude Haussler".

Gertrude Haussler
Assistant Administrator
Nursing Service

GH:11m

APPENDIX B

STRATFORD, CONNECTICUT

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CONSENT FORM

I, _____, understand that the purpose of this study is to determine the effects of systematic relaxation on my pain. I agree to participate by utilizing the methods of systematic relaxation. I agree to participate in this study by contracting to listen to the tape recording of systematic relaxation exercises a minimum of two times per day. I understand that all personal information obtained from this study will be held in strictest confidence. I also understand that my name will be withheld from any publication of the obtained information. I give my free and voluntary consent to participate in this project under the supervision of Brenda C. Armstrong of Loma Linda University and in witness thereof I have signed this consent. I understand that I am free to withdraw from participation in this study at any time without resulting in any prejudice toward me.

Signed

Date

Witness

Witness

CONTRACT

I, the undersigned, hereby agree to listen to the systematic
tape a minimum of two times per day from _____ to _____.
mo. day year mo. day year

Witnesses

Signature

Date

APPENDIX C

UNIVERSITY LIBRARY
LOMA LINDA, CALIFORNIA

DATA COLLECTION FORM

NAME _____

HOSPITAL NUMBER _____

AGE _____

DATE OF ADMISSION _____

SEX _____

RACE _____

Information related to the injury:

Type of accident _____

Type and location of injury _____

Type of traction _____

Date and Day	1	2	3	4	5	6	7
analgesic medication							
dosage and time							
tranquilizer medication							
dosage and time							
times S.R. used							