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**Effects of preoperative group teaching on recovery of patients
undergoing joint replacement surgery**

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The University of Arizona, 1991

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EFFECTS OF PREOPERATIVE GROUP TEACHING
ON RECOVERY OF PATIENTS UNDERGOING
JOINT REPLACEMENT SURGERY

by

Vicki Ann Hansen

A thesis Submitted to the Faculty of the
COLLEGE OF NURSING
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF SCIENCE
In the Graduate College
THE UNIVERSITY OF ARIZONA

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ABSTRACT

The purpose of this quasi-experimental study was to test the effects of a multidisciplinary team teaching program on state anxiety, satisfaction with care, and length of hospital stay in patients (N=38) undergoing hip and knee joint replacement. A multidisciplinary team composed of nurses, a social worker, and a physical therapist presented an one-hour structured teaching program to groups of patients and family members prior to surgery in a 350 bed teaching facility. Control subjects did not receive the structured teaching program.

No significant differences in state anxiety, satisfaction with care, or length of hospital stay were found between the experimental subjects (n=23) who received the teaching program and the control subjects (n=15) who did not. The project did however, stimulate the development of a formal group teaching program and encouraged collaboration and communication among members of a multidisciplinary team of care providers.

CHAPTER 1

INTRODUCTION

Patient education has been an integral part of nursing since its inception (Smith, 1989). The nursing intervention of patient teaching as a nursing responsibility is a premise acquired in nursing school and continued into professional practice. The increased knowledge of patients through the nursing intervention of patient teaching is purported to lead to decreased patient anxiety. A decrease in anxiety positively affects learning capabilities (Brill & Kilts, 1980) and decreases pain perceptions (Carrieri, Lindsey, & West, 1980), allowing the patient greater mobility. Mobility is a factor that decreases postoperative pulmonary complications and promotes healing (Carrieri et al, 1980). Nurses, by providing information to patients about the surgical experience and what is expected of them, may facilitate the recovery period in a postsurgical patient.

Our society as a whole is ageing. Technological advances have resulted in the capability to replace worn out joints with metal and plastic components that enable many to walk without pain. Total joint replacement is a costly surgical procedure that is becoming more prevalent in our

society. The first successful total hip arthroplasty (THA) surgery was done in 1960. In 1982, 66,000 THA's were done.

In 1985 the number was 196,000 at a average cost of \$23,670 (Cushner & Friedman, 1988). The public concern for the high cost of health care has led to prospective reimbursement through a system of diagnosis related groups (DRG's). Today there is a limit to the amount a hospital is reimbursed for total joint replacement surgery. The response of hospitals to the limited reimbursements has been cost containment measures, including limiting the hospital stay of surgical patients. Patients are often admitted the day of surgery (Mikulaninec, 1987). Admitting practices for patients undergoing total joint replacement have evolved from hospital admission two or three days prior to surgery to the current practice of admission the evening before or the morning of surgery (Bever & Takahashi, 1987). Post operative hospital stays for total hip arthroplasties in 1982 was 17.5 days (Cushner & Friedman, 1988). Currently at this institution the average length of stay for total hip arthroplasty is less than ten days. Through patient teaching as a nursing intervention, nurses can provide the physiological and psychosocial information that will facilitate patient response to the cost containment measure of shortened length of stay in the hospital.

The literature suggests that patients having a total joint replacement are better educated and more informed health care consumer. As patients become more aware, they take a more active role in their health care decisions (Miller Bader, 1988). The need for patient education is evident; however, there is now less time available to teach patients. Nursing care of the patient having a joint replacement might be improved through the use of a multidisciplinary teaching team. Members of the team may include nurses, a social worker, and a physical therapist. Each member has specialized knowledge and information needed and wanted by the patient (Miller Bader, 1988).

Problem Statement

In today's health care system the amount of time that the patient who is having a total joint replacement is hospitalized prior to surgery has been significantly decreased. Nursing interventions must include effective and efficient ways to practice patient teaching during the abbreviated preoperative period. Because the patient having total joint surgery may be admitted to the hospital the evening prior to or early on the day of surgery, minimal time is available for the nurse to effectively present the information needed and wanted. As a result, both patients and nurses tend to be dissatisfied.

A multidisciplinary team which included the orthopedic clinic nurse, the orthopedic unit nurse, the operating room nurse, the post anesthesia care unit nurse, the physical therapist, and the social worker was proposed as one approach to effectively teach patients scheduled for joint replacements. Scheduling patient teaching time prior to hospitalization with each nurse who had information to share specific to his/her specialty area was unrealistic. Patient teaching presented in a group format prior to hospital admission was proposed as a way to effectively present patient education. The preadmission class would allow the nurses to provide patient information specific to their expertise and still allow the patients to personalize their questions and concerns regarding the surgical experience.

The problem investigated in this research was the implementation and evaluation of a method of patient teaching presented by a multidisciplinary team for patients having total joint replacements.

Hypotheses to be Tested

The research question was: How will a structured group teaching program for patients undergoing hip and knee joint replacement impact on patients' anxiety, satisfaction with care, and length of hospital stay.

Three hypotheses directed this research:

- 1) Patients undergoing joint replacement who participated in a structured preoperative group teaching program will report less state anxiety than patients who received the usual written information and unstructured teaching preoperatively.
- 2) Patients undergoing joint replacement who participated in a structured preoperative group teaching program will report increased satisfaction with care than patients who received the usual written information and unstructured teaching preoperatively.
- 3) Patients undergoing joint replacement who participated in a structured preoperative group teaching program will have a shorter length of stay in the hospital than patients who received the usual written information and unstructured teaching preoperatively.

Definition of Terms

Significant terms, as used in this study, were defined as follows:

Team teaching: a multidisciplinary team of care givers including the orthopedic clinic nurse, the orthopedic unit nurse, the operating room nurse, the post anesthesia care unit nurse, the social worker, and the

physical therapist, providing information to a number of patients and his/her family members.

Unstructured preoperative teaching: informal teaching received by all patients from care givers prior to surgery based on the care givers personal preference for teaching method and content. Written information in the form of two brochures was included in the informal teaching (Appendix A).

Structured preoperative group teaching: a one hour presentation of planned group teaching using a video tape and lecture-discussion type presentations which followed a preestablished program of essential content (Appendix B). Written information in the form of two brochures was handed out at the teaching session (Appendix A). Teaching was done in a conference-type room on the first and third Friday of the month.

Total joint replacement: Insertion of a prosthesis into the hip or knee joint.

Anxiety: subjective feelings of tension, apprehension, nervousness, and worry.

State anxiety: transitory emotional state or condition of the human organism that varies in intensity and fluctuates over time (Zuckerman, 1976) as measured by a ten item adapted scale, labeled "Self-Evaluation

Questionnaire", of Form Y-1 of Spielberger's (1983) State-Trait Anxiety Inventory (STAI) (Appendix C).

Patient satisfaction: the patients' perceptions of how their care was provided in relation to nursing care, nursing skill, and patient teaching as measured by the 26 statements of Gerber's (1987) Patient's Opinion of Hospital Care Questionnaire (Appendix C).

Length of Stay: the number of days hospitalized. The first day of hospitalization was included in the length of stay but not the day of discharge.

Statement of Purpose

The shorter length of hospital stay prior to surgery requires nurses to develop efficient and effective preoperative teaching strategies. Group teaching is likely to be both efficient and effective. The purpose of this study was to test the effects of a multidisciplinary team-taught educational program on state anxiety, satisfaction with care, and length of hospital stay in patients undergoing hip and knee joint replacements.

Significance to Nursing

An inherent part of nursing is the process of transferring health related information from nurse to patient (Smith, 1989). The patient in today's health care

system seeks information that provides explanations of his/her response to health problems and treatments for those problems (Gamotis, Dearmon, Doolittle & Price, 1988). The advent of Diagnosis Related Groups (DRG's) and the initiation of a federal prospective payment system in 1983 resulted in decreased length of preoperative and postoperative hospital stay for patients (Bever & Takahashi, 1987). The health care environment now requires more intense nursing activity in the environment in which nurses practice. The time nurses have to provide care is decreasing; that is, today there is a need for more intense nursing care in fewer clock hours (Gamotis et al, 1988). Priorities for nursing care have to be set. Within those nursing priorities, efficient and effective teaching modalities need to be found that benefits the patients' needs as a consumer.

Becoming more prevalent in our society, total joint replacement is a costly surgical procedure. Curshner (1988) estimated the cost annually for total hip arthroplasties at \$4.9 billion. Total hip replacements alone tripled in five years to more than 196,000 annually (Curshner & Friedman, 1988). Care of the patient having a total joint replacement may involve a multidisciplinary team of nurses, social workers, and physical therapists. All have information the patient desires as part of the decision making process

(Miller Bader, 1988). Lindeman (1972) has suggested that patient education presented to a group is as effective and more efficient than individual teaching for meeting the psychoeducational needs of the patient. Group teaching by a multidisciplinary team to a group of patients may provide the specialized information desired by patients having total hip and knee replacements.

Summary

Nurses are responsible for providing health related information to patients. Today's health care system has changed the environment and shortened length of time to provide this information. The purpose of this study was to describe the effects of a group teaching program for patients undergoing hip and knee joint replacement on state anxiety, patient satisfaction with care, and length of hospital stay.

CHAPTER TWO

LITERATURE REVIEW

The theoretical model for group teaching and patient outcomes is presented in this chapter. The literature was reviewed relative to patient education with group or individual teaching interventions and patient outcomes of state anxiety, patient satisfaction, and length of hospital stay. Structured teaching interventions for individuals were well documented as were the patient outcomes of state anxiety and length of hospitalization. Documentation of the use of a multidisciplinary group as a teaching intervention and patient satisfaction with care as an outcome of patient education were limited or nonexistent.

Theoretical Model

Documented literature on the effects of patient education on patient outcomes provided the theoretical rationale for this study. The theoretical model is illustrated in Figure 1. The model illustrates the relationship between the more abstract constructs of teaching interventions and patient outcomes. At the concept level, the directional relationship between a preoperative group teaching program and patient outcomes of satisfaction

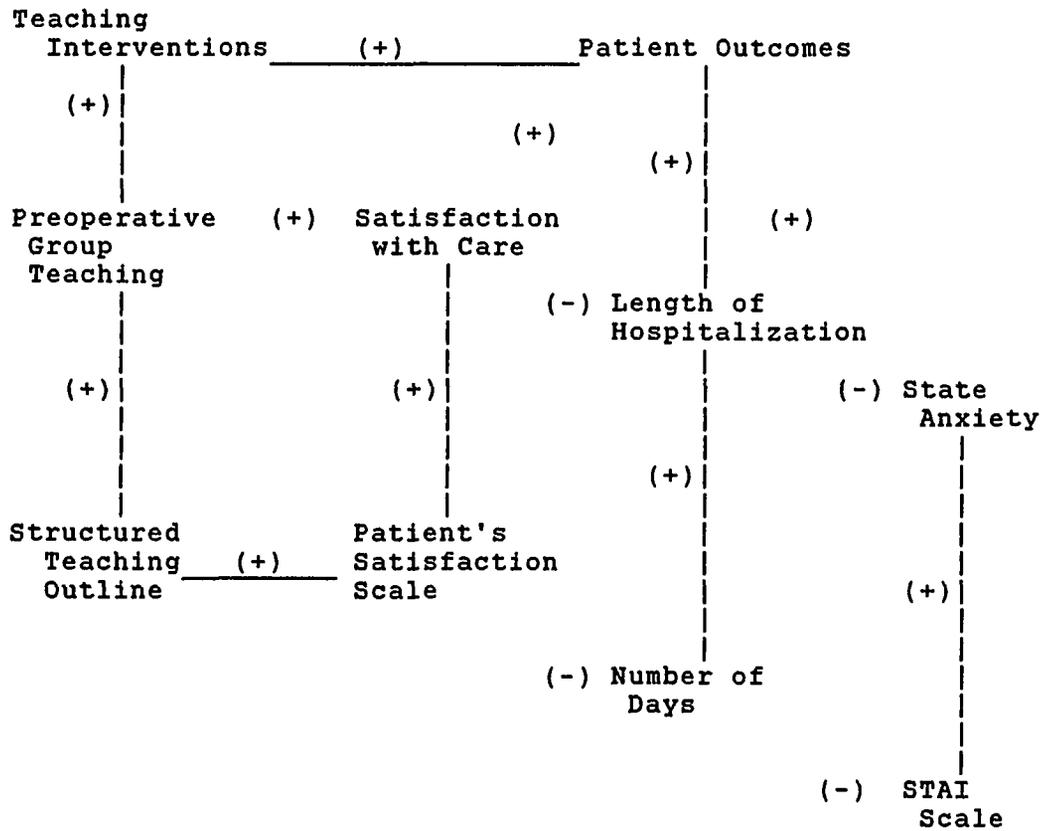


Figure 1. Theoretical Model for Group Teaching and Patient Outcomes

with care, state anxiety, and length of hospitalization is illustrated. These concepts were operationalized using a self-report measure of state anxiety, and satisfaction with hospital care, as well as the number of days the patient was hospitalized.

Teaching Interventions

Smith (1989) described patient teaching as an effective nursing intervention influencing recovery from surgery. Teaching interventions varied from simply answering patients questions to presenting a formal body of information in a preestablished manner.

Historically nurses have participated in individualized patient education. Healy (1968) described individual preoperative instructions including turning, coughing, and deep breathing, body mechanics, and procedures related to specific operations. Subjects (N=40) were assigned to groups who either did or did not receive the preoperative instruction. Statistical analysis was not used to examine the data. Frequencies, as the only statistics, showed that the group receiving the preoperative instruction went home three to four days prior to the expected date. Lindeman and Van Aernam (1971) looked at the effects of a Registered Nurse presenting a structured program (preestablished content, methods, and visual aids) as compared to the

Registered Nurse teaching per personal preference. A total of 260 subjects were in the study. The structured teaching focused on postoperative turning, coughing, and deep breathing exercises. Lindeman and Van Aernam (1971) documented a significant decrease in the length of hospital stay of 1.9 days for the experimental group. King and Tarsitano (1982) replicated the Lindeman study but showed no significant decrease in the hospital stay.

A review of studies conducted after Lindeman and Van Aernam (1971) indicated that only structured preoperative programs were used as teaching interventions. Teaching interventions also included individual versus group instruction, the use of booklets, involvement of family in the instruction, and patient instruction at home rather than at the hospital. Lindeman (1972) randomly assigned a total of 351 subjects to group or individual teaching programs. In terms of post surgery recovery specific to length of hospital stay, the group teaching program was found to be as effective and more efficient than individual teaching. The mean length of stay for patients in the group teaching program was approximately two days shorter than the patients receiving individual teaching.

Booklets as a teaching intervention were used by Doerr and Jones (1979), Christopherson and Pfeiffer (1980), and Mikulaninec (1987). Christopherson and Pfeiffer (1980)

provided an educational booklet for 41 anglo coronary artery bypass graft (CABG) surgery patients in three randomly selected groups. The booklet provided information on procedures, expected behaviors, sensations, and facts about their disease. Subjects were randomly assigned to one of three groups. One group received the booklet when surgery was scheduled, the second group received it one to two days prior to surgery, and the third group did not receive a booklet. The two experimental groups had significantly increased their level of knowledge with the booklet as compared to the control group. The group receiving the booklet one to two days prior to surgery had a significant decrease in state anxiety.

Mikulaninec (1987) compared the use of a booklet for teaching post surgery exercises mailed to patients prior to hospital admission to individual instruction of the same exercises performed by nurses after hospital admission. A control group received no preoperative instruction. The booklet was given to randomly assigned subjects seven days prior to surgery. The individual teaching was done the evening before surgery. The subjects receiving the preoperative instruction, either through the booklet or individual instruction, learned the exercises better than the control group. Those that received the booklet mastered the exercises better than the individually instructed group.

Doerr and Jones (1979) did the only study reviewed that looked at family teaching as an intervention for state anxiety. Twelve subjects that were patients in a cardiac care unit (CCU) were randomly assigned to an experimental or control group. Family members of subjects in the experimental group were provided a booklet of some most asked questions by family members about the CCU. Family members of subjects in the control group received no booklet. The results of this small sample study suggested there was a decreased state anxiety in the family members who received the booklet, resulting in a decreased state anxiety in the subjects. Family-to-patient transference suggests that family members who are less anxious give off less cues that elicit anxiety reactions within the patient (Doerr & Jones, 1979).

Williams (1986) studied home instruction as a teaching intervention. Thirty subjects participated in the study that compared individual instruction at home to individual instruction in the hospital. The subjects that received individual instruction in the hospital had a significant higher level of state anxiety than the group that receive individual instruction at home preoperatively but no significant difference postoperatively. Williams did not compare the cost of the instruction.

The literature reviewed did not document any cases where Registered Nurses taught patients as a group, nor was the use of a multidisciplinary team of teachers documented.

Patient Outcomes

State Anxiety

In the majority of the literature reviewed, anxiety as an outcome of patient teaching, was studied. Felton, Huss, Payne and Srsic (1976) used three approaches to preoperative teaching. A total of 62 subjects were in the study.

Twenty-five subjects received a preestablished teaching protocol, 25 received teaching routinely provided by the unit nurse, and 12 subjects received the nursing intervention referred to as the Therapeutic Communication Approach. The nurse encouraged patients to verbalize feelings and to use problem solving techniques to focus on actions that were beneficial in coping with preoperative anxiety. A significant decrease in anxiety was documented.

Dziubejko and Larkin (1978) provided individualized structured teaching for patients and family of 21 female patients having abdominal gynecological surgery. They documented a decrease in anxiety. However, there was no documentation on the reliability or validity of the tool used to measure patient anxiety. Shimko (1981) measured state anxiety before and after teaching for individual

patients. A significant decrease in state anxiety was noted.

Spielberger (1983) described trait anxiety (T-Anxiety) as an individual tendency to respond to stressful situations as threatening or dangerous. State anxiety (S-Anxiety) is the emotional state that varies in intensity and fluctuates over time. State anxiety as a patient outcome when booklets were used as the teaching intervention were reported in three studies. Doerr and Jones (1979) reported a significant decrease in state anxiety for families of six CCU patients after reading a booklet. Christopherson and Pfeiffer (1980) identified a decrease in state anxiety in 41 anglo male patients having a coronary artery bypass who received a booklet one to two days prior to surgery. Subjects who received the booklet at a longer interval of time prior to surgery or not at all had no decrease in anxiety.

Levesque, Grenier, Kerouac, and Reidy (1984) also provided booklets as a teaching intervention to elective cholecystectomy patients. The exercise booklets were distributed at the end of a preoperative group teaching program presented prior to hospital admission (N=40), or the evening prior to surgery (N=42). The control group (N=43) received no teaching program. Both experimental groups reported significantly lower state anxiety the evening prior

to surgery than the control group. There was no difference in state anxiety postoperatively.

Williams (1986) also reported a significant difference in state anxiety preoperatively with no difference postoperatively. Thirty subjects participated in the study that compared postoperative recovery of patients who first received preoperative instruction at home with those who first received preoperative instruction in the hospital setting. The experimental group receiving preoperative instruction at home had significantly lower preoperative state anxiety than the control group. There was no significant difference between the two groups in state anxiety postoperatively.

No significant difference in pre- and postsurgical state anxiety was documented in one study reviewed. Mikulaninec (1987) compared the use of a booklet for teaching post surgery exercises mailed to patients prior to hospital admission to individual instruction of the same exercises performed by nurses after hospital admission. A control group received no preoperative instruction. The subjects (N=66) reported no significant difference in state anxiety.

Patient Satisfaction with Care

In the literature reviewed, two studies were found that reported patient satisfaction with care as an outcome of

preoperative patient education. Fortin and Kirouac (1976) presented a structured teaching program to 28 subjects having intraabdominal or intrathorasic surgery 15-20 days prior to hospital admission. There was no statistical difference related to overall patient satisfaction with hospitalization. However, when asked questions about their knowledge level and desire for an educational program for future surgeries if needed, 100% of the experimental group answered yes while 50% of the control group answered yes. No reliability or validity estimates were documented on the instruments used.

In a quasi-experimental study of 88 abdominal and orthopedic surgical patients, Hinshaw, Gerber, Atwood, and Allen (1983) documented that 54 patients evidenced higher satisfaction with their care after an individualized perioperative teaching program that included cognitive, sensory, and participatory information. Patient satisfaction was measured with a modified Risser scale which indexed satisfaction with educational activities, trust relationship, and professional-technical skills of the nurses.

Length of Hospitalization

Those studies in which a significantly decreased length of hospital stay was documented appeared to be done prior to 1980 (Healy, 1968; Lindeman and Van Aernam, 1971; Dziubejko

and Larkin, 1978; Lindeman, 1972; Fortin and Kirouac, 1976). Healy (1968) described individual preoperative instructions including turning, coughing, and deep breathing, body mechanics, and procedures related to specific operations. Subjects (N=40) were assigned to groups who either did or didn't receive the preoperative instruction. Frequencies, as the only statistics, showed that the group receiving the preoperative instruction went home three to four days prior to the expected date. Lindeman and Van Aernam (1971) reported a significant decrease in the length of hospital stay for subjects participating in a structured teaching program (preestablished content, methods, and visual aids) as compared to the Registered Nurse teaching per personal preference. Dziubejko and Larkin (1978) provided individualized structured teaching for patients and family of female patients (N=14) having abdominal gynecological surgery. Those receiving the structured teaching program had a short length of stay in the hospital.

Lindeman (1972) randomly assigned a total of 351 subjects to group or individual teaching programs. The group teaching program had no effect on the length of hospital stay. Fortin and Kirouac (1976) also saw no significant decrease in hospitalization for 28 subjects having intraabdominal or intrathorasic surgery participating in

a structured group teaching program 15-20 days prior to hospital admission.

Christopherson and Pfeiffer (1980) provided an educational booklet for 41 anglo coronary artery bypass graft (CABG) surgery patients in three randomly selected groups. A decrease in hospital stay was documented by the group that received the booklet one to two days prior to surgery. This group, however, was also significantly younger than the other two experimental groups that showed no decrease in hospitalization.

Shimko (1981) measured state anxiety before and after a structured teaching program for 81 subjects. Levesque, Grenier, Kerouac, and Reidy (1984) provided booklets as a teaching intervention to elective cholecystectomy patients (N=82). The control group (N=43) received no teaching program. Williams (1986) compared postoperative recovery of patients who first received preoperative instruction at home with those who first received preoperative instruction in the hospital setting (N=30). None of these authors reported a significant decrease in length of stay in the hospital.

Operationalization of the Concepts

Structured Teaching Outline

In this study a structured outline was used as the nursing intervention for the preoperative team teaching

(Appendix B). Each member of the team teaching submitted an outline of essential content pertinent to that care giver's specialty. The content and timing was reviewed by the team as a whole. Presentation of the subject matter followed the flow of the patient's encounters with nursing, and other members of the team during his/her hospital stay. First a videotape of a total joint patient going through the whole surgical experience is shown. The videotape followed the patient through out her hospitalization and into her home postoperatively. The video showed the orthopedic unit, the operating room, physical therapy, and the patient pedaling a stationary bike in her own home postoperatively. This was followed by lecture-discussion presented in turn by the orthopedic clinic nurse, the operating room nurse, the postanesthesia care unit nurse, the physical therapist, and the social worker. Actual prosthesis were shown and presented for handling at the end of the presentations.

State Anxiety

In this study state anxiety was measured by an adapted ten item version of the S-Anxiety scale, Form Y-1 (Spielberger, 1983). State anxiety was conceptualized as a transitory emotional state or condition of the human organism that varies in intensity and fluctuates over time (Spielberger, Gorsuch, & Lushene, 1970). Anxiety was used to designate a very strong personal feeling of distress.

Anxiety changes with situations and conditions (Zuckerman & Spielberger, 1976).

Patient Satisfaction Scale

In this study patient satisfaction was the patients' perceptions of how their care was provided, excluding the outcome of their health status or the appropriateness of their therapy as measured by the Patient's Opinion of Hospital Care Questionnaire (Bustamante, Gerber, & Higgins, 1987). Patients' perceptions of nursing care, nursing skills, and patient teaching were measured in subscales of this instrument.

Length of Hospitalization

The studies that documented hospitalization stays identified the length of hospital stay as the number of days in the hospital. Variations of the length of stay related to what was considered the first and last day in the hospital. Some investigators counted all presurgery days, some didn't. Some counted the day of surgery, and some counted the day of discharge. In this study the length of Stay was the number of days hospitalized. The first day of hospitalization was included in the length of stay but not the day of discharge.

Summary

The theoretical model underlying this study was supported by existing literature. Literature reviewed related to teaching interventions that affected the patient outcomes of satisfaction with care, state anxiety, and length of hospitalization. The review of the literature supported the need to look at more efficient ways of patient teaching.

CHAPTER 3

METHODOLOGY

The methodology used in this study is discussed in this chapter. The design, sample, setting, instrument, data collection methods, and the plan for data analysis for the study are presented.

Research Design

This study used a quasi-experimental design to determine the effect of a group teaching program on patient outcomes for patients undergoing hip and knee joint replacement. The two-group pretest and posttest design included an experimental group which received the teaching intervention and a control group which received only the unstructured preoperative teaching routinely provided to all patients in this facility. Written information in the form of two brochures were given to all subjects (Appendix A).

A one-hour structured group teaching program was the independent variable. Essential content for the program was identified and placed in a formal teaching plan. The teachers varied occasionally but the content was presented in a consistent manner so that each patient group received the same instruction.

The dependent variables, or patient outcome variables, were state anxiety, patient satisfaction, and length of hospital stay. All dependent variables were measured using indices with acceptable psychometric properties.

Conditions related to staff turnover and staff scheduling were uncontrollable field problems. The effect of different teachers presenting the same information was minimized by standardizing the essential content to be taught during each class.

Sample

The convenience sample consisted of 38 subjects who were randomly assigned to either the control group (n=15) or the experimental group (n=23). The criteria for admission to the study included:

1. able to read and write English.
2. undergoing either hip or knee joint replacement

Potential subjects were identified during the preoperative clinic visit.

Setting

The setting for this study was a 350 bed teaching hospital within a tertiary-care medical center in the southwestern United States. The nursing unit was a 30 bed unit in the round to which orthopedic and neurology patients

were primarily admitted. The Department of Orthopedic Surgery had two surgeons who performed an average of fifteen hip or knee joint replacement surgeries per month. The Department of Perioperative Services had eight operating rooms, one with laminar air flow for total joint surgeries.

The structured preoperative group teaching program was conducted in a small secluded conference room on the first and third Friday of each month. The orthopedic clinic nurse coordinated the program. Other members of the teaching team presented information according to structured teaching outline (Appendix B).

Protection of Human Subjects

Approval to conduct the study was granted by the University Human Subjects Committee (Appendix D). A subject disclaimer (Appendix D) was provided with every pretest and posttest. All subjects were informed of the purpose and nature of the study. All participation was voluntary and all data were anonymous, identified only by a confidential code number.

Data Collection Protocol

Subjects were identified during a preoperative clinic visit by the Orthopedic Clinic nurse, who was also a member of the teaching team. When subjects agreed to participate

in the study, they were randomly assigned to either the control or experimental group by the physical therapist member of the teaching team. The Orthopedic Clinic nurse generated the list of patients undergoing total joint surgery and sent it to the physical therapist who started at the top of the list and designated every other name to either experimental or control group.

The control subjects were asked to complete the pretest during the clinic visit. A plain envelope containing the pretest was given to the subject. The pretest included a demographic sheet (Appendix E) and a Self-Evaluation Questionnaire related to state anxiety (Appendix C). After completing the pretest, the subject placed the pretest in the envelope and returned the sealed envelope to the clinic nurse. The nurse then placed a confidential code number on the envelope.

For the experimental subjects, the orthopedic clinic nurse distributed and retrieved the pretest as previously described immediately prior to the structured group teaching program. The subjects assigned to the experimental group then participated in the teaching program.

Postoperative data were collected by the researcher on both groups of subjects the day prior to hospital discharge. Postoperative collection included a demographic sheet (Appendix E), a Self-Evaluation Questionnaire related to

state anxiety (Appendix C), and a Patient Opinion of Hospital Care Questionnaire (Appendix C) using the same procedure as was used preoperatively.

Instrumentation

State Anxiety Questionnaire

A ten item adapted scale of Form-Y-1 of Spielberger's (1983) State-Trait Anxiety Inventory (STAI) was used to measure state anxiety. The questionnaire labeled "Self-Evaluation Questionnaire" (Appendix C) consisted of ten statements with subjects reporting how they felt "right now, at this moment". Subjects responded by rating themselves on a four point scale of "not at all" (value = 1), "somewhat" (value = 2), "moderately so" (value = 3), or "very much so" (value = 4). Construct validity of the 20 item instrument has been demonstrated in numerous studies (Spielberger, 1983). The reported internal consistency reliability, estimated with coefficient alpha, has been consistently high with an alphas of 0.90 or higher (Spielberger, 1983). The validity of the adapted 10-item scale was determined by correlating the 10-item mean score with the mean score for the total 20-item scale obtained in a pretest of 60 subjects. The two versions of the anxiety scale were correlated at $r = .96$. The alpha reliability for the adapted 10-item scale was 0.77.

Patient Satisfaction Scale

The Patient Satisfaction Scale (Bustamante, Gerber, & Higgins, 1987) was used to measure patient satisfaction with care. The questionnaire consisted of 26 statements related to caring, skill, and teaching (Appendix C). Subjects responded to each statement by rating it on a scale of "strongly agree" (value = 5) to "strongly disagree" (value = 1). Cronbach's (1951) coefficient alpha for internal consistency reliability was reported at 0.94 for the total scales. The subscale alphas were: caring, 0.87; skill, 0.85; and teaching, 0.81. In this study of patients having joint replacements the coefficient alpha for the total satisfaction scale was 0.94. The subscale alphas were: caring, 0.95; skill, 0.91 and teaching, 0.93.

Length of Stay

The length of stay was obtained through a chart audit (Appendix D). The first day of hospitalization was included in the length of stay but not the day of discharge. Subjects were admitted either the morning of surgery or the evening prior to surgery.

Teaching Intervention

The essential content of the multidisciplinary team teaching program was identified by those teaching the program and organized into a formal teaching plan

(Appendix B). Members of the team teaching program included the orthopedic clinic nurse, the orthopedic unit nurse, the operating room nurse, the post anesthesia care unit nurse, the physical therapist, and the social worker. The orthopedic clinic nurse served as the moderator during the one-hour teaching program.

The teaching plan was structured to follow the perioperative process starting with preoperative care requirements and ending with postoperative appointments following the patient's discharge from the hospital. A ten minute videotape of a patient who had had a total knee replacement was used at the beginning of the class. The videotape followed the patient through out her hospitalization and into her home postoperatively. The video showed the orthopedic unit, the operating room, physical therapy, and the patient pedaling a stationary bike in her own home postoperatively.

Following the videotape, the order of presenters was the clinic nurse, the orthopedic unit nurse, the operating room nurse, the postanesthesia care unit nurse, the physical therapist, the social worker, and ending with the clinic nurse. A strict time limit for each presenter was adhered to so that all the information could be given. Subjects were given an opportunity to see and handle some actual

prostheses at the end of the program. At this time subjects' questions were encouraged and answered.

Data Analysis Plan

Measures of central tendency and dispersion were used to describe the subjects in terms of age, gender, previous joint replacements, income, and education. The Student's t-test for independent groups was used to test the research hypotheses. Data were entered into the computer by a research assistant. SPSS-X software was used for data analysis. The decision criterion was $p < .05$.

Summary

Subjects undergoing hip and knee replacements were randomly assigned to either a structured group teaching program (n=23) or to a control group (n=15). The control subjects responded to a pretest during a preoperative clinic visit. The experimental subjects were given the pretest immediately prior to the group teaching program. The posttest was given to all subjects the day prior to discharge. Inferential statistics and measures of central tendency and dispersion were used for data analysis

CHAPTER 4

PRESENTATION OF DATA

The purpose of this study was to test the effects of a group teaching program on state anxiety, satisfaction with care, and length of hospital stay in patients undergoing hip and knee joint replacement. Findings related to the characteristics of the sample and to each of the hypotheses tested are presented in this chapter.

Description of the Sample

Data which describe the total sample (N=38) are presented in Table 1. Frequencies and percentages of the control group (n=15) and the experimental group (n=23) are presented by age, sex, income, history of previous total joint replacements, and education.

The age range for all subjects was from 33 to 87 years, with a mean age of 71.16 (s.d. = 10.06) years. Seventy-eight percent (n=30) of all subjects were 60 to 80 years of age. Eighty-one percent of the control group (n=12) and 78 percent of the experimental group were that same age bracket.

Sixty percent of the subjects (n=9) in the control group were female, which was similar to 65 percent (n=15)

Table 1. Sample Description of Control Group (n=15) and Experimental Group (n=23) by Age, Sex, Income, Previous Total Joint Replacement History, and Education.

Variable	Control Group		Experimental Group	
	n	%	n	%
AGE				
31-39 years	0	0	1	4
40-49 years	1	6	0	0
51-59 years	0	0	1	4
60-69 years	5	33	6	27
71-79 years	7	48	12	52
80-89 years	2	13	3	13
SEX				
Male	9	60	15	65
Female	6	40	8	35
INCOME				
Less than \$1000/month	4	27	8	35
More than \$1000/month	11	73	12	52
Missing data	0	0	3	13
PREVIOUS JOINT REPLACEMENT HISTORY				
No	9	60	19	83
Yes	6	40	4	17
EDUCATION				
Some high school	5	34	4	17
High school graduate	2	13	8	36
Some college	3	21	4	17
College graduate	2	13	4	17
Some graduate credit	2	3	13	13
Graduate degree	1	6	0	0

in the experimental group. Twelve subjects (34%) had incomes of less than \$1000 per month; four (27%) of them were in the control group and 8 (40%) were in the experimental group. The majority of subjects (n=23, 66%) had incomes greater than \$1000 per month. Several subjects in the experimental group did not report their income.

Of the subjects in the control group, 6 (40%) had previous joint replacement surgery, compared to four (17%) of the experimental subjects. The subjects in the control group appeared to have had more experience with joint replacement surgery.

Education was categorized into six groups: some high school, high school graduate, some college, college graduate, some graduate credit, and graduate degree. The subjects were distributed among the six educational categories, with 24% (n=9) of the subjects having attended high school, 26% (n=10) having graduated from high school, 18% (n=7) having attended college, 16% (n=6) having graduated from college, 13% (n=5) having some graduate credit, and 3% (n=1) of the subjects having completed a graduate degree. Fifty-two percent (n=8) of the control group and 47 percent (n=11) of the experimental group had participated in formal education beyond high school.

Data Analysis Related to Hypotheses

The research question was: How will a group teaching program for patients undergoing hip and knee joint replacement impact on patients' state anxiety, satisfaction with care, and length of stay. The comparison of the experimental and control group relative to patient outcomes of state anxiety, satisfaction with care, and length of stay are summarized in Table 2. Differences between group means were tested using the Student's t-test. Regression analyses were not done because of the small sample size.

Hypothesis 1

The first hypothesis was: Patients undergoing joint replacement who participated in a structured preoperative group teaching program will report less state anxiety than patients who received the usual written information and unstructured teaching preoperatively. The experimental group (n=23) had a mean anxiety score of 3.12 (s.d. = .407) and the control group (n=12) had a mean score of 3.14 (s.d. = .557). There was no significant difference between the mean scores of the experimental group and the control group ($t = .12, p = .904$).

Hypothesis 2

The second hypothesis was: Patients undergoing joint replacement who participated in a structured preoperative group teaching program will report greater satisfaction

Table 2. Comparison of Mean Scores for subjects in the Experimental (n=23) and the Control Group (n=15).

Outcome Variable	n	X	s.d.	df	t-value	Probability
State Anxiety*				33	.12	.904
Experimental	23	3.12	.407			
Control	12	3.14	.557			
Satisfaction with Care**				24	-.86	.399
Experimental	14	4.15	.500			
Control	12	3.99	.427			
Length of Hospitalization***				35	-.81	.426
Experimental	22	9.23	2.22			
Control	15	8.67	1.84			

Note: Varying numbers of subjects reflect missing data.

*Response range: 1 (low anxiety) to 4 (high anxiety)

**Response range: 5 (high satisfaction) to 1 (low satisfaction)

***Number of days (day of admission and day of discharge included)

with care than patients who received the usual written information and unstructured teaching preoperatively. The experimental group (n=14) had a mean satisfaction score of 4.15 (s.d. = .500) and the control group (n=12) a score of 3.99 (s.d. = .427). No significant difference was found between the experimental group and the control group ($t = -.86, p = .399$).

Hypothesis 3

The third hypothesis was: Patients who undergo joint replacement who participated in a structured preoperative group teaching program will have a shorter length of stay in the hospital than patients who received the usual written information and unstructured teaching preoperatively. The experimental group (n=22) had a mean of 9.23 (s.d. = 2.22) days of hospitalization while the control group (n=15) had a mean of 8.67 (s.d. = 1.84). There was no significant difference between the experimental group and the control group ($t = -.81, p = .426$).

Summary

Characteristics of the sample of 38 subjects were presented in this chapter. The majority of the subjects in both groups were female, had an income of more than \$1000 per month, and had at least a high school education. However, more of the control subjects had experienced

previous joint replacement surgery than the experimental group.

The three hypotheses were tested using the t-test of differences between group means. There were no significant differences between the experimental and control groups for state anxiety, satisfaction with care, or length of hospital stay.

CHAPTER 5

DISCUSSION OF FINDINGS

The purpose of this quasi-experimental study was to determine the effects of a multidisciplinary team teaching program on state anxiety, satisfaction with care, and length of hospital stay in patients undergoing hip and knee joint replacements. A discussion of the findings of this study as they relate to the hypotheses tested are presented in this chapter. The implications for nursing practice, limitations, and suggestions for further research are also presented.

Findings Related to the Hypotheses Tested

Earlier research, as illustrated in the theoretical model for this study, suggested the existence of positive relationships between the constructs of teaching interventions and patient outcomes. At the concept level, a positive directional relationship was hypothesized between a preoperative group teaching program and patient outcomes of state anxiety, satisfaction with care, and length of hospitalization.

The first hypothesis, that patients who participated in a structured preoperative group teaching program would

report less state anxiety than patients who received the usual written information and unstructured teaching preoperatively, was rejected. That is, there was no significant difference in the state anxiety between the subjects that attended the teaching program ($X=3.12$) and those subjects that did not attend the teaching program ($X=3.14$).

The second hypothesis, that patients undergoing joint replacement who participated in a structured preoperative group teaching program will report greater satisfaction with care than patients who received the usual written information and unstructured teaching preoperatively, was rejected. Although the experimental group was somewhat more satisfied with care than the control group, there was no significant difference between the two groups.

The third hypothesis, that patients undergoing joint replacement who participated in a structured preoperative group teaching program will have a shorter length of stay in the hospital than patients who received the usual written information and unstructured teaching preoperatively, was rejected. In this study length of hospital stay was defined as the number of days hospitalized. The first day of hospitalization was counted but not the day of discharge. Data comparing the number of days hospitalized prior to surgery was not analyzed. There was no significant

difference in the number of days of hospitalization in the subjects that attended the group teaching program ($X=9.23$ days) and in those subjects that did not ($X=8.67$ days). Interestingly, the control subjects were in the hospital for a slightly shorter period of time than the experimental subjects.

Conclusions

The anticipated effects of a multidisciplinary team teaching program for patients undergoing hip and knee joint replacements were not observed. The lack of a significant difference between the two groups may be related to the limited control of variance when multidisciplinary group work is used within a clinical study. The main function of research design is to control variance, but a strict adherence to the design is difficult when a whole team is involved.

Kerlinger (1986) describes the principle underlying experimental control as the "maxmincon" principle. That is, in experimental studies the investigator should attempt to maximize the systematic variance under study, control extraneous variance, and minimize error variance. Systematic variance, or the independent variable, is that which causes outcomes to lean in one direction or another. The greater the differences in

the outcomes between groups, the more the independent variable can be presumed to have operated. Error variance is the fluctuation or varying of measures due to chance and is unpredictable. Extraneous variance is the influence of independent variables unrelated to the purpose of the study.

The project team sought to maximize the systematic variance, the team teaching intervention. The "teachers" were all knowledgeable and all skilled in the care of patients having total joint replacements. Each teacher identified and presented essential content for the formal teaching plan. Instructional content was planned so that each group of patients would receive the same information each time. However, the reality of working with a team is that staff member relocation and career moves cause some turnover among the personnel involved in this project. Turnover in the teachers may have led to unknown changes in the level of commitment to the project. A change of commitment may have altered the feeling and delivery of the content during the teaching process.

The format of the teaching program was one hour. It may have been an unreasonable expectation to effectively present the content of the structured teaching program in that amount of time. Even though attempts to maximize the teaching intervention were made, the intervention may not have been sufficient to produce the desired results.

Error variance was minimized as much as possible through the use of valid and reliable outcome measures. State anxiety and patient satisfaction were both measured using tools which had acceptable psychometric properties. The length of hospital stay was defined as the number of days the patient was hospitalized, a frequently used measure of length of hospitalization. In retrospect, measurement of the number of days hospitalized included presurgery days for some patients. Some patients were admitted the day of their surgery. Patients entering the hospital prior to the day of surgery may have had the benefit of unknown preoperative teaching. Considering the nature of the teaching program, perhaps counting only the days from surgery to discharge may have been a more valid indicator of the outcomes of teaching.

In this study the sample size, another source of error variance, was small. While the project was in progress there was an unanticipated change in the location of the orthopedic clinic, which was away from the hospital. Distance decreased communication among team members and made data collection more difficult. During the same time, the team member responsible for collecting postoperative data made a career move, necessitating restructuring of the team in order to assure collection of postoperative data. These two factors may have affected the sample size.

Control of extraneous variance is often difficult in clinical studies. Experimental control was achieved as much as possible through methodological techniques. For example, only subjects having a hip or knee joint replacement and only those who could read and write English were included in the study. Another example of experimental control was the random assignment of subjects to the group teaching program from the list of patients having hip or knee joint replacement. Another source of control was use of the conference-type room for each class. As much as possible, "teachers" remained the same and presented the same information in the same way for all subjects.

The education and skill of the team members relative to conducting research is an extraneous variance that may have had a unknown effect on the results. Different educational backgrounds of the members may have emphasized different aspects of the research process. Ideally, the rigor of doing research and the importance of consistency in method will be valued by all those who are involved in the conduct of research.

Some subjects met the admission criterion of speaking and writing English but still used a interpreter during the teaching sessions. Actual comprehension of the material being taught is an unknown extraneous variable.

Previous experience with joint replacement surgery was an extraneous variable which may have had an effect on outcomes. The data showed that 40% of the control subjects had previous joint replacement surgery compared to 17% of the experimental subjects. Subjects who had previous experience with joint replacement surgery were likely to have memories and knowledge that could have affected their learning and their behavior during this second experience.

Extraneous variances might have been minimized by strengthening the commitment of team members to the teaching process, by having all members of the team present at regular meetings, and by having a predetermined exit procedure from the team if or when a team member chooses to leave the program. Additionally, extraneous variance might have been decreased by studying only subjects who were experiencing their first joint replacement.

Limitations

Two major limitations of this study have been identified. First, the sample was one of convenience, was small, and was limited to one clinical setting and There were unequal numbers of subjects in the control and experimental groups. A second limitation was related to the unanticipated career moves and turnover among teachers that

led to unknown changes in the commitment of the individual team members to the group teaching program.

Implications for Nursing Practice

Patient care recommendations based on this study will not be made because the findings in this study were not significant. However, conducting the study encouraged the formalization of the teaching program. Consistant preoperative information was presented to patients and their families. Also, an increased flow of patient information among the team members was informally observed. Potential problems could be identified and discussed within the team before the patient was admitted to the hospital.

Recommendations for Further Study

The following suggestions for future study are recommended to clarify and strengthen the findings of this study. The study could be replicated with a larger sample to clarify if the lack of significant differences between the groups is due to the sample size. The group teaching program might be presented via a script or by videotape to avoid inconsistencies in the delivery of the content. Previous experience with joint replacement surgery should be controlled. Inclusion of subjects who require the use of an interpreter to participate in the group teaching should be

avoided. Only the days of hospitalization after surgery should be measured, or some other form of control should be used to eliminate the effects of early admission to the hospital.

The study might be expanded to include family member anxiety and satisfaction with the teaching and care. Another study that might be interesting would be one that includes the cost of the teaching and job satisfaction for the team teachers.

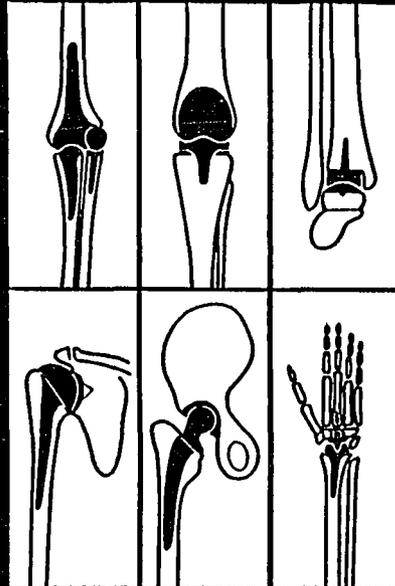
Summary

Results of this study as they relate to the hypotheses tested were discussed in this chapter. The three hypotheses were rejected. There were no significant differences in state anxiety, satisfaction with care, or length of hospital stay between the experimental subjects (n=23) who received the teaching program and the control subjects (n=15) who did not.

Results of the study were discussed in relation to team research in the clinical setting. The project stimulated the development of a formal group teaching program and encouraged collaboration and communication among members of a multidisciplinary team.

APPENDIX A
PATIENT BROCHURES

Patient's Primer On Artificial Joint REPLACEMENT



by
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Patient's Primer on Artificial Joint Replacement

This pamphlet has been written for those contemplating or already scheduled for artificial joint replacement. Its purpose is to inform the reader of the time proven principles and the current state of the art of artificial joint replacement. Additionally the anticipated results and frequently encountered problems associated with such surgery will be discussed. The pamphlet also outlines a typical hospital stay for such surgery, describing the usual day by day progression of activities and the subsequent period of out-patient recovery. Obviously, additional questions may arise in the reader's mind which may be unique to his or her own personal situation. Please feel free to contact me if such is the case for it is my intent that you be thoroughly familiar and comfortable with any decision that you make concerning a surgical solution to your current problem.

Historical Aspects of Artificial Joint Replacement

The present state of the art of artificial joint replacement began in England in 1962 when an English surgeon, Sir John Charnley (now knighted for his contribution), implanted an artificial hip which was fabricated of a plastic socket and a metal ball. The two prosthetic parts were secured to the patient's skeleton by use of an acrylic dental cement called methylmethacrylate. Today those materials and methods of attachment, having withstood the critical test of time, serve as the basis for nearly all types of artificial joint replacement. The few exceptions to this will be covered under a discussion of each respective joint.

So successful have the techniques of total joint replacement evolved, that they represent some of the most predictable and dramatic forms of treatment available in removing the source of pain and disability in patients with malfunctioning joints due to old injuries or arthritis of various types. It is estimated that in the United States alone 100,000 artificial hips will be implanted yearly. Next in declining numbers will be artificial knees, elbows, shoulders, wrists, and ankles.

What Is Arthritis and Who Is a Reasonable Candidate for Artificial Joint Replacement?

Arthritis is quite simply the gradual or rapid wearing away of the pad or cushion (articular cartilage) covering a bone at a joint interface. For most of us, this gradual wearing away of cartilage goes unnoticed until a critical degree is reached. Then we begin to notice early morning stiffness, joint aching, and increased pain in the involved joint with usage. For others, an injury to the previously asymptomatic joint may bring the condition to our attention and still for other patients, the cause of articular cartilage damage or loss may be due to biochemical alterations provoked by such diseases as rheumatoid arthritis, juvenile arthritis, gout, hemophilia, or infection. Once the cushion or pad of articular cartilage is lost, the underlying bone becomes exposed and soon proves to be an unsatisfactory joint surface. Pain with usage and compromised function then follows.

Thus the ideal candidate for artificial joint replacement should display the following components to his disability:

- A. X-ray evidence of loss of articular cartilage.
- B. Sufficient disability that his or her lifestyle is significantly compromised.
- C. A non-vigorous lifestyle.
- D. Lack of obesity.
- E. Absence of any disabling medical problems.

What Are the Anticipated Results of Surgery?

Patients successfully undergoing an artificial joint replacement can expect to experience 90-95% relief of pain in the involved joint. Deformed joints can usually be straightened and joints stiffened by disease can be made more mobile. The great majority of patients will not require walking aids following surgery provided other joints are not a problem.

What Are the Risks Associated with Such Surgery?

The two most serious problems following artificial joint replacement are infection in the operative site and the eventual loosening of the prosthesis from the skeletal bed. With any type of surgery it is impossible to prevent a few air borne bacteria from gaining entrance into the wound. These small numbers of bacteria may eventually give rise to an active infection. However, careful surgical technique, expediently performed surgery, and generous use of antibiotics have all served to minimize this risk factor of infection. The risk of an infection following total joint replacement should not exceed 1%. Because the prosthesis is secured to the skeleton with a very strong but very brittle type of cement, it is possible to break the cement bone junction causing the implant to become microscopically loose within the skeleton. This complication can occur following a sudden fall, from overusage, or abusive activities, from soft bone, and other reasons. The risk of this happening is estimated at approximately 1% per year of usage (thus 20% of patients with a total joint replacement will have loosening of a component part after 20 years of usage). This figure may vary depending upon many circumstances.

A third and infrequently observed complication is that of a blood clot forming in a vein (thrombophlebitis). This complication generally arises in the pelvic or leg vessels. Infrequently a small piece of the clotted material may break off and travel to the lung causing a blockage of circulation to the heart. In rare circumstances this problem (pulmonary embolism) can be fatal.

Although all patients undergoing total joint replacement are carefully screened preoperatively, a few may develop a complication from a drug, an anesthetic, or suffer cardiac problems postoperatively but every effort is made to identify such potential problems preoperatively.

What Does the Typical Hospital Stay Represent?

DAYS 1 & 2 All patients are admitted two days prior to their scheduled surgery. This permits a thorough preoperative evaluation* thus lessening the likelihood of postoperative medical problems.

DAY 3 **DAY OF SURGERY.** Patients are kept in the recovery room until fully awake or until the anesthetic effects of a spinal or local anesthetic have significantly worn off.

DAY 4 Patients are confined to bed rest.

DAYS 5 & 6 Patients are generally gotten out of bed to begin physical or occupational therapy. With lower extremity surgery patients begin weight bearing using a walker or crutches.

DAY 7 Active movement to the operated joint is begun.

DAYS 8-12 Increasing activities aimed at improving the patient's muscle strength, range of motion and ability to use the operated joint. Generally patients are seen one to two times a day by the therapy department.

DAY 13 Patients are released from the hospital.

*Includes chest X-ray, EKG, laboratory blood test.

Are There Age Limits for Total Joint Replacement?

No. Patients varying from 19-91 years of age have successfully undergone total joint replacement at this institution. If sufficient disability exists and total joint replacement offers the best solution, age is not a determinant providing medical problems do not exist.

Postoperative Followup

Patients will be seen on a regularly scheduled program of visits that extend one to two years postoperatively.

The first postoperative visit is scheduled for six weeks following surgery. At this visit the degree of pain relief and range of motion are reviewed. Generally crutches or walking aids are stopped at this time interval.

The second visit is three months postoperatively. The third visit is six months postoperatively. The fourth visit is twelve months postoperatively. At this time a final checkup is usually performed and any residual problems are identified and discussed.

What Happens If a Joint Becomes Infected or Loose?

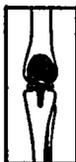
Generally if a prosthetic joint develops an infection, the artificial parts must be removed before the body can control the infection. In some cases depending upon the type of organism causing the infection, consideration can be given to reimplanting a new prosthesis at a later date. If patients experience sufficient pain from a prosthesis that has become loosened, the only solution is the recementing of that prosthetic device.

Details of Specific Joints:



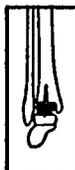
HIP

Newer prosthetic designs are beginning to appear which aim at eliminating the need for bone cement for their attachment to the skeleton. These "biologically fixed" prostheses have surfaces which possess small, open pores allowing for the ingrowth of scar and bone tissue to assure their rigid attachment to the skeleton. Work on such techniques is presently underway at the University of Arizona Health Sciences Center.



KNEE

Earlier designs of artificial knee prostheses proved to be inadequate resulting in a high rate of loosening. Current designs now are proving to be as successful as those observed at the hip. A total knee designed at the Arizona Health Sciences Center is now being used in the United States and work continues at this center on newer designs aimed at eliminating the need for bone cement for attachment in certain selected situations.



ANKLE

An artificial ankle replacement is generally recommended only for patients with rheumatoid arthritis. Surgical stiffening of the ankle joint (called an ankle arthrodesis) provides for pain free usage with walking activities and is the preferable form of treatment for patients with osteoarthritis of the ankle.



SHOULDER

Dependable and successful results with artificial shoulder replacement have been reported since the early 1970s. This procedure, however, should be reserved almost exclusively for the patient with rheumatoid arthritis.



ELBOW

An artificial elbow prosthesis was designed at the Arizona Health Sciences Center in 1975 and has been used successfully since that date.



WRIST

One of two artificial wrist prostheses currently used throughout the world was designed at the Arizona Health Sciences Center. It has been available to patients since 1974 and has proven to be a most successful and predictable means of providing pain free stable motion at the wrist. This procedure is being performed in patients with rheumatoid and osteoarthritis.

This pamphlet was designed to serve as a basis for further discussion if additional questions should arise in your mind. The state of the art of artificial joint replacement is changing rapidly and what was impossible last year may be tomorrow's reality. If you should have further questions, please do not hesitate to contact me.

Robert G. Volz, M.D.
Professor of Surgery

626-6110

After The Operation... Suggestions Concerning The Care Of An Artificial Joint



Orthopedic Surgery
Arizona Health Sciences Center
Tucson, Arizona

This pamphlet has been written for your benefit — the patient who has just undergone an artificial joint replacement. Its purpose is to inform... so that you will have a better understanding of the dos and don'ts of your convalescence and the long-term care required of an artificial joint.

There are many factors that go into the lifespan of an artificial joint. Some you will have control over; others you will not. Certainly, the likelihood that your implant will provide painfree function for a long time is, in great part, dependent upon how carefully you read and follow the enclosed suggestions, starting with your dismissal from the hospital.

First, some general suggestions concerning diet and the immediate postoperative care of the operated joint(s).

Diet:

A well-rounded diet with adequate protein is essential because of your body's needs in rebuilding injured tissues. A diet which provides generous amounts of protein and fresh vegetables is, therefore, highly desirable.

Vitamin Supplements:

A multivitamin taken once daily is recommended. Vitamin C dosage should be at least 500 mg. daily, as vitamin C is an essential component in tissue healing.

Bathing:

Unless you have been specifically advised, do not submerge the wound area in bath water until complete wound healing has occurred and all skin sutures have been removed. Any increased redness, swelling about the wound, seepage or drainage should be reported immediately to your physician. If showering has been approved, avoid a steady flow of water upon a freshly healing wound as contamination of the wound by surface bacteria might occur. Wounds do not need to be kept bandaged unless seepage is noted or friction from clothes poses a problem.

Walking Aids:

If you have received an artificial joint in the lower extremity, you are to remain on your walking aid (two crutches or a walker) until advised by your doctor that they are no longer necessary. Generally, the period in which protected weight bearing is necessary extends to at least six weeks following the operation. This period of protected weight bearing is necessary to assure that undue stress will not be placed upon the living bone which is supporting the prosthetic device. This bone was injured in the preparation of the site for securing the prosthesis and it must be permitted adequate time to heal before full weight bearing activities are permitted. Failure to adhere to this request may seriously jeopardize the long-term outcome of your operation, thereby necessitating a subsequent operation in the future.

Exercise:

Daily periods of time should be set aside for exercise of the new joint. This includes gradually increased periods of walking, particularly if one is able to do so outside of the home. Additionally, several times a day, the artificial joint should be put through a complete arc of motion, as failure to do so may result in gradual stiffness and loss of function (see diagram for specifics of each joint). At each postoperative visit with your doctor, an assessment of the range of motion of the joint will be made and further suggestions in regard to exercise or therapy modalities will be made.

Driving:

The decision as to when you should drive your automobile is, in great part, the patient's. If your automobile does not require a great deal of pedal pressure by the operated extremity or, in the case of an upper extremity artificial joint, power steering is available, you may begin to drive when you feel you have the potential to adequately control the automobile. The only exception to this advice is specific restrictions expressed on the part of your physician.

Sunbathing:

Undue exposure of the operated areas is to be avoided until approximately 12 weeks following your operation.

Antibiotic Prophylaxis:

The presence of an artificial joint increases the likelihood that an infection arising elsewhere in the body might settle in the area of the artificial joint. If this were to occur, great difficulty in controlling or arresting the infection might ensue, thereby necessitating removal of the prosthesis. Therefore, should you incur any acute infection associated with a fever, preventive antibiotics should be instituted. Additionally, with any type of dental work or urinary tract procedures such as catheterization or prostate surgery, you should be treated appropriately with prophylactic antibiotics. In the case of dental work, prophylactic antibiotics need be started only one hour before your visit to the dentist and continued for no longer than 24 hours. If questions should arise in this regard, please consult your physician.

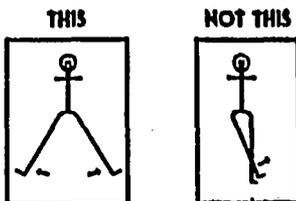
Ankle and Leg Swelling:

If you have received an artificial hip, knee or ankle, there is a good possibility that you will have some ankle and leg swelling from time to time. This is due to protected weight bearing because of the use of crutches or a walker. Once these aids are discontinued, the swelling should subside. Intermittent periods of leg elevation will assist in decreasing this problem as will the wearing of support or elastic stockings. If calf redness or pain is associated with leg and ankle swelling, please notify your physician promptly.

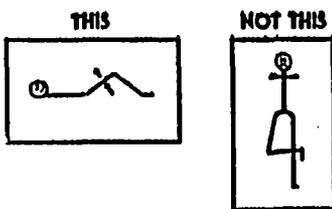
Now, some specific dos and don'ts and further suggestions for the various joints of the upper and lower extremities:

THE HIP:

Until sufficient scar tissue has developed about your artificial hip joint, there is a remote possibility of dislocation of the component parts. To avoid this unlikely problem, the following suggestions should be adhered to. It is permissible to turn onto the operated side but one should not sleep on the opposite, uninvolved side.

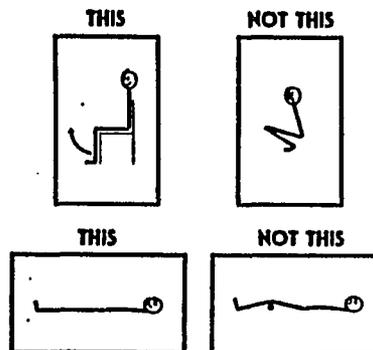


Avoid crossing the operated leg upon the other. Avoid turning the involved leg and hip outward. Avoid sitting or reclining on low objects such as chairs, pillows, and beds. A commode seat elevator is required until at least three months postoperatively. Avoid extremes of crouching and stooping. Swimming activities without the addition of flippers is highly recommended. Stationary bicycling is also a very desirable and safe way to engage in daily exercise.



THE KNEE:

When recumbent, attempt to straighten the knee as much as possible. Avoid placing a pillow or any type of roll under a slightly flexed knee. When sitting, attempt to draw the knee back in a bent fashion as far as possible. You should attempt to strengthen the main muscle about the knee, the quadriceps, by lifting the straightened leg during repeated periods of exercise which should be scheduled three or four times daily.



Avoid twisting motions at the knee and extreme positions of flexion, i.e., bending of the knee such as in assuming a crouching position. Swimming and bicycling activities, whether stationary or mobile, are recommended.

THE ANKLE:

A home exercise program should consist of several periods throughout the day in which an attempt is made to move the ankle in an upward and downward motion as far as possible. If swelling of the ankle occurs throughout the day, intermittent periods of elevation will resolve this problem. It may be necessary to wrap the operative area with an ACE bandage or to continue the wearing of an elastic support hose.



THE SHOULDER:

A home program of physical therapy will have been outlined by your physician. It is terribly important that you follow his or her instructions and those of the therapist as carefully as possible if you are to regain the maximum arc of motion. Objects weighing in excess of 10 lbs. should not be lifted by the involved extremity.

THE ELBOW:

THIS



An exercise period should be set aside on a daily basis in which an attempt is made to bend and straighten the elbow as far as possible. Complete straightening of the elbow (extension) probably will not prove to be critical to most activities of daily living. Objects weighing in excess of 10 lbs. should not be lifted at any time during the convalescence or the subsequent lifespan of the implant.

THE WRIST:

The physical therapy program outlined by your physical therapist should be carefully adhered to at home. Generally, splints are advisable for nighttime use until complete voluntary control of the wrist has been regained.

Finally, some notations about your specific implant. It is composed of

- _____ cobalt/chrome alloy
- _____ titanium/vanadium
- _____ other

It is

- _____ cemented
- _____ porous surface
- _____ smooth surface } non-cemented
- _____ other

All artificial joints are composed of metal and plastic surfaces. This assures the lowest degree of friction at the bearing interface and, thus, the lowest rate of wear. Most artificial joints will have a predictable lifespan of wear of at least 20 years.

Your next scheduled appointment is

You are to remain on two crutches or a walker until

Should you have further questions, please contact

Dr. Robert G. Volz
(602) 626-7644

Dr. James Benjamin
(602) 626-4024

APPENDIX B
STRUCTURED TEACHING OUTLINE

**ORTHOPEDIC RESEARCH PROJECT
JOINT REPLACEMENT TEACHING PLAN
CLASS FORMAT**

TIME	CONTENT
5 minutes	Introductions Purpose of Class
10 minutes	Videotape
15 minutes	Nursing Preoperative and Postop Preparation
5 minutes	Operation Room Preparation
5 minutes	Recovery Room Preparation
10 minutes	Physical Therapy
5 minutes	Social Services
5 minutes	Posthospitalization Preparation
5 minutes	Questions/Discussion

I. Nursing Pre-op Teaching for Total Joint Arthroplasty
(15 minutes)

A. Admission

1. Day of admission (day before vs same day)
2. Articles to bring (toiletries vs clothing)
3. Discussion of valuables

B. Nursing Unit

1. Nurse introduction and general facilities
2. Nursing history and assessment
3. Explanation of admission orders
4. Verification of laboratory and preliminary tests (EKG, chest x-ray, etc.)
5. Resident MD visit
 - a. Explanation of the surgical procedure
 - b. Consent form witnessing and signing
 - c. Question and answer period
6. Preparing for surgery
 - a. Shower and/or skin preparation if ordered
 - b. NPO status after 2400: Be certain not to accept food or drink even if offered, without consulting the nurse
 - c. Medication for anxiety and/or sleep available, if needed
7. Morning before surgery
 - a. Preoperative medication, if ordered
 - b. Family should plan to be here approximately 90 minutes prior to surgery
 - c. Preoperative check list
 - d. To the holding area (hips by bed and others by gurney)
8. Nursing unit after surgery
 - a. Nurse involvement (postoperative vital signs, assessment, etc.)
 - b. Pain control: Do not refuse pain medication or tolerate pain. There is a definite need for comfort; for the purpose of enhancing mobility and healing.
 1. Medication will be available by injection if needed
 2. Patient controlled analgesic (PCA) control (explanation of mechanics and philosophy)

- c. Therapy and equipment involved
 - 1. IV therapy (antibiotics)
 - 2. Dressings (Jones and rationale)
 - 3. Drains (types and rationale)
 - 4. A-pillow (purpose)
 - 5. Catherizations
 - 6. TED hose (purpose and length of use)
 - 7. Trapeze
- d. Pulmonary status
 - 1. Cough & deep breath every 2 hours
 - 2. Incentive spirometry (rationale)
 - 3. Turning every 2 hours (except total hips)
- e. Diet as tolerated after surgery
- 9. Early mobility: will aid healing and decrease length of stay
 - a. Out of bed first day after surgery
 - b. Physical therapy second day after surgery

II. Operating Room (OR) Preparation (5 minutes)

Ortho: Holding Area
OR environment
Prosthesis

- A. Preparation for OR
 - 1. Skin preparation (hair removal)
 - 2. Jewelry removed
 - 3. Hearing aids removed
 - 4. Nail polish removed
 - 5. Bed
 - 6. Box (A-pillow)
 - 7. TED hose
- B. Preparation for Anesthesia
 - 1. Temperature
 - 2. Monitors
 - 3. spinal vs general
 - 4. Warm blanket
- C. Mechanics:
 - Actual prosthesis will be displayed

III. Recovery Room Preparation (5 minutes)

- A. Preparation for awakening
 - 1. People will be asking you to cough, deep breathe
 - 2. Oxygen mask, automatic blood pressure cuff
 - 3. Warm blankets available
- B. Relatives will be notified
 - 1. surgeon will visit in waiting room
 - 2. No visitors in recovery room
- C. Return to room
After you awaken and are stable

IV. Physical Therapy (10 minutes)

- A. Introduction
 - 1. Orthopedic physical therapy
 - 2. Bedside treatments twice daily
 - 3. Premedicate for pain control before treatments
- B. What to bring
 - 1. Slippers with back
 - 2. Button down robe
 - 3. Walker or crutches
- C. Equipment
 - 1. We will order if necessary
 - 2. Will need assistive device and toilet seat extender
- D. Total hip replacement
 - 1. Out of bed into chair first day after surgery
 - 2. Second postoperative day, begin out of bed transfers and ambulate with walker; instruct in exercises
 - 3. Continue with transfers and gait training until independent
 - 4. Written handout with precautions
 - a. No flexion past 90 degrees
 - b. Toes pointed forward
 - c. No crossing of midline (i.e., do not cross legs)

- E. Total knee replacement
 - 1. Out of bed in chair first day after surgery
 - 2. Second postoperative day
 - a. Ambulate with walker
 - b. Range of motion exercises, 0-90 degrees of flexion before discharge
 - c. Continue until independent with ambulation and 90 degree flexion
 - 3. Nothing under knees
- F. Attitude, cooperation, safety
- G. Instruct in quadricep-setting exercises

V. Social worker (5 minutes)

- A. Purpose is to inform you about medicare, inquire into your plans for care after discharge, and discuss the importance of motivation to quicken your recovery.
 - 1. Medicare coverage
 - a. After the Medicare deductible, you are responsible for 20% of the medical bill
 - b. Your supplemental insurance will usually cover the difference if allowable by Medicare
 - c. Medicare will pay for 80% of the cost of equipment needed after your surgery except for a raised toilet seat. We can order equipment through the hospital supplier and they will bill Medicare for you.
 - d. Medicare DOES NOT PAY for nursing home placement or home health automatically even if ordered by a physician. These are only covered if you require skilled nursing care after your discharge. Most patients after joint replacement DO NOT qualify.
 - 2. What are your plans after surgery?
 - a. Find out how many patients live by themselves. Inquire into what plans they might have.
 - b. How many live with an informed spouse

- c. Discuss options: nursing home placement and home health if Medicare eligible, Meals on Wheels, Assistance League, Title XX, and private pay services.
3. Motivation a key to quick recovery
 - a. Give examples of other patients who did well despite age, rheumatoid arthritis, etc.
 - b. Discuss availability of social worker to express fears, feelings of anger, pain, loss, etc.
 - c. Discuss importance of trusting staff to provide the care you'll need to recover.

VI. Posthospitalization Care (5 minutes)

- A. Postoperative follow up
 1. We will see you between 2 and 3 weeks after surgery to check the incision.
 2. Bathing begins after first medical check up.
 3. TED hose should be worn for six weeks to decrease swelling.
 4. Toilet seat extenders need to be used for three months postoperatively.
 5. Take antibiotic prophylaxis before dental work, etc.
 6. Sun bathing is not recommended for three months.
 7. You can drive your car in three weeks.

In case of postoperative complications: During business hours call Cindy or Sue Ellen for Dr Volz, and Cindy or Joan for Dr Benjamin. After hours, please call the orthopedic resident on call at 626-6000.

- B. Helpful hints
 1. At home bar stools work well for total hip replacements. Lazyboy chairs and other low soft chairs are not good.
 2. Buy two pair of TED hose.
 3. Try to borrow a walker, if possible.
 4. Plan to have someone help you with shopping, etc, when home
 5. Swelling of the operated side is normal for weeks after surgery. Periods of elevation will help control this as well as TED hose.

APPENDIX C
DATA COLLECTION TOOLS

SAMPLE ITEMS

SELF-EVALUATION QUESTIONNAIRE
FORM Y-1

Directions: A number of statements which people have used to describe themselves are given below. Read each statement then circle the phrase to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

Response Options: Not at All
Somewhat
Moderately So
Very Much So

I feel calm.

I feel self-confident.

I am presently worried over possible misfortunes.

I feel frightened.

I am relaxed.

I feel content.

Source:
Charles D. Spielberger
Consulting Psychologists Press
577 College Avenue
Palo Alto, California 94306

SAMPLE ITEMS

PATIENT'S OPINION OF HOSPITAL CARE QUESTIONNAIRE

Directions: Please give your honest opinion for each statement below by CIRCLING ONE of the five answers which BEST describes your hospital care.

Response Options: Strongly Agree
Agree
Uncertain
Disagree
Strongly Disagree

Teaching Subscale

Thing were always explained to me clearly.

Too often staff members could NOT answer my questions.

Caring Subscale

The staff members were sincerely interested in me as a person.

There was always someone willing to listen to me.

Skill Subscale

Everyone seemed very skilled at their work.

The staff members did NOT seem to know how to handle my case.

Source:

Rose Gerber, PhD, RN
College of Nursing, Bldg. 203
University of Arizona
Tucson, Arizona 85721

APPENDIX D
HUMAN SUBJECTS APPROVAL FORMS



University Medical Center

77

1501 North Campbell Avenue
Tucson, Arizona 85724
Nursing Administration

MEMORANDUM

TO: Carolyn Murdaugh, RN, PhD
Director of Nursing Research

FROM: Mickey L. Parsons *mlp*
Vice President

DATE: March 22, 1990

RE: Access Approval

Your request for access for the project "The Effects of Group Teaching on Patient Outcomes" has been approved. The procedures to be followed pose no more than minimal risk to the participating subject requiring the use of a disclaimer.

MLP/cg

SUBJECT DISCLAIMER**"THE EFFECT OF GROUP TEACHING ON PATIENT OUTCOMES"**

The subject of this study is to test the effectiveness of a structured teaching program on satisfaction with care, anxiety, and length of hospitalization. If you decide to participate, you will be assigned by chance (flipping a coin), to receive either written information or to attend a one hour group class before the surgery. There are no known risks in this study. You will be asked to complete a set of questionnaires before the surgery and the day before you leave the hospital following the surgery. About 15 minutes will be needed to complete the questionnaire each time. You may ask questions at any time.

You are free to withdraw from the study at any time without it affecting your care in any way. Your name will not be placed on the questionnaires and all information you give us will remain anonymous. By completing the questionnaires, you are giving your consent to participate.

Carolyn Murdaugh, PhD, RN
Principal Investigator
626-5191

APPENDIX E
DEMOGRAPHIC DATA

ORTHOPEDIC RESEARCH PROJECT

DEMOGRAPHIC DATA
(To Be Completed by Subject)

NAME: _____ Today's Date _____

Sex: Male _____ Female _____

Age: _____

Education: Check One

- _____ Some high school
- _____ High school graduate
- _____ Some college
- _____ College graduate
- _____ Some graduate credit
- _____ Graduate degree
- _____ Other (please state) _____

Income Per Month:

- _____ \$100 - 200
- _____ \$200 - 300
- _____ \$300 - 400
- _____ \$400 - 500
- _____ \$500 - 1000
- _____ \$1000 or greater

Number of persons living in your household: _____

Have you ever been hospitalized? yes _____ no _____

Have you had a previous joint replacement? yes _____ no _____

Who is your surgeon? _____

ORTHOPEDIC RESEARCH PROJECT

DEMOGRAPHIC DATA

(To Be Completed From Chart Data)

ID: _____ Unit: _____

Diagnosis: _____

M.D. _____

Length of time between teaching and

surgery: _____ days

Date of Admission: _____

Date of Discharge: _____

Comments: _____

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