THE EFFECTS OF STRUCTURED PREOPERATIVE INSTRUCTION ON POSTOPERATIVE PAIN

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

The management of postoperative pain is a major responsibility of the nurse. The nurse must clearly show that caring and concern in the process of pain management are more important than the single act of administering analgesic medications. Nurses can competently develop a plan of care which will reduce or alleviate the pain a patient experiences after undergoing an operative procedure.

The pain experience has been identified as possessing physiological, psychological, and emotionally reactive components. Pain is identified as either acute or chronic in nature, and it is usually managed by physicians and nurses with this fact being of primary consideration when selecting actions to alleviate pain. Postoperative pain is acute in nature and traditionally has been managed singly with narcotic and nonnarcotic analgesics. Operant conditioning, biofeedback, relaxation training and other cognitive manipulations have been implemented in the treatment of chronic pain. However, few options other than

taking analgesics are available to the postoperative patient for pain relief.

Preoperative teaching by the nurse continues to be limited. Information relating to preoperative procedures and expected routines are frequently provided to patients. Since the experience of surgery has often been identified as psychologically threatening, it is necessary to provide structure to patients and to prepare them psychologically for the entire postoperative experience of which information about pain and associated discomforts is so vitally important. The focus of this study was to determine the differences between two groups of patients receiving different teaching plans.

Problem of Study

The problem of this study was to determine the differences on pain scores between two groups of patients. The experimental group received a structured teaching plan and the control group received the standard teaching plan. The pain scores were comprised of: (a) the pain rating index (PRI) scores achieved by the treatment group and control group of subjects on the McGill-Melzack Pain Questionnaire (Melzack, 1975), (b) on present pain intensity (PPI) scores achieved by the treatment group and

control group of subjects on the McGill-Melzack Pain Questionnaire; and (c) on number of words chosen (NWC) scores achieved by the treatment group and control group of subjects on the McGill-Melzack Pain Questionnaire.

Justification of Problem

Several studies have been conducted which consider the effects of preoperative instruction on the recovery of patients after a surgical intervention (Andrew, 1970; Johnson, Rice, Fuller, & Endress, 1978; Lindeman, 1973; Lindeman & Van Aernam, 1971; Miller & Shada, 1978). Lindeman (1973), who studied the effects of structured and unstructured teaching, showed that preoperative teaching significantly improved postoperative ventilating function and reduced hospital stay. Lindeman and Van Aernam (1971) found that data from a study of surgical patients supported the value of structured preoperative instruction and promoted patient recovery by decreasing the length of hospital stay and increasing scores on tests of ventilatory function.

A study conducted by Miller and Shada (1978) focused on interviewing open-heart surgery patients postoperatively to identify what information presented or not presented preoperatively was important to their recovery.

As a result of this study, Miller and Shada suggested that areas of pain occurrence and pain duration be explained during the preoperative period. Patients in this study viewed the nurse as an important provider of information during the preoperative period.

Johnson et al. (1978) studied the effects of giving information about the sensations that surgical patients experience as compared to the effects of providing information about coping activities and procedure information. They found that the intervention of providing descriptions of sensory experience was the only intervention that significantly increased the rate of recovery of patients in their study of 81 cholecystectomy patients.

In a study done by Johnson (1972), she supported her hypothesis that accurate expectations about physical sensations will reduce distress when an individual is faced with a threatening event. In another study, Johnson (1973) found that preparatory information which reduces the incongruency between expected and experienced sensations is associated with less intense emotional response during painful stimulation.

Preparatory instruction was given to patients who were classified into groups according to the way in which they managed stressful situations. These three groups of

patients were defined as sensitizers, neutrals, and avoiders. The purpose of the study was to improve recovery from surgery for sensitizers, but the findings of the study indicated that learning was not important for this group of patients (Andrew, 1970).

The studies which have been cited demonstrated that preoperative instruction is important in improving recovery from surgery, reducing length of hospitalization, and reducing distress in threatening situations. Patients have expressed the desire to know more about pain occurrence and pain duration. The nursing profession in general and nurses in particular face the challenge of determining the specific kind of information about pain which will be most beneficial to preoperative patients.

Theoretical Framework

The gate-control theory of pain as presented by Melzack and Wall (1965) and Gagne's (1977) theory of learning formed the theoretical base for this study. Melzack and Wall's (1965) gate-control theory consists of three spinal cord systems which transmit nerve impulses when stimulation of the skin has occurred. These systems include the cells of the substantia gelatinosa in the dorsal horn, the dorsal-column fibers that project toward

the brain, and the first central transmission (T) cells in the dorsal horn. The substantia gelatinosa is believed to function as a gate-control system which modulates the afferent patterns prior to its influencing the transmission cells. A central control trigger which activates selective brain processes that influence the modulating properties of the gate-control system is located in the afferent patterns in the dorsal column system. Neural mechanisms are activated by the transmission cells which compose the action system which is responsible for perception and response.

The gate-control system consists of the substantia gelatinosa which acts as a gate-control system that modulates the synaptic transmission of nerve impulses from peripheral fibers to central cells. Small diameter fibers are responsible for an excitatory effect of arriving impulses in the substantia gelatinosa and large diameter fibers are responsible for inhibitory effects of arriving impulses in the substantia gelatinosa. Melzack and Wall (1965) proposed that in this afferent input system there are three features which are important in explaining pain: the relative balance of activity in large versus small fibers, the stimulus-evoked activity, and the ongoing activity which precedes the stimulus. As long as impulses

are being transmitted via small diameter fibers and there is no large diameter fiber activity, the gate is held in a relatively open position. When large diameter fibers are stimulated, there is a counteraction effect on the impulses and the presynaptic gate will be partially or completely closed. The pain experience and response results when the output of the transmission cells reaches or exceeds a critical level.

Afferent conduction at the earliest synaptic levels of the somesthetic system can be influenced by descending efferent fibers which are activated by stimulation of the brain. Control over sensory input is exerted by central nervous system activities subserving attention, emotion, and memories of prior experience. Melzack and Wall (1965) suggested that these central influences are regulated through the gate-control system. This central control trigger activates particular, selective brain processes that exert control over sensory input.

A sequence of responses by the action system is triggered when the firing level of transmission cells exceeds a critical preset level. Among these responses are a startle response, a flexion reflex, postural readjustment, vocalization, orientation of the head and eyes to examine the damaged area, autonomic responses,

evocation of past experience in similar situations and prediction of the consequences of the stimulation and many other patterns of behavior aimed at diminishing the sensory and affective component of the whole experience.

Gagne's (1977) theory of learning was used to support the structured teaching plan of the study. Major concepts in Gagne's theory of learning include learning outcomes, phases in an act of learning, input stimulus situation, output response, learning types, and learning hierarchies. Learning outcomes consist of intellectual skills, cognitive strategies, verbal information, motor skills, and attitudes. Phases in an act of learning include internal processes of learning. These internal processes are attention, selective perception, semantic encoding, retrieval, response organization, control processes, and expectancies. External events are responsible for enhancing and supporting the internal processes. Gagne (1977) identified the types of learning as signal learning, stimulus-response learning, chaining, and verbal association.

Gagne (1977) stated that the psychological organization of intellectual skills may be represented as a learning hierarchy. This learning hierarchy is often composed largely of rules. Two or more rules may be necessary to

the learning of a superordinate rule. Once the superordinate rule has been learned, it may combine with another rule. This learning of a combination of rules leads to the attainment of an organized set of intellectual skills.

Gagne (1977) stated that many kinds of intellectual skills, both simple and complex, are learned by the individual. The learning of a rule is the most typical form of an intellectual skill. Intellectual skills can be further subcategorized into the learning of concepts. A component of a rule is a concept, and the concept is subordinate to the rule. Another type of intellectual skill is termed a discrimination. A learner must have the ability to distinguish the difference between objects which have particular qualities. Discrimination is being able to tell the difference between variations in some particular object-property.

Higher order rules can be utilized for problem solving by the learner. On many occasions, two or more rules may be combined from very different content domains in order to solve a problem.

Gagne (1977) stated that a cognitive strategy is the most important kind of learning outcome achieved by the human being. With this skill the internal processes of

attending, learning, remembering, and thinking are regulated by the learner. Cognitive strategies are not oriented to any particular kind of external content.

Verbal information is a third category of learning outcome. The learning of verbal information composes a large part of an individual's life. This type of learning is important because an individual will need to know certain facts; it is an aid and accompaniment to learning, and it is important as specialized knowledge.

The acquisition of a motor skill is usually easy to distinguish in human performance. A motor skill is not the performance of certain prescribed movements but of the organization of these movements to include a total action that is smooth, regular, and precisely timed. A high degree of internal organization has occurred when these movements are smooth and precisely timed.

Attitudes are another kind of learning outcome. Gagne (1977) defined attitudes as an internal state that influences the choices of personal action made by the individual. Attitudes possess affective and cognitive aspects in addition to behavioral consequences. Gagne (1977) emphasized the importance of the effects of attitudes upon behavior. Attitudes are learned through

single incidents, from individuals' experiences of success and pleasure, and by imitating other people's behavior.

Gagne (1977) believed that learning is a set of processes. He defined the phases of processing as the events of learning. The events of learning are initiated when the learner receives stimulation from the environment which triggers his receptors and is converted to neural information. The sensory register then receives this information where it stays for a very brief time. If the information persists for a longer time period, it must be the focus of the process of attention.

The process of attending involves the learner having the ability to attend to specific features of the contents of the sensory register. A process of transformation is accomplished by attending and this new kind of input enters the short-term memory. The information which has been transformed enters the short-term memory and will generally stay for a time period up to 20 seconds. There are two forms of storage which are believed to occur in the short-term memory. The first, an acoustic form, involves information which is internally "heard" by the learner. The second form, an articulatory form, involves information which the learner "hears himself saying."

The next step of the process of learning involves encoding of information which is input to the long-term memory. Information containing perceptual features is transformed into a conceptual form. Organization of information occurs when it is encoded into long-term memory. Encoded information may take the form of meaningful propositions, hierarchial relations of concepts, topical organization, and visual and other kinds of imagery. Encoded information also undergoes storage and retrieval processes.

The response generator is the next structure involved in the transformation of information. This structure has two functions: first, to determine the basic form of human responding; and second, to determine the pattern of the performance. This pattern of performance involves the sequence and timing of the movement involved in the action to be accomplished. The last two stages involved in the processing of information are performance and feedback. In the performance stage there is activation of the effectors which results in patterns of activity that can be observed externally. Whatever capability has been learned, the performance should demonstrate that the learning has occurred. The final aspect in the process of learning is the event of feedback. Feedback occurs

outside the learner, and is provided by the learner's observation of the effects of his performance. The learner is provided with the confirmation that his learning has accomplished its purpose.

This study is based on the aspect of the gate-control theory of pain which focuses on the control of sensory input by central nervous system activities. Such psychological factors as past experience, attention, and emotion influence pain response and perception by acting on the gate-control system. Teaching the preoperative patients about the pain and associated discomforts following surgery will provide psychological comfort and will present an experience which they will be able to perceive as non-threatening. This experience in learning about their pain will provide them with an element of control when they are faced with the pain experience.

Since Gagne's (1977) theory of learning is an eclectic psychology, his theory can be applied to all types of learners and learning needs. Adult learners facing surgery have attained through formal education and life experience a broad base of knowledge upon which to base new information, but the researcher was aware that in this study it would be difficult to predict common characteristic learning capabilities within the sample. Newly

admitted patients anticipating nonemergency surgery are least affected by the medical regimen and hospital environment. Their physical and mental capabilities are more intact than other types of patients. The researcher felt that learning for the preoperative patient would be enhanced through a more organized and structured teaching plan.

Gagne (1977) outlined instructional events which can be used to support and enhance each of the phases of learning. These instructional events were used to formulate the teaching plan. The statement and communication of objectives served to establish expectancy of the performance to be achieved as a result of learning. Directing attention was achieved through the use of transparencies. Stimulating recall, providing learning guidance, enhancing retention, and transfer of learning were accomplished with the use of patient activity (Appendix A). Test questions were included to elicit performance from the patient.

Assumptions

The following assumptions underlying the study were:

1. Pain in the postoperative period is a common occurrence.

2. Central nervous system activity is capable of exerting control over perception of pain.

3. Painful sensory stimuli are transmitted to the gating mechanism via small diameter fibers.

4. Stimulation of large diameter fibers creates an inhibitory effect on impulses transmitted to the gating mechanism thereby decreasing or preventing pain perception.

5. Patients are human beings capable of learning.

6. Instruction of patients is a major dimension of nursing practice.

7. Human beings are capable of learning intellectual skills, cognitive strategies, verbal information, motor skills, and attitudes.

8. Learning occurs through the internal processes of attention, selective perception, semantic encoding, response organization, control processes, and expectancies.

9. Teaching is composed of presenting several different kinds of external stimulation which influence several different processes of learning.

10. Teaching provides support for the various kinds of internal processing which are taking place in the learner.

Hypotheses

The following hypotheses were formulated:

1. There is no significant difference between the PRI (R) scores achieved by the treatment group and the control group of subjects on the McGill-Melzack Pain Questionnaire.

2. There is no significant difference between the PPI scores achieved by the treatment group and the control group of subjects on the McGill-Melzack Pain Questionnaire.

3. There is no significant difference between the number of words chosen (NWC) scores achieved by the treatment group and the control group of subjects on the McGill-Melzack Pain Questionnaire.

Definition of Terms

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

1. Adult patient--a female between the ages of 20 and 65 who is hospitalized on a surgical unit.

2. Postoperative pain--the occurrence after a surgical intervention of increased impulses arriving from peripheral small diameter fibers to the substantia gelatinosa, creating an open gating mechanism, and

influencing transmission cell activity; interpretation of painful sensory input by central nervous system activity would also exist. Postoperative pain was measured by the McGill-Melzack Pain Questionnaire (Appendix B) which indicated pain rating index, present pain intensity, and number of words chosen.

3. Pain experience

> A sequence of responses by the action system. . . which consists of. . . (i) a startle reflex; (ii) a flexion reflex; (iii) postural readjustment; (iv) vocalization; (v) orientation of the head and eyes to examine the damaged area; (vi) autonomic response; (viii) evaluation of past experience in similar situations, and prediction of the consequences of the stimulation and other patterns of behavior aimed at decreasing the sensory and affective part of the entire experience. (Melzack & Wall, 1965, p. 976)

4. Standard preoperative instruction--information given to the patient by nurses concerning scheduled surgery and procedures (Appendix C).

5. Structured teaching plan--a lesson plan designed to activate motivation, inform the learner of the objectives, direct attention, stimulate recall, enhance retention, elicit performance, and provide feedback (Appendix C).

6. Intra-abdominal surgery--nonemergency surgical entry into the abdominal cavity for the purpose of correcting a pathological process.

Limitations

The limitations of this study were:

1. The pain tolerance of each patient may have been different; reason for the surgery and ethnicity may have been influencing factors.

2. Medical regimens may have varied among physicians.

3. Sedative effects from medications may have affected responses given by patients.

4. Attitudes about pain relief in the sample may have been established due to ethnicity and cultural factors. These attitudes may have affected their readiness to request narcotic analgesics.

5. The teaching tool was not pretested.

6. Educational attainment and level of intelligence may have varied among patients.

Summary

The problem of the study centered on preoperative instruction, pain intensity, and a pain rating index. The theoretical framework was comprised of Melzack and Wall's (1965) gate-control theory and Gagne's (1977) theory of learning. Three null hypotheses were formulated to test differences between two groups of surgical patients.

CHAPTER 2

REVIEW OF LITERATURE

Studies relating to structured and unstructured teaching and information giving in the preoperative period are presented. The effects of this teaching and information giving are discussed in relation to relief of postoperative pain and other variables important in the recovery of postoperative patients. Studies related to personality traits and cognitive components important in the study of postoperative pain are included. A brief discussion of ethnic and cultural factors and the response to pain is also included.

Perhaps the nursing practitioner would be assisted in teaching role mastery if she had a clear idea of why the teaching of patients is so important. Gusfa, Christoff, and Headly (1975) cited reasons for the teaching of patients. Patients are taught in order to speed recovery and shorten the hospital stay, to provide them with an understanding of the disease process, to assist the patient to his maximum level of health, to enhance the patient's and family's acceptance of the limitations imposed by the disease process, to prevent further loss

of health or permanent deformity as a result of a disease process, and to provide the patient and his family with the necessary knowledge and skills to care for him after discharge.

Storlie (1973) discussed various reasons which may be attributed to the reluctance of the health practitioner to engage in patient teaching. In order for effective teaching to occur, there should be a willingness on the part of the health professional to share knowledge about illness and medical care. A patient who lacks knowledge is placed in an inferior position. Thus, the health practitioner will need to make the decision about disseminating knowledge previously held by the practitioner only.

Storlie (1973) stated that there is confusion among health practitioners regarding health teaching because the term teaching may mean different things to different practitioners. The benefits of patient teaching may be hindered further due to lack of clinical application even though there has been support for the concept at the policy-making level. Lack of clinical application can result from lack of commitment of either the physician or nurse, or from the practitioners holding differing or conflicting ideas about where the emphasis in teaching should be.

Storlie (1973) suggested that a possible outcome of sharing knowledge would be the eventual independence of the consumer in selected areas of health care. Emerging from this vantage point are numerous ethical dilemmas which will need to be resolved at the professional as well as the individual level.

Structured and Unstructured Preoperative Teaching

Lindeman and Van Aernam (1971) utilized a pretest-posttest static group design involving an experimental group consisting of 126 subjects who received structured preoperative teaching and a control group of 135 subjects who received unstructured preoperative teaching. The unstructured teaching consisted of a few general statements by a registered nurse about the need to deep breathe, cough, and turn postoperatively. The structured teaching included specific content, methods, and visual aids necessary for the teaching of coughing, deep breathing, and turning.

Lindeman and Van Aernam (1971) hypothesized that structured preoperative teaching would significantly increase the adult surgical patients' ability to cough and deep breathe, significantly reduce average length of hospital stay for the adult surgical patient, and

significantly reduce the need for postoperative analgesics for the adult surgical patient. Lindeman and Van Aernam (1971) accepted the hypothesis that structured preoperative teaching would significantly increase the adult surgical patient's ability to cough and deep breathe. Vital capacity *t* values and 1 second forced expiratory volume *t* values were significant beyond the .01 level. The maximum expiratory flow rate *t* values were significant beyond the .001 level.

A *t* test was applied to the data for mean length of hospital stay for the control and experimental groups. Significance beyond the .02 level was detected and the hypothesis that structured preoperative teaching would significantly reduce average length of hospital stay for the adult surgical patient was accepted.

A *t* test was applied to the data for number of analgesics administered during the first 72 hours postoperatively. The *t* value for these data was not significant at the .05 level. The hypothesis that structured preoperative teaching would significantly reduce the need for postoperative anagesics for the adult surgical patient was rejected.

Miller and Shada (1978) conducted a study to explore with a patient postoperatively what specific information

presented in preoperative instruction was important to his recovery. The 4 women and 15 men ranging in age from 29 to 70 years of age were purposively selected for this study. The characteristics of the typical subject were that he was a 55-year-old Caucasian, protestant, married man with children. The typical subject was employed, had a history of cigarette smoking and a family history of cardiac disease. The scheduled surgery to be performed was a double, aorta-to-coronary artery revascularization procedure.

The instruments utilized in the study consisted of an Open-Ended Interview Schedule and three nursing assessment data forms. The open-ended questions on the interview schedule were related to the preoperative, operative, and postoperative periods and were grouped into 11 categories.

Frequency distribution tables were used to summarize the medical and demographic characteristics, to indicate information included and excluded, and information important and unimportant in preoperative instructions. Subjective data were coded in units corresponding to the categories of the interview schedule.

Miller and Shada (1978) found that for this group of patients the immediate postoperative period was the most

difficult time for the patients. Lack of information regarding pain and discomfort was an area identified by patients. This area of concern existed throughout the first five postoperative days. Information was supplied preoperatively about incisional pain and pain while deep breathing and coughing. Miller and Shada (1978) noted few complaints of incisional pain postoperatively but many complaints about discomfort from mechanical and physiological factors such as discomfort from the respirator and stiffness of arms and neck. A majority of subjects identified pain as an area of preoperative instruction which should be given to other patients approaching heart surgery.

Johnson et al. (1978) studied a group of 81 cholecystectomy patients, 63 females and 18 males, to determine the effectiveness of instruction in a specific coping strategy and two types of informational interventions on postoperative pain, ambulation, mood state, length of postoperative hospitalization, and post hospitalization recovery. Johnson et al. (1978) utilized a 2x3 experimental factorial design consisting of instruction and information as experimental factors. Instruction in deep breathing, coughing, leg exercises, turning, and ambulating; and no instruction were the levels of instruction.

A description of the usual events occurring in the surgical experience; a description of the typical sensations experienced, in addition to the usual events; and no experimental information were the levels of information.

Results from the study by Johnson et al. (1978) showed that there was an association of preoperative fear scores from the Mood Adjective Checklist with several of the indicators of postoperative recovery. As a result of this finding, two levels of preoperative fear were used as a third factor in the analysis. The total number of patients in the sample was divided into high and low preoperative fear groups, with as nearly an equal number of patients in each group as possible.

In relation to postoperative pain, a main effect for instruction was found on the number of doses of analgesics received from midnight the day of surgery to midnight the third postoperative day. Fewer doses of analgesics were received by the patients who received instructions than patients who did not receive instruction. Fewer doses of analgesics were received by older patients than by younger patients.

A two-dependent-variable multivariate analysis was completed on totals of subjective reports of intensity of painful sensations in the incision and how distressing the

sensations were. A main effect for preoperative fear was the only multivariate *F* ratio which approached an acceptable level of significance. The preoperative fear effect was due to patients who were relatively fearful before surgery reporting higher intensity sensations.

In relation to ambulation, no significant *F* ratios were revealed by analysis of the amount of ambulation on the second postoperative day. There was a tendency, however, for patients who received instructions to ambulate more times than those who did not receive such instructions. Patients with high preoperative fear reported ambulation to be more bothersome than low preoperative fear patients.

Postoperative mood states of patients who were relatively fearful preoperatively were affected by procedural information as well as the other two interventions. Patients who received both procedure and sensation information had shorter postoperative hospitalization than did patients receiving no information. Analysis revealed that the sensation information condition mean differed significantly from the no-information condition mean. Patients who received sensation information left their homes earlier than patients who received no information.

Andrew (1970) utilized information giving as a possible method to improve recovery from surgery for sensitizers, one personality type who characteristically seek, learn, and use information in their intellectualizing defenses. A hypothesis was stated that

> Surgical patients whose preferred coping style was that of intellectualizing and vigilance toward, rather than avoidance of, stressful stimuli should be expected to welcome information about impending stress; to learn such information; to reduce their stress thereby; and then to recover from surgery more quickly and with fewer medication. (Andrew, 1970, p. 223)

Subjects included in the study were 59 hospitalized veterans ranging from 24 to 75 years of age. There were three groups of patients from which the subjects were selected, those being patients expecting hernia surgery, patients expecting other minor surgery, and patients undergoing nonsurgical treatment.

During the study conducted by Andrew (1970) each subject was visited twice. At the time of the first visit, memory and personality tests were administered. At the time of the second visit, a 50-item questionnaire was administered before and after the subjects had listened to an 8-minute audio tape which outlined origins of hernias, dangers of delay of surgery, and the surgery process.

Results of the study by Andrew (1970) indicated that after preparation, neutrals required fewer days of hospitalization and fewer medications. Avoiders required equal days of hospitalization and more medications. Sensitizers required equal days of hospitalization and equal medication.

Johnson (1972) reported two studies, a laboratory experiment and a clinical experiment, which tested the hypothesis that discrepancy between expectations about sensations and experience during a threatening event results in distress. The assumption that information about sensations is information taken from threatening stimuli relevant to distress was used as a basis for the hypothesis.

In the laboratory experiment, Johnson (1972) induced ischemic pain by applying a blood pressure cuff to the upper arm and inflating the cuff to 250 mm. Hg. Male college students served as subjects and a total of 48 subjects were included in the study. A 2x2 design was utilized for the study which included two types of information and distraction or attention being combined in all possible ways.

Johnson (1972) informed half of the subjects that they would experience pressure, tingling, aching,

numbness, and blueness of the fingernails after the blood pressure cuff was inflated. Information about the procedure was given to the remainder of the subjects. Half of each information group of subjects were asked to work multiplication problems in order to accomplish distraction from sensations. The remaining subjects were asked to look at and think about their arms and to report the presence or absence of seven sensations in order to direct attention to the sensations. The intensity and the distress of the sensations were rated by the subjects every 45 seconds.

Johnson (1972) reported that subjects who were given the description of sensations reported that they had expected more of the sensations they experienced than the subjects who had received a description of the procedure. The rating of the intensity of sensations were not significantly affected by the information. The subjects who had been informed of the sensations to expect and focused attention to their arms demonstrated a tendency for sensations to decrease the last 2 minutes of tourniquet inflation.

Significantly less distress while the cuff was inflated was reported by subjects who were given a description of the procedure. All groups reported

increased distress the longer the cuff was inflated. Distress ratings were not significantly altered by attention or distraction.

Three experimental conditions including 99 patients who were to undergo a gastrointestinal endoscopy examination were utilized in the clinical experiment conducted by Johnson (1972). The first group of patients received a tape recorded message describing the sensations patients frequently experience during a gastrointestinal endoscopy examination. The second group of patients received a tape recorded message describing the procedure followed during an endoscopic examination. The third patient group received no experimental information and served as a control condition.

Johnson (1972) reported that patients in both message groups required approximately 6 mg. less tranquilizer to achieve sedation than the no message group, indicating a reduction in anticipatory distress. Distress indicators were different between the two message condition groups during the tube passage and while the tube was in place. Fewer indications of tension in the hands and arms of subjects who heard the description of sensations was noted during tube passage than for the subjects in the other two groups. Patients who were in the description of

sensation group were the least restless during the examination while the patients in the description of procedure group were the most restless.

Perri and Perri (1979) conducted an investigation to determine the effectiveness of relaxation training as a method for coping with the clinical pain which follows surgery. A group of 26 women, ages 30 to 62, who were scheduled to undergo vaginal hysterectomies served as subjects for the study. Both experimental and control groups were utilized, and subjects were randomly assigned to either of these two groups. The 13 women in the experimental group received two 90-minute individual sessions of training in progressive muscle relaxation. The individual sessions were conducted during the 10-day periods before their scheduled surgery. The experimental group was given instructions to focus attention on pleasant, relatively monotonous internal feelings and instructions on systematic tension-release of gross muscle systems. The control group of subjects had no contact with the experimenters before their surgery.

On the first and third days postoperatively, Perri and Perri (1979) assessed the subjects' pain employing the McGill-Melzack Pain Questionnaire, the Chambers-Price Scales for Pain, and the number of pain medications

received by the subjects. There were no significant differences shown by statistical analyses between the experimental and control groups on the dependent measures at either 1 or 3 days postoperatively. Reduction of clinical pain was not accomplished by the use of relaxation training.

Lindeman (1972) stated that the purpose of this study was to determine the effects of individual and group preoperative teaching of coughing, deep breathing, and bed exercises upon specific variables associated with recovery from surgery and upon length of learning time. Age, smoking history, and site of incision were also studied in relation to the main and interactional effects of these variables.

Lindeman (1972) stated five null hypotheses for this study:

> 1. There will be no difference between group and individual preoperative teaching in terms of postoperative ventilatory function test scores, length of hospital stay, and number of analgesics administered postoperatively.
> 2. There will be no difference between group and individual preoperative teaching in terms of length of learning time required for successful preoperative performance of the deep breathing, coughing, and bed exercise regimen.
> 3. There will be no difference between group and individual preoperative teaching for all age groups singly and in combination with smoking history or site of incision or both.

> 4. There will be no difference between group and individual preoperative teaching for smokers and nonsmokers, singly and in combination, with site of incision.
>
> 5. There will be no difference between group and individual preoperative teaching irrespective of site of incision. (p. 197).

There were 351 subjects included in the study. There were 178 subjects who received individual preoperative instruction and 173 subjects who received group preoperative instruction. There were 98 subjects who had major chest, neck, or upper abdominal incisions, 75 subjects who had lower abdominal incisions, and 178 subjects who were in the "other" incisions category.

A randomized group design was used while conducting a 2x2x3x3 factorial experiment with unequal replication. A factorial experiment was considered the most efficient approach and would provide for the evaluation of both main and interaction effects. Also, a factorial experiment would enable an investigator to make decisions which would have a broad range of applicability.

The results of the study by Lindeman (1972) indicated that there were no significant differences for the main effect between the adjusted mean postoperative ventilatory function test values for subjects who received individual preoperative instruction and those who received group instruction. The mean length of hospital stay for

subjects who received individual instruction was 8.68 days. The mean length of hospital stay for subjects who received group instruction was 6.67 days. The analysis of variance applied to these data shows that this difference of approximately 2 days was significant. There was no significant difference in the mean number of analgesics administered during the first 72 postoperative hours to subjects who had received individual instruction and subjects who had received group instruction. There was a significant difference in the mean length of learning time for subjects who received individual instruction and those who received group instruction. The mean length of learning time for subjects who received group instruction was 1.80 minutes and 4.14 minutes for subjects who received individual instruction.

In relation to the effects of age on ventilatory function, the F ratios indicated that there was no significance. The F ratios for the main effect of age upon length of hospital stay was significant. Significance was detected with the F ratio for the main effect of age upon number of analgesics.

In relation to smoking history, there was no significance detected by the F ratio for the main effect of smoking history on ventilatory function. There was no

significant difference in the mean length of hospital stay for smokers and nonsmokers. There was no significant difference in the mean number of anagesics administered during the first 72 hours postoperatively for smokers and nonsmokers.

In relation to site of incision, the *F* ratios for the main effect of site of incision upon ventilatory function were significant. The differences were not significant in relation to mean length of hospital stay for subjects who had major chest, neck, and upper incisions, subjects who had lower abdominal incisions, and subjects who had other incisions. There was significance detected by the *F* ratio for the main effect of site of incision upon number of analgesics administered.

The benefits of utilizing group instruction are presented by Mezzanotte (1970). She proposed that group instruction provided more adequate instruction for more patients, a definite time and place for instruction, a consistent presentation of the instructions, and the assignment of one nurse to give the instruction. Also, the patient received the possible therapeutic value of group participation. Group instruction was selected by Mezzanotte because of the success of group sessions in other areas of health education.

The study conducted by Mezzanotte (1970) was limited to patients having elective abdominal surgery. Detailed preoperative instructions were given to six groups of patients with four patients being included in each group. General instructions in preparation for surgery, hospital policies concerning surgical patients, suggestions about the control of pain, and activity that would promote satisfactory recovery were four major areas of information included in the study.

The 24 patients in the study were interviewed postoperatively. Fifteen patients said they had gained ability to participate properly in the activity after surgery. Twelve patients reported that their questions had been answered. Twelve patients revealed that they had gained knowledge about how to improve their recovery. Eleven patients stated they enjoyed the interaction with other patients who were anticipating surgery. Seven patients reported liking group discussion and two reported that their anxiety had been lessened.

Patients in the study were asked to give a preference for either group instruction or individual instruction. Twenty patients reported that they preferred the group session. One patient was uncertain and two said that they would prefer individual instruction.

The Halifax Infirmary pioneered the use of an admission unit whose goal and purpose was to educate the preoperative patient about the surgical experience in order to reduce anxiety and fear of the situation. Prsala (1974) discussed the primary functions of the admission unit. The patient was admitted to the unit for a stay of approximately 4 to 5 hours. The patient was informed about the length of his stay in the unit and the various tests and preoperative preparations that would be performed. Special emphasis was placed on informing the patient of every aspect of the experience. Deep breathing, coughing, and turning exercises were demonstrated, and the reason for needing to perform them was explained. Patients were presented a slide show which included information about preoperative tests, preoperative medication, the recovery room, and intravenous solutions. The patient also viewed, via the slides, members of the health team who would possibly be in contact with him during his hospitalization.

Merkatz, Smith, and Seitz (1974) developed a teaching program for gynecologic patients which provided the patients with information about preoperative and postoperative procedures and important hospital routines. The program also provided the patients an atmosphere which was

conducive to expressing feelings and sharing anxieties and information. The role of the instructor was to meet with all preoperative patients in a group or individual conference.

Merkatz et al. (1974) surveyed patients by an open-ended questionnaire. Responses from 105 questionnaires revealed 97 patients did not feel well informed about the surgery before admission. Cancer, surgery itself, anesthesia, and pain were reported as being of greatest concern to the patients. Ninety-three patients stated that nurses' explanations were helpful. Seventy-eight patients believed it was helpful to discuss their feelings.

Questionnaire responses did not reveal patient preferences for either individual or group instruction. Group instruction was utilized for groups of patients who were scheduled for the same type of surgery. Individual conferences were held when a patient demonstrated signs of stress.

A study of 100 patients who had open-heart surgery provided information which was useful in selecting information to teach patients in the preoperative period. Weiler (1968) asked the patients to rate information commonly used in giving preoperative instructions. The areas of instruction which were most important to patients were

the techniques involved in teaching coughing and deep breathing; information about pain, such as the amount of pain that might be experienced after surgery; information about oxygen and chest tubes; information describing intensive care; information about seeing a minister, priest, or rabbi; and communication of information to relatives.

Patients in this study were given the opportunity to write information which they felt should have been included in the preoperative teaching. In reference to pain, patients made statements that they would explain to the patient that he should be prepared for more pain than he had ever experienced or to express to the patient that the surgery is very painful. In contrast to the patients who wanted to know more about pain, some patients expressed the need to limit this information so as to prevent fear of pain.

Patients and nurses have shown differing opinions about what they feel is important to know about a patient's illness and hospitalization. Dodge (1972) reported findings obtained from a 60-item questionnaire which was administered to 139 patients and 62 nurses in which they were asked to rate the importance of various kinds of information.

Patients and nurses were in agreement that patients should be informed about what is wrong with them, how long the illness is likely to involve them, and how they can participate in their own care. Patients and nurses thought that it was important for patients to be informed about what symptoms to expect and the kind of care they would need. Information about anesthesia, feelings after tests, and X-rays was ranked as moderately important for patients to know.

Findings from the questionnaire indicated major disagreements between nurses and patients related to information patients should be told. Patients rated highly information about the seriousness of their condition, chances of recovery and recurrence, and results of their operation and diagnostic work. Nurses did not report that they felt this information was important.

Patients were more concerned than nurses were with the name and effects of their medications, knowing the causes of their conditions and symptoms, and various procedures that had been performed. Nurses, in contrast, rated as important the fact that patients should know what to expect regarding their care, what to expect during tests and X-rays, what to expect in terms of hospital routines and policies, and what to expect regarding their

activity restrictions and other required modifications in daily living.

A survey of 96 medical-surgical patients was done to determine what they felt was important about diagnostic tests which had been performed. Dlouhy, Erikson, Jedlicka, Imburgia, Ipavec, and Kiewlich (1963) found that patients wanted to know why a test was to be done and how the test was to be done. Patients were concerned with how the equipment used in a test would affect them. It was important to patients to know what they could do to assist with the test. Findings of the survey also indicated that it was important to patients to know that the person performing the test was competent. Patients indicated that having knowledge of the meaning of test results was important to them.

These findings have several implications for nursing practice. First, the nurse can offer a general explanation of the tests and relate information on how the tests will be performed. The nurse should relate information about how a particular part of the body will be affected by a test. The nurse will need to discuss with the patient what is expected of him; for example that he is not to eat or drink anything after midnight or that he is to save all urine for a 24-hour urine specimen.

In an attempt to improve health education techniques, Dodge (1969) studied a group of medical and surgical patients to determine what information they felt was necessary to possess in order to adjust to their illness and hospitalization. Patients were particularly concerned with questions of diagnosis. Patients were concerned with knowing both what was wrong with them and what the status of their general condition was at the time of hospitalization. Patients demonstrated a strong desire to know what the cause of their condition was; both immediate causes and the possible influence of previous conditions.

Patients expressed a desire to know the effects of their condition on their futures, both long-term and short-term. Questions were posed by patients regarding the chances of their condition recurring and the probabilities of their being able to resume living as they had known it before the present problem occurred.

Patients were concerned with the type of activity restrictions which would be imposed. They wanted to know the total time involvement required for treatment of the disease or surgery and the expected length of stay in the hospital environment.

In a study reported by Carlson and Vernon (1973), a questionnaire called the Staff Information Questionnaire

was designed to assess the informativeness of persons responsible for the care and treatment of patients who experience surgery. The characteristics, a set of subscales, represented topics which might be discussed with surgical patients preoperatively. The subscales included were the condition of the patient and specific information about surgery, preoperative procedures, postoperative nausea, intensive treatment and recovery room, postoperative discomfort and relief, anesthesia, suctioning postoperative procedures, postoperative medications, and drainage tubes.

Carlson and Vernon (1973) suggested that the instrument developed in this study could be used in research conducted on variables that influence patterns of information giving. Areas of study might include informativeness and age, type of education program, socioeconomic status of the patient, age of the patient, and time available with patients.

A study conducted by Egbert, Battit, Welch, and Bartlett (1964) included 97 patients awaiting elective intra-abdominal surgery. The patients were divided into a control group and a special care group. The special care group was visited by an anesthetist and told where they would feel pain, how severe it would be, how long it

would last, and that having pain was normal after abdominal surgery. The special care group was also told what would be done about the pain. Instructions were given concerning the cause of the pain and that they could relieve most of the pain themselves by relaxing the muscles under the incision. They were told that relaxation could be achieved by slowly taking a deep breath and consciously permitting the abdominal wall to relax. Instructions were given concerning how to turn onto one side by using their arms and legs while relaxing their abdominal muscles. They were told to request medications if they could not achieve a reasonable level of comfort.

Egbert et al. (1964) found that the special care group of patients required 50% less narcotics in the postoperative period and that they were ready for discharge 2.7 days before the control patients. The study indicated that the anesthetist's role in pain relief should be extended to include caring for patients on the surgical units.

The willingness of patients to related their needs to nurses is extremely important in patient teaching. Gowan and Morris (1964) reported findings of a study done with 52 adult postoperative patients concerning expressed patient needs and the responses given by registered

nurses, licenced vocational nurses, nurse aides, and orderlies.

After interviewing patients regarding their unstated requests, Gowan and Morris (1964) reported that patients viewed nurses as too busy, disapproving, and persons whom they hated to bother. Findings demonstrated a need to change patients' perception of postoperative care. These researchers questioned the findings of this study as being a good indicator of satisfaction with the care received when there was such a high proportion of unstated requests.

Postoperative Pain and Personality Traits

The emotional drive theory was used in a study designed by Johnson, Dabbs, and Leventhal (1970). This theory predicted that a moderate level of preoperative fear will motivate the work of worry which results in postoperative adjustment. Emotional responses, which were measured by mood scores and evaluations of pain, clustered together and were related to chronic anxiety. The study which consisted of a sample of 62 female surgical patients who had abdominal surgery, indicated that more fear before surgery was closely related to more negative moods and more negative evaluations of pain after surgery.

Chronic anxiety was found to be a predictor of pre- and postoperative emotional responses.

Results from the study showed that the evaluations of pain were associated with preoperative fear and with the patient's birth order. First borns had a tendency to evaluate pain as more severe and this tendency appeared to be related to emotional responses.

In a study conducted on 50 male patients who were undergoing elective gastric surgery, Parbook, Steel, and Dalrymple (1973) studied several factors preoperatively which could be correlated to postoperative pain. Each patient's personality was assessed by means of the PEN (Psychoticism, Extraversion, and Neuroticism) Inventory. Vital capacity was assessed using a Morgan Mark II spriometer. The pain threshold was measured by tibial pain technique using a pressure algesimeter.

Twenty-four hours after surgery, the patient's pain was assessed using a graphic method. This graphic method consisted of a 10 centimeter line which had at the left-hand end "I have no pain" and at the right-hand end "My pain is as bad as it can be." The patient was asked to mark with a pencil on the line where he felt it would indicate the pain he was experiencing. Also, postoperatively the pain threshold readings were repeated and the

patient's vital capacity was recorded. Finally, the number, dose, and type of narcotic injections received by the patients in the first 24 hours after surgery were also recorded.

A late postoperative assessment was done to determine the presence of chest complications. Postoperative vital capacity measurements were taken again on the sixth postoperative day.

The results of the study by Parbrook et al. (1973) showed correlations between neuroticism, postoperative pain, and vital capacity impairment and complications. Parbrook et al. (1973) postulated that the patient's neuroticism makes him more susceptible to postoperative pain and pulmonary complications. These researchers cited the importance of checking the neuroticism scores of the groups being compared in pain studies or studies of postoperative complications. This study suggested that it may be possible to identify on a group basis those patients who are more likely to have severe pain and complications.

In a study of 50 female patients who were undergoing elective cholecystectomy, Dalrymple, Parbrook, and Steel (1973) studied the same preoperative factors and how they were related to postoperative pain and complications.

Results of the trial showed that there was a significant relationship between the neuroticism scores and vital capacity impairment and chest complication scores. The fact that neuroticism was found to be of importance in this second study with a different type of patient makes it more likely that neuroticism is of general importance in postoperative pain assessment.

Blitz and Dinnerstein (1968) discussed the use of suggestion, instructions, and placebos in the study of pain in the clinical area. The mechanism at work in this situation was strong belief. Placebo effects, hypotic analgesia, and voluntary attempts to imagine were based on a common process in which a subject reorganized or reinterpreted somesthetic experience so as to perceive it as less painful.

A group of 24 male college students served as subjects for the experiment. An electric shock was administered using normal saline solution electrodes. There were three conditions selected and subjects were randomly assigned to one of three conditions. The conditions consisted of the threshold instruction group, the quit-point instruction group, and the control group.

Blitz and Dinnerstein (1968) found that pain-threshold scores were significantly elevated by

pain-threshold instructions. The Mann-Whitney U test comparison with controls was $U = 2$, $p = .001$; and with quit-point group was $U = 3$, $p = .002$. The group receiving threshold instructions also had an elevated drug request point. The difference scores from the controls were $U = 6$, $p = .004$; and the difference scores from the quit-point instruction group was $U = 6$, $p = .004$. The group receiving quit-point instructions and the group receiving threshold instructions had an elevated quit-point. The quit-point instruction group difference from the controls was $U = 9.5$, $p = .02$; the difference for the threshold instruction group was $U = 4$, $p = .002$.

Blitz and Dinnerstein (1968) stated:

> It is not clear from the present data whether the observed elevated pain threshold was due to an alteration in the perception of pain, or rather due to a shift in S's criteria for the use of a verbal response "pain," a type of response bias. (p. 279)

In addition, the findings of this study are probably dependent upon the type of noxious stimulation utilized. The results also indicate that in the perception of a noxious stimulus, judgments made about comfort and discomfort may be rather different from judgment of relative painfulness.

Blitz and Dinnerstein (1971) conducted a study to demonstrate the potential effect of instructions in producing dissociation and analgesia in a population of normal individuals. The subjects in the study were 36 paid volunteers who were from a population of personnel and students at a college. There was random assignment of subjects to one of three groups: a control group, Experimental 1 group, and Experimental 2 group. Five trials were utilized in the experiment. The first three trials were the same for all groups, in which they were asked to place their right hands in a tank of ice water which served as the noxious stimulus. The fourth and fifth trials were different for the Experimental 1 and Experimental 2 groups. The Experimental 1 group was instructed to focus their attention and concentrate on the cold and try to forget the discomfort or pain. The Experimental 2 group was instructed to imagine that it was a very hot day and that the water was refreshing and pleasantly cool. Both groups were also instructed to report what they would call "pain" and then to continue to keep their hand in the water as long as possible.

The results of the study indicated an elevated threshold in response to instructions. Attempts to redirect focus of attention, dissociate different aspects of the

noxious stimulus complex, and reinterpret some of the aspects are shown to possess analgesic effectiveness. The conceptualization stressing the role of attentional and cognitive process in pain perception is further supported by the findings of this study.

Corah and Boffa (1970) tested the hypothesis that a choice variable provided a degree of perceived control over an aversive stimulus. They predicted that aversive stimuli would be less arousing under choice instructions than under no-choice instructions. A group of 20 male and 20 female introductory psychology students volunteered as subjects for the study. The subjects were placed in either a choice or a no-choice condition in which they listened to white sound which served as an aversive stimulus. Different instructions were given to the subjects in both conditions regarding continuing or discontinuing the sound when it became uncomfortable. A 7-point scale was used for rating the white sounds.

> A mixed analysis of variance design was used with escape-no escape as the within condition and six choice-no choice conditions as between effects. The analysis of the discomfort ratings gave three significant effects. Women rated the sounds as producing more discomfort (M = 5.79) than did the men (M = 5.37). No-escape trials were rated as producing more discomfort (M = 5.67) than were escape trials (M = 5.50). The test of major interest was the Escape X Choice Conditions

interaction which was significant. (Corah & Boffa, 1970, p. 3)

The findings of this experiment suggested a determinant of the cognitive appraisal of threat is a sense of control. When a method provides a subject the choice of avoiding or not avoiding the aversive consequences of a stimulus, it is the same as giving him perceived control over the potential threat.

Ethnic and Cultural Factors and the Response to Pain

Pain responses of a group of 18 Southern Negroes was compared with those of a group of 18 Americans of North European ancestry by Chapman (1944) and Chapman and Jones (1944). They were matched for age and sex, and the Hardy, Wolff, and Goodell (1944) radiant heat method was utilized with stimulation to the forehead. The Negroes were found to have a lower pain threshold than the North Europeans, which indicated that they were more sensitive to pain. Also, the Negroes were found to have a much lower pain reaction threshold than the North Europeans. Chapman and Jones (1944) found that pain perception and reaction thresholds in 30 Russian Jewish and Italian subjects were similar to those of the Negroes, which indicated that they were much lower than those of the North Europeans.

There was a conclusion by Chapman and Jones that differences exist in pain sensitivity and pain tolerance due to ethnic factors.

The radiant heat technique of Hardy et al. (1944) was applied to the back of the hand by Meehan, Stoll, and Hardy (1954) in a study of 26 Alaskan Indians from Fort Yukon, 37 Eskimos from the Endicott Mountains, and 32 Whites from the Ladd Air Force Base. Findings from the study indicated that the Eskimos had a higher pain threshold than the Whites and Indians. However, after a conversion formula was applied to correct for skin temperature, Meehan et al. found that the Whites had the highest and the Eskimos the lowest pain thresholds. The differences found were not statistically significant.

Pain reactions of 28 White and 11 Afro-Asian male medical students were compared by Merskey and Spear (1964). A simple mechanical device for experimental pain induction by pressure, the pressure algometer, was used. Merskey and Spear found no significant differences between the White and Afro-Asian students in the verbal report of pain, pain reaction point, and the reaction interval.

Pain and skin potential response to electric shock were studied by Sternback and Tursky (1965) in 60 housewives, divided into 4 ethnic groups of 15 women each. A

variety of physical variables such as age and height-weight ratio were studied and no significant differences between the groups were noted. Consistent differences among the group were found both at pain threshold and pain tolerance levels, but these reached significance only at pain tolerance. It was found that Italian women differed significantly from both "Yankee" and Jewish women. The highest mean scores at pain tolerance levels were attained by the "Yankees" followed by the Jews and then the Irish, with the Italians attaining the lowest mean scores. It was concluded by Sternback and Tursky (1965) that attitudinal differences among these four subcultures accounted for the psychophysical and autonomic differences.

Effects of religious affiliation rather than ethnic group on pain tolerance was studied by Lambert, Libman, and Poser (1960). The Hollander (1939) technique which induces pressure pain was utilized to study 80 female students, 40 Jewish and 40 Protestant, between the ages of 18 and 23. It was found in the first administration that the mean pain tolerance scores for the Jewish groups were somewhat, but not significantly, lower than those for the Protestant groups. In a second experiment, it was found that the experimental Jewish subgroup significantly

increased its mean pain tolerance, whereas neither the Jewish controls nor the two Protestant subgroups showed significant changes in their pain tolerance. These results indicated that Jews try to become more like the majority group when they are made aware of differences, whereas the Protestant groups did not.

A total of 88 subjects was used by Poser (1963) which was divided into Jewish and Roman Catholic groups. Poser used the Hollander technique and employed Jewish and Roman Catholic experimenters. The pain sensitivity range (PSR) was the measure of pain tolerance used by Poser (1963). The Jewish students with a Jewish experimenter had a significantly lower mean PSR than the Roman Catholic students. It was indicated by an analysis of variance that the ethnic origin of the subject was a very significant factor with the ethnic origin of the experimenter being a significant second factor.

Woodrow, Friedman, Siegelaub, and Callen (1972) reported a study in which 41,119 subjects participated in the Automated Multiphasic Screening (AMS) Examination at the San Francisco or Oakland Multiphasic Testing Laboratories. The pain tolerance test was given as a routine part of the AMS Examination. The differences in age, sex, and race were studied in relation to pain tolerance.

The results of the study indicated that there were consistent and statistically significant differences in pain tolerance according to age, sex, and race. Males and females both showed decreased pain tolerance with increasing age. Males, age 60 and over, showed about two-thirds to three-fourths the pain tolerance of those under 30. For females the decrease with age was also steady but less marked. Men were found to be more tolerant of pain than women. The oldest men in the study had a higher pain tolerance than the youngest women. There was consistency in both sexes in relation to racial differences, but these were less marked than were differences by age and sex. Orientals showed the lowest average pain tolerance, Blacks were second, and Whites showed the highest average pain tolerance.

Woodrow et al. (1972) employed an instrument which applied calibrated pressure to the Achilles tendon instead of to the skin of the forehead or arm. The selection of measurement of deep pain was made because it was assumed that deep pain was more significant clinically than superficial pain. At this time, the pain tolerance test results from this study have not been shown to be correlated with clinical pain.

Summary

A review of the utilization of structured and unstructured teaching and the effects of this teaching on postoperative pain and recover from surgery has been presented. A brief discussion of personality traits, cognitive components, and cultural and ethnic factors has been included.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

A quasi-experimental approach was used for the study (Polit & Hungler, 1978). The study included manipulation of an independent variable and use of a control group, but was lacking randomization of the subjects. Polit and Hungler (1978) stated that quasi-experimental studies involve the manipulation of an independent variable but will lack either the randomization or control group aspect. The independent variable was structured preoperative instruction, and the dependent variable was postoperative pain.

Setting

The study was conducted in a city of 45,000 population, located in the southern region of the United States. The site of the study was a 241 bed general hospital which serves the population of the city and a large rural population.

Two surgical units were utilized for the study. Both units were 36 bed, single occupancy units. Patients who

had all types of surgical procedures performed, except orthopedic and ophthalmic surgery, were hospitalized on these units.

Surgeons practicing in the hospital utilized traditional medical and surgical protocols in treating their patients. The surgeons admitted patients the evening before surgery. Laboratory studies, electrocardiograms, and radiological studies were done the evening before surgery.

The registered nurses on the units had varied educational preparations. However, the majority of nurses had been prepared in an Associate Decree Nursing Program. Other personnel on the units consisted of licensed practical nurses and nursing assistants. On the patients' admission, the registered nurse completed a nursing history, instructed the patients about expected procedures, and oriented him or her to the physical environment.

Population and Sample

The population of the city and surrounding rural areas was approximately 50% black and 50% white Anglo-Saxon Americans. Residents of the area were in the low to middle income status and occupy jobs in farming, small factories, and state civil service positions. The

population for the study was composed of adult, female patients between the ages of 20 and 65 scheduled for non-emergency intra-abdominal surgery.

In order to be included in the study, subjects had to be able to speak the English language. Subjects had to be free of visual and hearing problems if they were to be included in the study. Subjects who had experienced no pulmonary, cardiovascular, or gastrointestinal complications postoperatively were included in the study.

The sample consisted of a minimum of 32 subjects who were obtained through convenience sampling. Convenience sampling involves the use of the most readily available persons or objects for use as subjects in a study (Polit & Hungler, 1978). Convenience sampling is probably the most commonly used sampling method but is considered to be the weakest form of sampling (Polit & Hungler, 1978). Individuals who met the specifications for the study were identified from the list of patients on the operating room schedule which was posted on the surgical units. All subjects included in the sample were female patients.

Protection of Human Subjects

Before conducting this study, an application was made to the Human Subjects' Review Committee of Texas Woman's

University to obtain permission to conduct the study. The application contained a brief description of the study, steps taken to protect the rights and welfare of the subjects, the method for obtaining informed consent from the subjects, and how the subjects were to be given the opportunity to express their willingness to participate in the administration of questionnaires. After permission was granted by the Human Subjects' Review Committee (Appendix D), permission was obtained from the agency in which the study was conducted (Appendix E). Surgeons practicing in the area where the research was conducted were sent a letter in which they were asked for permission to obtain informed consent from their patients (Appendix F).

All prospective participants for the study received a verbal explanation of the study (Appendix G). They were told that their participation in the study was voluntary and that they would be able to withdraw their participation from the study at any time during the study without any penalty. Each participant was asked to sign an informed consent form for the study (Appendix H)

All participants were told that information would remain confidential, that their names would not be included in the research report, and that only group data

would be reported. Each questionnaire had a code number and, in addition, the researcher maintained a list of patient names which was needed to complete the analysis of the data. The list with patient names was destroyed after the study was completed.

Instruments

The McGill-Melzack Pain Questionnaire (Appendix B) was one tool used for the study. Written permission to use this tool was obtained (Appendix I). This tool was developed by Melzack and Torgerson (1971) in a study in which "subjects were asked to classify 102 words, obtained from clinical literature relating to pain, into smaller groups that describe different aspects of pain experience" (Melzack, 1975, p. 278). The second step was to create categories of words consisting of 3 major classes and 16 subclasses. The classes were composed of words that describe sensory qualities, affective qualities, and the evaluative aspect of the pain experience. Other groups of words which subjects felt were similar in quality were placed in the subclasses (Melzack, 1975).

There are four types of data which can be obtained from the tool. They are as follows:

(1) Pain rating index based on the patients' mean scale values obtained by Melzack and

> Torgerson, designated henceforth as the PRI(S). This consists of the sum total of the scale values of all the words chosen in a given category (sensory, affective, etc.) or for all categories.
> (2) Pain rating index based on the rank values of the words--PRI(R). In this scoring system, the word in each subclass implying the least pain is given a value of 1, the next word is given a value of 2, etc. The values of the words chosen by a patient are then added up to obtain a score for each category, and a total score for all categories.
> (3) The number of words chosen (NWC).
> (4) The present pain intensity (PPI)--the number-word combination chosen as the indicator of overall pain intensity at the time of administration of the questionnaire. (Melzack, 1975, p. 283)

Validity

Melzack (1975) used the pain questionnaire to determine the relative effectiveness of alpha-feedback training, hypnotic training, and a combination of both procedures in the treatment of several pain syndromes. The questionnaire was administered before and after each session for each patient. An analysis of the data revealed that as a whole there was consistency among all the scores. There was no statistical significance shown in the NWC scores. The PRI(R) was found to be a more valid index of a decrease in pain in the various categories. The PPI difference scores were statistically significant, but failed to reflect changes in pain as satisfactorily as the PRI(R).

Reliability

There is evidence of reliability of the questionnaire since Melzack (1975) indicated measures taken to demonstrate internal consistency among various parts of the questionnaire. Melzack presented correlation coefficients of static pain questionnaire scores, correlations based on percentage changes in pain scores, and correlations based on individual syndromes.

The static pain questionnaire scores revealed a high correlation between the scale and rank value methods for determining the PRI scores for each category. Melzack (1975) found that intercorrelations were higher than .9 for all categories ($p < .05$: .14; $p < .01$: .18). The intercorrelations among the various subclasses were almost at the same level. The NWC correlated highly with the PRI when they were calculated with either the scale or rank value.

The ratings of overall present pain intensity correlated significantly with the total number of words chosen and the PRI(R) for each category and for all categories together. Correlations based on percentage changes in pain scores were found to be "highly significant statistically and indicate an internal consistency among

different categories of the PRI and among the three indices in the questionnaire" (Melzack, 1975, p. 286).

Structured Teaching Plan

The instrument used for applying treatment was a structured teaching plan devised by the researcher (Appendix A). The teaching plan was based on Gagne's hierarchial learning theory, and includes objectives, content, teacher activities, patient activities, and evaluation. The teaching plan had not been utilized in a research study or teaching situation so there was no data available to determine its effectiveness.

Standard Teaching Plan

The researcher presented information to subjects in the control group which was usually given by staff nurses. Information included coughing, deep breathing, turning, and leg exercises. Explanations were also given concerning assistive devices, skin preparation, and preoperative medications.

Data Collection

The subjects were given an oral explanation of the study on the evening before surgery and were asked to participate. A signed consent form (Appendix H) was

requested of each subject. It included consent to be included as a subject in the study.

Subjects in the treatment group were presented a structured teaching plan on the evening before their scheduled surgery the following day. Information about pain and discomforts that are usually experienced by post-operative patients was presented. The structured teaching plan was presented by the researcher and was 15 minutes in length. The researcher gave the subjects in the control group the usual preoperative instructions used in the hospital selected to be the setting for the study. The usual preoperative instructions included content relating to approximate time preoperative medication was to be administered, effects of preoperative medication, time of surgery, approximate length of stay in the recovery room, postoperative exercises, and equipment that would be used to meet physiological needs during the postoperative period.

Each subject in the control group and treatment group had the McGill-Melzack Pain Questionnaire (Appendix B) administered to them 32 hours postoperatively. A research assistant administered the questionnaire to all subjects. Initially, the questionnaire required 15-20 minutes to

administer. After the assistant had gained experience, it took 5-10 minutes to complete.

The research assistant read the instructions out loud to each subject. The subject was then asked to respond verbally to the items on the questionnaire and her responses were recorded on the questionnaire by the research assistant. The research assistant was instructed to give the subjects definitions of words if they were beyond the subjects' vocabulary.

The research assistant was a 25-year old female enrolled in an Associate Degree Nursing Program. At the time the study was conducted she was enrolled in a medical-surgical nursing course. The researcher and research assistant met for a 1-hour training session in which the McGill-Melzack Pain Questionnaire was discussed. Each part of the questionnaire was fully explained and the research assistant was instructed in how to approach the subjects, how to explain the instructions, and how to record the subjects' responses. The researcher accompanied the research assistant to the surgical units for the first five times to be available to answer questions and solve potential problems. The research assistant was paid for her work in the research project.

Treatment of Data

The three types of data which were treated statistically were the Pain Rating Index (Rank), PRI(R); Number of Words Chosen (NWC); and Present Pain Intensity (PPI). Part two of the questionnaire contained 20 subclasses or subcategories of words that described pain. Categories 1 through 10 were descriptive of the sensory component of pain. Categories 11 through 15 were descriptive of the affective component of pain. Category 16 was descriptive of the evaluative component of pain and categories 17 through 20 were miscellaneous word descriptors of pain.

A sum of the rank values for PRI(R) values of each of the four major categories was done for the control group and the treatment group. The sums of PRI(R) for each of the major categories was then totaled. A *t*-test was then done to determine if there was a significant difference between the two groups.

The NWC scores were determined by computing the mean for all subjects in each of the two groups. A *t*-test was then done to determine if there was a significant difference between the control group and the treatment group. In computing the PPI, a mean score was obtained for each group and than a *t*-test was done to determine statistical significance between the two groups.

Summary

An explanation of the setting, population and sample, and protection of human subjects has been presented. The instrument utilized in the study, the McGill-Melzack Pain Questionnaire, has been discussed. The information about the reliability and validity of the instrument has also been discussed. An explanation of the structured teaching plan, method of data collection, and the type of statistical analyses which will be employed has been presented.

CHAPTER 4

ANALYSIS OF DATA

An analysis of data is presented which consists of a description of the sample and results of the study. Each null hypothesis is stated and the findings of the study are related to each null hypothesis.

Description of Sample

The sample for this research study consisted of 32 female patients. There were 16 subjects in the treatment group and 16 subjects in the control group. The age range for subjects in the treatment group was 20 to 63 years of age, and the age range for subjects in the control group was 27 to 61 years of age. There was 1 Black subject and 15 Caucasian subjects in the treatment group and 4 Black subjects and 12 Caucasian subjects in the control group.

Intra-abdominal surgery was performed on all subjects, but there were various surgical procedures performed in each of the groups. In the control group there were three cholecystecomy procedures, one exploratory laparotomy, nine total abdominal hysterectomy with bilateral salpingo-oophorectomy procedures, one total abdominal

hysterectomy, one total abdominal hysterectomy with anterior repair, and one partial left colectomy procedure.

In the treatment group there were two cholocystectomy with appendectomy procedures, one exploratory laparotomy with right salpinto-oophorectomy and appendectomy, nine total abdominal hysterectomy with bilateral salpingo-oophorectomy procedures, one total abdominal hysterectomy, one gynecology laparotomy with uterine suspension, one total abdominal hysterectomy with left nephrectomy, resection of sigmoid colon, descending colon colostomy, and one hiatal hernia repair.

Findings

Hypothesis One

The hypothesis which stated that there is no difference between the PRI(R) scores achieved by the treatment group and control group of subjects on the McGill-Melzack Pain Questionnaire was accepted. The *t*-test was performed on the data for the treatment group and the control group. The results showed no significant difference between the two groups. Table 1 shows the mean, standard deviation, and *p* value for the Pain Rating Index (PRI)(R).

Table 1

Mean, Standard Deviation, and *p* Value for Pain Rating Index (PRI)(R)

	Control Group	Treatment Group
Mean	34.56	30.44
Standard Deviation	14.50	13.84
Number	16	16

Note. $p = .417$; $t = .82$

Hypothesis Two

The hypothesis which stated there is no difference between the PPI scores achieved by the treatment group and control group of subjects on the McGill-Melzack Pain Questionnaire was accepted. The *t*-test was performed on the data for the treatment and the control group. The results showed no significant difference between the two groups. Table 2 presents the mean, standard deviation, and *p* value for the Present Pain Intensity (PPI).

Hypothesis Three

The hypothesis which stated that there is no difference between the number of words chosen (NWC) scores achieved by the treatment group and control group of patients on the McGill-Melzack Pain Questionnaire was

Table 2

Mean, Standard Deviation, and *p* Value for Present Pain Intensity (PPI)

	Control Group	Treatment Group
Mean	2.44	2.00
Standard Deviation	1.15	.73
Number	16	16

Note. $p = .21$; $t = 1.28$

accepted. The *t*-test was done on the data for the treatment group and control group of subjects. The results showed no significant difference between the two groups. Table 3 displays the mean, standard deviation, and *p* value for the number of words chosen (NWC).

The inference which may be drawn for the two groups of subjects in this sample is two-fold. The subjects were alike regarding the rating and intensity of their pain and on the number of words chosen to describe their pain.

Summary of Findings

The findings of this study were as follows:

1. There was no significant difference between the PRI(R) scores achieved by the treatment group and the control group of subjects.

Table 3

Mean, Standard Deviation, and *p* Value for Number of Words Chosen (NWC)

	Control Group	Treatment Group
Mean	14.75	13.31
Standard Deviation	3.89	3.52
Number	16	16

Note. $p = .282$; $t = 1.10$

2. There was no significant difference between the PPI scores achieved by the treatment group and the control group of subjects.

3. There was no significant difference between the number of words chosen (NWC) scores achieved by the treatment group and the control group of subjects.

CHAPTER 5

SUMMARY OF THE STUDY

The problem of this study focused on determining the effects of structured preoperative instruction on the pain rating index scores, present pain intensity scores, and number of words chosen scores achieved by the treatment group and control group of subjects on the McGill-Melzack Pain Questionnaire. The null hypotheses for the study stated that there would be no significant difference between pain rating index scores, present pain intensity scores, and number of words chosen scores achieved by the treatment group and control group of subjects on the McGill-Melzack Pain Questionnaire.

Summary

A quasi-experimental approach was selected for the study. The sample consisted of 32 female preoperative patients who were awaiting intra-abdominal surgery. A structured preoperative teaching plan, which was the independent variable, was presented to each subject in the treatment group. Subjects in the control group were given the usual preoperative information presented to all

patients awaiting surgery. Thirty-two hours postoperatively, each subject was asked to complete the McGill-Melzack Pain Questionnaire. A research assistant was utilized to administer the questionnaire. After completion of the study, the pain rating index scores, present pain intensity scores, and number of words chosen scores were computed and a *t*-test was used to detect a possible significant difference between the scores. Findings of the study indicated that there was no significant difference between the two groups on their pain rating index, present pain intensity, and the number of words chosen to describe their pain.

Discussion of Findings

Since this study was based on the aspect of the gate-control theory of pain which focuses on the control of sensory input by central nervous system activities, the teaching which was presented may not have been sufficient to influence enough control of brain processes over input by peripheral small diameter fibers. In addition to explaining the types of pain and discomfort and causes of the pain, the patient may have needed information on what they could do for themselves to relieve their pain. This information would have provided them with an additional

degree of control over the pain. Perhaps the findings would have been significant if an intervention would have been included to create a balance of activity in large and small diameter fibers.

Since the patients in the sample were required to learn only basic concepts about pain, it is felt that the intellectual skills taught were not too difficult for the learner. The findings for the study may have been affected by the events of learning as stated by Gagne (1977). Researcher interaction with the learner during the teaching-learning situation indicated that the learner was involved in the process of attending. The learner demonstrated eye contact, nodding, and the like during the interaction. According to Gagne (1977), information attended to will enter the short-term memory. The problem in the processing of information may have been with the process of encoding the information into the long-term memory. The short duration of time devoted to teaching or the instructional events may have been insufficient in promoting the encoding of information into the long-term memory. Failure to encode information will lead to failure in the storage and retrieval processes.

The findings of this study were congruent with Lindeman and Van Aernam (1971); however, their structured

teaching did not consist of information about expected postoperative pain. In the study conducted by Lindeman and Van Aernam (1971), the researchers hypothesized that structured preoperative teaching about turning, coughing, and deep breathing would significantly reduce the need for postoperative analgesics for the adult surgical patient. This hypothesis was rejected. Johnson et al. (1978) found a main effect for instruction on the number of doses of analgesics received from midnight the day of surgery to midnight the third postoperative day. Patients in this sample were provided with instructions in deep breathing, coughing, leg exercises, turning in bed, and getting out of bed. Again, no information was given in relation to the pain which would occur postoperatively.

The findings of the present study are not in agreement with the study conducted by Miller and Shada (1978). In Miller and Shada's (1978) study, nurses presented preoperative instruction following the standard procedure of the institution. Information was provided to patients about incisional pain and pain while deep breathing and coughing. Patients in this study reported few complaints of incisional pain postoperatively.

The findings of the present study were in agreement with the findings reported by Perri and Perri (1979).

Perri and Perri (1979) investigated the effectiveness of relaxation training as a method for coping with clinical pain. This study is more closely related to the present study being reported even though the content of the teaching was different. Pain was assessed by administering the McGill-Melzack Pain Questionnaire and the Chambers-Price Scales for Pain. The number of pain medications received was also compared. Reduction of clinical pain was not accomplished by the use of relaxation training.

Although the present study did not focus on the study of chronic anxiety or neuroticism and their relationship to pain, there is evidence that these factors are important in the study of postoperative pain. Johnson, Dabbs, and Leventhal (1970) studied a group of 62 female surgical patients and found that mood scores and evaluations of pain were related to chronic anxiety. Chronic anxiety was found to be a predictor of pre- and postoperative emotional responses. In a study conducted by Parbrook et al. (1973), results showed correlations between neuroticism, postoperative pain, and vital capacity impairment and complications. The sample for this study consisted of 50 male patients who were undergoing gastric surgery. In another study, Dalrymple et al. (1973) studied 50 female patients who were undergoing elective cholecystectomy.

A significant relationship between neuroticism scores and vital capacity impairment and chest complications scores was detected.

Conclusions

The conclusions of this study were:

1. The structured teaching plan may have been equivalent to the standard teaching plan used in the hospital.

2. Variables other than the teaching plans may have been operative. Some examples of variables may be: pain tolerance, ethnicity, reason for surgery, medical regimens, attitudes about pain relief, and sedative effects.

3. Nursing interventions other than teaching may be effective in the relief of pain.

Implications for Nursing Practice

Before instituting patient teaching, nurses may need to identify those patients who are suffering from chronic anxiety or neuroticism. Additional research probably would need to be conducted in this area, but patient teaching will be enhanced if these efforts are made.

Nurses on all surgical units need to develop an awareness of the need for patients to be taught about postoperative pain. Teaching must extend beyond the

practice of teaching only coughing, deep breathing, and turning. The development of teaching plans which focus on all aspects of postoperative pain needs to be incorporated into current nursing practice. There are efforts being made in various locations with different types of surgical patients, but the approaches being used differ greatly.

Egbert et al. (1964) provided instruction about all aspects of the pain experience including what the patients could do for themselves to relieve their pain. Egbert et al. (1964) found that the special care group of patients required 50% less narcotics in the postoperative period and that they were ready for discharge 2.7 days before the control group. The approach by Egbert et al. represented comprehensive instruction on the pain experience and revealed areas which were not included in the teaching plan utilized in the present study.

Although this study utilized individual teaching, research supports the approach of teaching to groups of patients. This is a more efficient approach for the nurse, and patients can benefit from the interaction which takes place in the group. For the practicing nurse, group teaching is the most desired method of teaching.

In relation to the benefits of group and individual teaching, Lindeman (1972) found no significant difference in the mean number of analgesics administered during the first 72 postoperative hours to subjects who had received individual instruction and subjects who had received group instruction. In the study conducted by Mezzanotte (1970), 20 of the 24 patients reported that they preferred group instruction. Merkatz et al. (1974) reported that 78 patients in their study believed it was helpful to discuss their feelings.

Recommendations for Further Study

Recommendations for further study are:

1. A study could be done including an assessment of past experiences with pain, administration of personality tests, and assessment of physiological indicators of pain.

2. Since the teaching plan may lack information needed by the preoperative patient, additional information such as the severity of the pain, duration of the pain, how to achieve relaxation, and when to request pain medication could be included.

3. A study could be conducted which consists of all males in the sample.

4. An exploratory of factors which inhibit learning in the preoperative and postoperative period could be conducted.

APPENDIX A

TEACHING PLAN

Theory	Objective	Content	Teacher Activity	Patient Activity	Evaluation
Neo-Behaviorist Exponent: Robert Gagne	1. Identify the three types of pain that are most frequently experienced by postoperative patients.	Incisional pain Arises primarily from the skin and mucous membranes Produced by both mechanical and chemical factors. Somatic pain Is associated with muscles, tendons, ligaments, joints, spongy bone tissue, and arteries. Visceral pain Is associated with any large interior organ in any of the great body cavities, especially those in the abdomen (Sweeney, 1977).	Utilize transparency (will have the three types of pain listed and parts of the body from which it originates)	Give an account of a situation in which you experienced one or all of the types of pain described.	Pain which is produced in a large body cavity is termed _____ pain. Somatic pain is most often associated with A. skin B. joints C. organs D. mucous membranes
Neo-Behaviorist Exponent: Robert Gagne	2. List causes of the three types of post-operative pain.	Incision pain caused by: a. Damage and destruction of skin cells, tissue under the skin, muscles, facia, and large organs b. pulling, stretching or	Utilize transparency (will have all content for objective #2)	Name at least four situations which might produce these types of pain.	Which of the following actions can produce all three types of pain? A. chemical changes B. stretching of tissue C. damage to tissue D. decreased blood supply

TEACHING PLAN--Continued

Theory	Objective	Content	Teacher Activity	Patient Activity	Evaluation
		straining of skin c. the normal healing processes of swelling, redness and contraction will influence incisional pain Somatic pain caused by: a. abdominal swelling b. swelling of tissues c. muscle spasms or muscle stretching d. inflammation changes in the body e. chemical changes in the body Visceral pain caused by: a. swelling b. spasm c. contraction d. stretching e. tearing f. decreased blood supply to stomach, intestines, bladder, kidneys, heart, liver, spleen, pancreas (Sweeney, 1977).			

TEACHING PLAN--Continued

Theory	Objective	Content	Teacher Activity	Patient Activity	Evaluation
Neo-Behaviorist Exponent: Robert Gagne	3. Discuss common uncomfortable sensations reported by postoperative patients.	You may have the following sensations after surgery a. tenderness, sensitivity, pressure, pulling, smarting, or burning of the incision b. the sensation might become sharp and seem to travel along the incision when you move c. tiredness after physical effort d. bloating of abdomen e. cramping with gas pain f. pulling and pinching when stitches are removed (Johnson et al., 1978)	Utilize transparency (will have all content for objective #3).	Talk with another person who has had abdominal surgery. Compare what they tell you about uncomfortable sensations with the information you have received in the teaching-learning situation.	Name three sensations which you might experience after your surgery. 1. _____ 2. _____ 3. _____

TEACHING PLAN--Continued

Theory	Objective	Content	Teacher Activity	Patient Activity	Evaluation
Neo-Behaviorist Exponent Robert Gagne	4. Discuss common uncomfortable sensations which are associated with mechanical devices.	You may have the following sensations which are associated with mechanical devices. a. your arm with intravenous solution entering it will seem awkward and restricted b. dryness of mouth c. thirst d. hunger e. irritation of the nose and throat f. sleeplessness g. difficulty in urinating (Johnson et al., 1978).	Provide examples of mechanical devices for patient to observe (intravenous catheter, intravenous tubing, urinary catheter, nasogastric tube).	Discuss previous experiences as a patient with mechanical devices.	The most commonly used mechanical device which may cause you discomfort after surgery is the A. nasogastric tube B. suction tube C. intravenous tubing D. urinary catheter

APPENDIX B

McGILL-MELZACK PAIN QUESTIONNAIRE

Code Number _____ Age _____ Sex _____

Surgical Procedure _____ Date_____

Diagnosis: _____ Race_____

_____

_____

Analgesic (if already administered):

1. Type _____
2. Dosage _____
3. Time given in relation to this test _____

Patient's intelligence: circle number that represents best estimate

1 (low) 2 3 4 5 (high)

* * * * * * * * * *

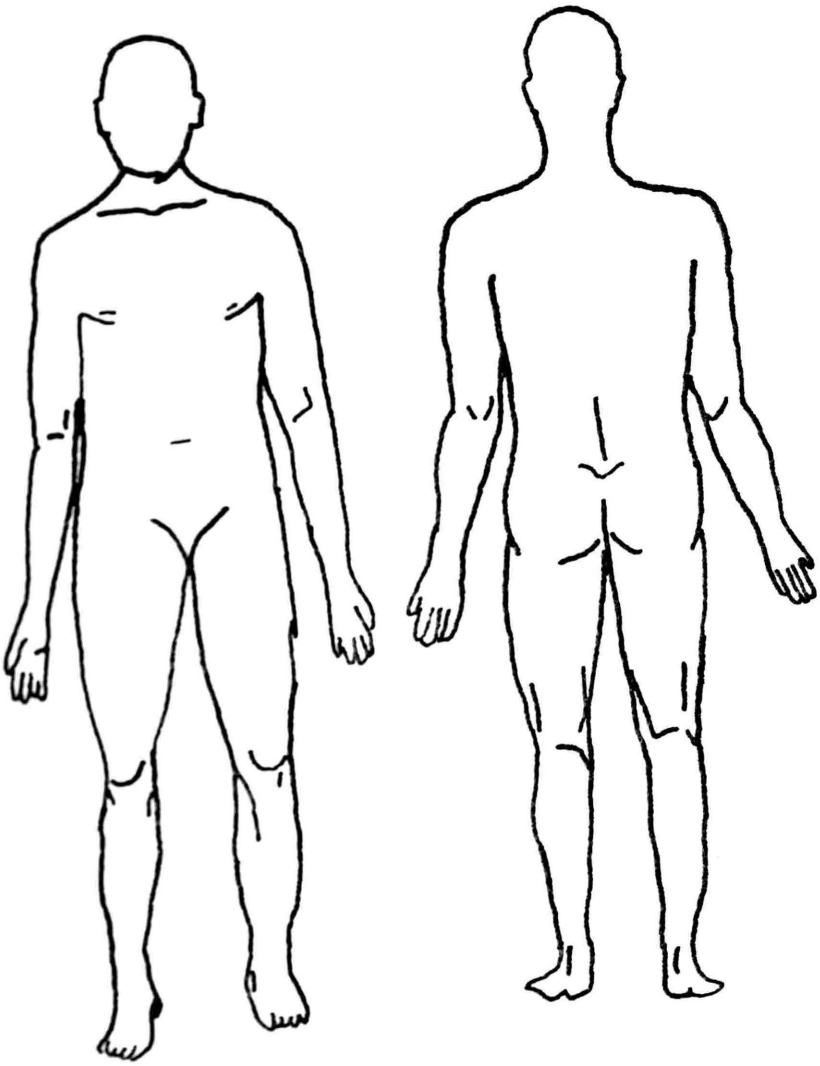
This questionnaire has been designed to tell us more about your pain. Four major questions we ask are:

1. Where is your pain?
2. What does it feel like?
3. How does it change with time?
4. How strong is it?

It is important that you tell us how your pain feels now. Please follow the instructions at the beginning of each part.

Part 1 Where is Your Pain?

Please mark on the drawings below the areas where you feel pain. Put E if external, or I if internal near the areas which you mark. Put EI if both external and internal.



Part 2 What Does Your Pain Feel Like?

Some of the words below describe your present pain. Circle ONLY one word in each numbered category and only the one which best describes your present pain. Leave out any category that is not suitable. Use only a single word in each appropriate category--the one that applies best.

1	2	3	4
Flickering Quivering Pulsing Throbbing Beating Pounding	Jumping Flashing Shooting	Pricking Boring Drilling Stabbing Lancinating	Sharp Cutting Lacerating
5	**6**	**7**	**8**
Pinching Pressing Gnawing Cramping Crushing	Tugging Pulling Wrenching	Hot Burning Scalding Searing	Tingling Itchy Smarting Stinging
9	**10**	**11**	**12**
Dull Sore Hurting Aching Heavy	Tender Taut Rasping Splitting	Tiring Exhausting	Sickening Suffocating
13	**14**	**15**	**16**
Fearful Frightful Terrifying	Punishing Gruelling Cruel Vicious Killing	Wretched Blinding	Annoying Troublesome Miserable Intense Unbearable

17	18	19	20
Spreading	Tight	Cool	Nagging
Radiating	Numb	Cold	Nauseating
Penetrating	Drawing	Freezing	Agonizing
Piercing	Squeezing		Dreadful
	Tearing		Torturing

Part 3 How Does Your Pain Change With Time?

1. Which word or words would you use to describe the pattern of your pain?

1	2	3
Continuous	Rhythmic	Brief
Steady	Periodic	Momentary
Constant	Intermittent	Transient

2. What kinds of things relieve your pain?

3. What kinds of things increase your pain?

Part 4 How Strong Is Your Pain?

People agree that the following 5 words represent pain of increasing intensity. They are:

1	2	3	4	5
Mild	Discomforting	Distressing	Horrible	Excruciating

To answer each question below, write the number of the most appropriate word in the space beside the question.

1. Which word describes your pain right now? _____
2. Which word describes it at its worst? _____
3. Which word describes it when it is least? _____

4. Which word describes the worst toothache you ever had? _____

5. Which word describes the worst headache you ever had? _____

6. Which word describes the worst stomachache you ever had? _____

APPENDIX C

Standard Preoperative Instruction

1. Explanation and demonstration of coughing.
2. Explanation and demonstration of deep breathing.
3. Explanation of turning.
4. Explanation of leg exercises.
5. Explanation of assistive devices.
6. Explanation of skin preparation and preoperative medications.

APPENDIX D

TEXAS WOMAN'S UNIVERSITY

Human Research Committee

Name of Investigator: Stephanie Barnett Center: Dallas

Address: 316 Lawrence Blvd. Date: 12/13/79

Pineville, Louisiana 71360

Dear Ms. Barnett:

Your study entitled The Effects of Structured Preoperative Instruction on Postoperative Pain has been reviewed by a committee of the Human Research Review Committee and it appears to meet our requirements in regard to protection of the individual's rights.

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

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

Sincerely,

Estelle D. Kurtz

Chairman, Human Research Review Committee

at Dallas

APPENDIX E

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

DALLAS INWOOD CENTER
1810 INWOOD ROAD
DALLAS, TEXAS 75235

DALLAS PRESBYTERIAN CENTER
8194 WALNUT HILL LANE
DALLAS, TEXAS 75231

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

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Parkides General Hospital

GRANTS TO Stephanie A. Barnett
a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem.

The effects of structured preoperative instruction on postoperative pain

The conditions mutually agreed upon are as follows:

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

Date: _____

Richard Nugent
Signature of Agency Personnel

Stephanie A. Barnett
Signature of Student

Helen A. Bunk
Signature of Faculty Advisor

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

GP:GEN 13
07026074 cd

APPENDIX F

LETTER TO PHYSICIAN

Dear Dr. _____:

I will be conducting a nursing research study on the effects of structured preoperative instruction about the pain experience of postoperative pain as experienced by the adult patient who has had intra-abdominal surgery. I am requesting permission to include patients admitted by you to (name of hospital) for the study.

The prospective subjects for the study will receive an oral description of the study and will be told that their participation in the study will be voluntary. A teaching plan devised by the researcher will be presented to subjects in the treatment group the evening before surgery. The control group will receive the usual instructions given to patients the evening before surgery. All subjects in the control and treatment groups will have a pain questionnaire administered to them 32 hours postoperatively.

If you have any questions about the study, please contact me at 445-3672 or 640-0988. A copy of the teaching plan, pain questionnaire, and approval form is attached to this letter.

Sincerely,
Stephanie A. Barnett, BSN

PHYSICIAN APPROVAL FORM

☐ Yes, you have my permission to ask patients for consent.

☐ No, you do not have my permission to ask patients for consent.

Signed _____

APPENDIX G

ORAL PRESENTATION FOR SUBJECTS

Hello _____(name)_____,

My name is Stephanie Barnett and I am asking for your consent to take part in a nursing research study. This study is being conducted in order to find out more about the patient's pain which generally occurs after surgery.

On the evening before surgery, you will be asked to participate in a short teaching-learning session with a registered nurse. After your surgery is over and you are awake, you will be asked some questions about your pain. You will be able to remain in your room during the teaching-learning session and during the time in which you will be asked to answer questions about your pain.

Your participation in the study will take about 30 minutes of your time. Your name will not be used in any of the research reports. Only group numbers will be reported. You are free to withdraw your consent and to stop your participation in the study at any time without any penalty. There will be no medical service or compensation provided to subjects by Texas Woman's University as a result of injury from participation in the

research study. Do you have any questions about the study, _____(name)_____?

APPENDIX H

CONSENT FORM

Title of Project: _____

_____

Consent to Act as a Subject for Research and Investigation:

I have received an oral description of this study, including a fair explanation of the procedures and their purpose, any associated discomforts or risks, and a description of the possible benefits. An offer has been made to me to answer all questions about the study. I understand that my name will not be used in any release of the data and that I am free to withdraw at any time. I further understand that no medical service or compensation is provided to subjects by the university as a result of injury from participation in research.

_____ _____
Signature Date

_____ _____
Witness Date

Certification by Person Explaining the Study:

This is to certify that I have fully informed and explained to the above named person a description of the listed elements of informed consent.

_____ _____
Signature Date

_____
Position

_____ _____
Witness Date

APPENDIX I

Dear Miss Barnett — It's a pleasure to give you permission to use the McGill Pain Questionnaire. With best wishes for success in your work
Ronald Melzack

STEPHANIE BARNETT, R.N.

Pain, 1 (1975) 277–299

THE McGILL PAIN QUESTIONNAIRE: MAJOR PROPERTIES AND SCORING METHODS

RONALD MELZACK

Department of Psychology, and Pain Rehabilitation Research Unit of the Department of Psychiatry, McGill University, Montreal (Canada)

(Accepted May 14th, 1975)

SUMMARY

The McGill Pain Questionnaire consists primarily of 3 major classes of word descriptors — sensory, affective and evaluative — that are used by patients to specify subjective pain experience. It also contains an intensity scale and other items to determine the properties of pain experience. The questionnaire was designed to provide quantitative measures of clinical pain that can be treated statistically. This paper describes the procedures for administration of the questionnaire and the various measures that can be derived from it. The 3 major measures are: (1) the *pain rating index*, based on two types of numerical values that can be assigned to each word descriptor, (2) the *number of words chosen*; and (3) the *present pain intensity* based on a 1–5 intensity scale. Correlation coefficients among these measures, based on data obtained with 297 patients suffering several kinds of pain, are presented. In addition, an experimental study which utilized the questionnaire is analyzed in order to describe the nature of the information that is obtained. The data, taken together, indicate that the McGill Pain Questionnaire provides quantitative information that can be treated statistically, and is sufficiently sensitive to detect differences among different methods to relieve pain.

INTRODUCTION

The measurement of pain in man is essential for the evaluation of methods to control pain. Yet the tools which are currently used encounter serious difficulties[1,2]. Laboratory techniques for the production and measurement of pain have obvious ethical limitations on the intensity and duration of the pain that can be employed for experimental study. Laboratory pains are necessarily brief and are stopped when they reach unbearable intensity. Clinical pains, in contrast, are often persistent, un-

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