8-1973

A study of the effect of preoperative communication between operating room nurses and patients having total hip replacement surgery

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A STUDY OF THE EFFECT OF PREOPERATIVE COMMUNICATION BETWEEN OPERATING ROOM NURSES AND PATIENTS HAVING TOTAL HIP REPLACEMENT SURGERY

A Thesis

Presented to the

Department of Speech

and the

Faculty of the Graduate College

University of Nebraska at Omaha

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

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August 1973

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THESIS ACCEPTANCE

Accepted for the Faculty of The Graduate College of the University of Nebraska at Omaha, in partial fulfillment of the requirements for the degree Master of Arts.

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ACKNOWLEDGEMENTS

My sincerest thanks to Dr. John Brilhart, Dr. George Barger, and Walter Combs, members of the Graduate Faculty University of Nebraska at Omaha, and Dr. Arnold Lempka and Dr. Claude Organ, members of the Creighton University Medical School Faculty, for their critical reading and evaluation of this study.

I am indebted to my colleague, Susan Rydberg and to Dr. Werner P. Jensen, for their assistance in collecting data.

A very special thanks is due the operating room staff and administration at Archbishop Bergan Mercy Hospital, for their indulgence and continued reassurance.

Barba J. Edwards
July, 1973

TABLE OF CONTENTS

Introduction

Communication and interpersonal relations are two vital elements of the nursing process. The basic unit of nursing consists of two persons, the patient and the nurse; in this interpersonal relationship the individuals bring their past experiences and expectations to the present situation and attempt to find ways to communicate their thoughts and feelings.

As operating room nurses accept the responsibility of giving comprehensive patient care, we are faced with the problem of understanding our role in effective interpersonal communication with the preoperative patient and using this knowledge for therapeutic results. Our skills based on knowledge and personal attributes give us a highly unique therapeutic function, the true significance of which has very probably not yet been fully recognized.

The electronic revolution in America that provided the capability to place man on the moon has invaded the modern surgical suite, but only to assist the team effort of doctors and nurses by providing more time for the maximum in total care of the surgical patient. Hopefully this study has helped clarify the relationship of the operating room nurse with her patient.

People in general understand that patients undergoing surgery have some degree of anxiety. Anxiety may be defined as a state of tension and/or distress likened to fear, but being produced by the threatened loss of inner control rather than by an external danger. Physiological manifestations are increased pulse and respiratory rates and profuse diaphoresis.[1]

The medical profession has long known that emotional reactions and disturbances of varying degrees may accompany surgical procedures, and anxiety has been emphasized as a significant delaying factor in postoperative recovery.[2] Jones, Williams and Williams concluded that preoperative anxiety does exist in most patients and can be physiologically measured.[3] It seems likely therefore that anxiety, based on fear of death, disfigurement, disability, and the unknown, causes disruptive transoperative physiological changes. The mental attitude of the patient prior to surgery seems to have significant effect on his ability to tolerate the procedure and to progress

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[1]Charles K. Hofling and Madeleine M. Leininger, Basic Concepts in Psychiatric Nursing (Philadelphia: J. B. Lippincott Co., 1960), p. 43.

[2]Morris Herman, "Anxiety and Tension States," Medical Clinics of North America, VI (May, 1958), 723-40.

[3]J. R. Jones, J. G. Williams, and B. Williams, "A Physiological Measure of Preoperative Anxiety," Psychosomatic Medicine, XXXI (November-December, 1969), 522-27.

in his postoperative course. Although apprehension may reasonably be associated with any surgical procedure, the degree of apprehension varies considerably because of associated factors. Two of these associated factors are the nature of the operation and the relationship of the patient to the surgeon. Mendel, in his study of anxiety in patients scheduled for cancer surgery, note that patients who have little or no rapport with their surgeon require more anesthesia during their operation.[4] When the surgery involves major reconstruction, as in total hip replacement, there seems to be an especially high anxiety reaction--a reaction akin to that which is seen in surgery for cancer or an organ of value, such as genitalia, uterus, or breast.

Acrylic cement, known as Methylmethacrylate, offers a "new life" for those individuals suffering from long term disabling or debilitating hip joint disease due to arthritis, congenital disorders, or surgical correction. Many of these patients have been hopeless invalids for years. Now they can be all but guaranteed the near normal function of their hip joints following surgery cementing in the high-density polyethylene and metal hip components.

Major reconstructive hip surgery utilizing self-curing acrylic cement in the hip joint is relatively new

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[4]Werner M. Mendel, "The Anxious Patient," California Medical Journal, CII (April, 1965), 123-27.

in the United States; in late 1971 the Federal Food and Drug Administration released the material for general use. Prior to that time selected orthopedic surgeons were awarded the investigational privilege of using the cement in various areas of the United States.

Establishment of the proper physician-patient rapport appears to be particularly important for this emotionally disturbing procedure. With the increasing demands being made upon the surgeon's time, it seems only logical that the well trained operating room nurse who assists the surgeon might expand her role and assume the duty of allaying patient anxiety and establishing rapport by effective preoperative communication. As a human response to persons in distress, nursing demands effective interpersonal communication, and communication often fails because a satisfactory relationship between nurse and patient is not established. The nurse must be warm and responsive so as to create a climate which will enable rapport to develop. She must be sensitive to the needs of the patient, recognizing that all behavior is meaningful. The unspoken fears which the patient may have can be relieved by meeting the operating room nurse who will be concerned with the next phase of his hospitalization. She can utilize her knowledge, emotions, experiences, humor, and insight in her first encounter with patients in order to successfully attempt to relieve the patient's anxiety. It is necessary

to find out what the surgeon has told the patient, so that she may help to interpret this information. The term "tenotomy," for instance, may have no practical meaning to a housewife or clerk but it is still the surgeon's prerogative to use the term with the patient. It is likewise vital that the nurse assess what the patient doesn't want to know. For some individuals, too much knowledge may be as destructive and anxiety-producing as not enough knowledge. Taking into account the above considerations, this study was proposed. The aims of this study were restricted to the following questions: (1) Are there similar overall patterns of reactivity in variables of temperature, heart, and lungs, before, during, and after anesthesia in patients having total hip replacement? (2) If so, can these patterns of reactivity be lessened by preoperative communication with operating room nurses? The vital signs were chosen because they are necessary to sustain life and are considered to be indicators of anxiety reactions.[5] Since each individual patient is physiologically unique and subsequently necessitates a variation in the type and amount of anesthesia given, pre-induction anesthesia measurements are felt by anesthesiologists to be more reliable than those taken during and immediately after surgery. Certain

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[5]H. Visotsky, O. Hamburg, and M. Goss, "Coping behavior under extreme stress," Archives of General Psychiatry, V (November, 1961), 445-51.

anesthetic agents are known to raise or lower the body temperature as well as increase or decrease the respiratory and cardiovascular systems.[6]

One individual may react primarily with his cardiovascular system, while another under the same conditions may react via the respiratory system. Even within the cardiovascular system individuals may react differently; one may have increased blood pressure, while another may have increased pulse rate. At the same time, patients tend to show a common element in their physiological reactions and response patterns to anxiety feelings.

Survey of Literature

Considering the apparent importance of preoperative communication in patient care, surprisingly little has been done by nurses in this area of research. As far back as 600 years ago, physicians, and surgeons in particular, were aware that "good news," pleasant surroundings, and the personality of the patient were important factors in recovery. The late 1930's and early 1940's brought further recognition of the tendency for the course of a surgical operation to be adversely affected by an impersonal approach by the surgeon and his staff toward the patient. The need to view people as persons with complex feelings which interact with

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[6]A. F. Ax, "The Physiological Differentiation Between Fear and Anger in Humans," Psychosomatic Medicine, XV (September-October, 1953), 433-39.

their particular physiological state was stressed.[7]

At about the same time, numerous observers of human behavior stressed the impersonal nature of the surgical operation. As early as 1932 Mayo wrote of several causes for a patient's unrest while awaiting surgery. He stated that psychological sensitivity by the surgeon and/or his staff in alleviating the patient's anxiety might be more demanding than the exercise of the skills required for the operation itself.[8]

Menguy demonstrated physiologically monitored changes in the anxious patient's pupillary reaction and pulse rate.[9] Mendel, in his extensive work with cancer patients, showed a definite stress record in patients undergoing anesthesia for destructive procedures of malignant areas.[10] Student nurses have surveyed the problem as related to nursing and set up preoperative teaching schedules, but no conclusions have been drawn.[11]

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[7]Robert Elman, "Psychogenic Factors in Surgery," Surgical Clinics of North America, XXX (October, 1950), 1391-1402.

[8]C. Mayo, "Preoperative Preparation and Its Relationship to Postoperative Complications," Journal Iowa State Medical Society, XXVI (April, 1932), 73-77.

[9]R. Menguy, "Operating Room Monitoring," Surgical Clinics of North America, XLVIII (February, 1968), 3-10.

[10]Werner M. Mendel, "The Anxious Patient," California Medical Journal, CII (April, 1965), 123-27.

[11]N. Burwash, "The Student Nurse and the Patient in the O.R.," Canadian Nurse, LVI (August, 1960), 709-15.

Struck, an operating room nurse, in 1968 measured anxiety in patients following cancer surgery by utilizing the Wittenborn psychological rating scale for anxiety. Testing was done on a total of 148 patients before sedation was given on the morning of surgery and on the first postoperative day. The selected patient-subjects had some type of known or questionable malignancy. Thirty-two of these patients were interviewed prior to surgery by personnel other than the operating surgeon. Of the 116 non-interviewed patient-subjects, thirty-two were matched as closely as possible to those who had been interviewed and served as the control group. The differences between presurgical anxiety reduction of 22.7 per cent in the experimental group and 16.0 in the control group was considered not to be significant.[12]

While this study failed to show an appreciable difference in the levels, perhaps due to the interviewers who possibly ranged widely in educational backgrounds and/or their techniques, neither of which were described, the results are noteworthy for the lack of effectiveness of the interviews.

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[12]R. M. Struck, J. D. Lynch and D. R. Wermers, "Anxiety and Anxiety Reduction in Surgical Patients," Journal Association of Operating Room Nurses, VI (July, 1967), 58-63.

Lindeman and Van Aernam in 1971 found that structured preoperative teaching significantly increased the adult surgical patient's ability to deep breath and cough following surgery.[13] In 1972, Lindeman, using the Palmar Sweat Index Test as an index of anxiety, found that patients experiencing "minor" surgical trauma had less anxiety postoperatively when visited preoperatively by the operating room nurse.[14] No significant difference for patients experiencing moderate or extensive surgical trauma was found. It should be noted, however, as mentioned by the author, that the Palmar Sweat Index Test has limitations and requires further validation.

Many nurses have published articles emphasizing the need for and benefit of preoperative communication between the operating room nurse and patient.[15] Programs for preoperative visits are widespread and considered to be of benefit to the patient according to the positive comments given the nurses and physicians during their

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[13]Carol Lindeman and Berry Van Aernam, "Nursing Intervention with the Presurgical Patient: The Effects of Structured and Unstructured Preoperative Teaching," Nursing Research, XX (July-August, 1971), 319-26.

[14]Carol Lindeman, "Nursing Intervention with the Presurgical Patient: The Effectiveness and Efficiency of Group and Individual Preoperative Teaching," Luther Hospital, Department of Nursing Service, Eau Claire, Wisconsin, 1971. (Mimeographed).

[15]For example, see S. F. Brophy, "A Means of Allaying Patient Anxiety Preoperatively," Journal Association of Operating Room Nurses, VII (February, 1968), 44-47.

postoperative rounds. No empirical evidence to support these claims (using the vital signs as indicators of anxiety reaction levels) has been published. Recent research reports investigating preoperative anxiety and the need for lessening this phenomenon have indicated that the operating room nurse and anesthesiologist are the most obvious persons to accomplish this.

Problem

The problem was: Do two different styles of preoperative communication by operating room nurses produce a significant difference in the amount of patient anxiety before, during, and after total hip replacement surgery as indicated by variables of temperature, pulse, and respirations? Two major hypotheses were generated from this problem.

Hypotheses

Hypothesis 1. There will be a significant difference in the temperature of patients undergoing total hip replacement surgery who have had preoperative communication with the operating room nurse and those who have had no communication.

Hypothesis 1:1 - There will be a difference in the temperature before surgery.

Hypothesis 1:2 - There will be a difference in the temperature during surgery.

Hypothesis 1:3 - There will be a difference in the temperature after surgery.

Hypothesis 2. There will be a significant difference in the pulse rate of patients undergoing total hip replacement surgery who have had preoperative communication with the operating room nurse and those who have had no communication.

Hypothesis 2:1 - There will be a difference in the pulse rate before surgery.

Hypothesis 2:2 - There will be a difference in the pulse rate during surgery.

Hypothesis 2:3 - There will be a difference in the pulse rate after surgery.

Hypothesis 3. There will be a significant difference in respiration rate of patients undergoing total hip replacement surgery who have had preoperative communication with the operating room nurse and those who have had no communication.

Hypothesis 3:1 - There will be a significant difference in the respirations before surgery.

Hypothesis 3:2 - There will be a significant difference in the respirations during surgery.

Hypothesis 3:3 - There will be a significant difference in the respirations after surgery.

Design

An analysis of variance design was used. This design was selected because it provides a method for evaluating the main effects of the two experimental variables as well as the interaction between them. Thirty-two subjects were assigned at random to the four conditions: Nurse 1 or Nurse 2, and preoperative communication or no preoperative communication by the operating room nurse. Measurements were taken of the three dependent variables of temperature, pulse rate, and respiration rate at three points in time: before, during, and after surgery.

Procedures

This study was conducted at Archbishop Bergan Mercy Hospital, Omaha, Nebraska. Bergan-Mercy is a private, non-profit medical-school-affiliated hospital with a bed capacity of 400.

The investigator and one other operating room nurse were the nurses communicating with patients. Two nurses were used to give some indication of whether any significant effect of preoperative communication might be due to unique personality variables other than the communicative interview itself. The nurses used in the study were the investigator, who has twenty years' experience as an operating room nurse, and a colleague who has four

years of operating room experience. Each nurse visited eight randomly selected patients meeting certain criteria mentioned below. These patients scheduled for total hip replacement surgery were compared to two similar control groups of eight patients each who did not receive preoperative communication from the operating room nurses, but were attended by the nurse indicated in the experimental design. Thus each nurse attended sixteen subject-patients having surgery, with eight of whom she conducted a preoperative interview and with eight of whom she had no contact prior to seeing them in the operating room.

All thirty-two patients had the same diagnosis and were scheduled for total hip replacement by the same surgeon. To be selected as a subject in this experiment, the patient had to fall within the age range of fifty-five and over, and have had no previous hip surgery. Patients meeting these two criteria were assigned at random to the four experimental conditions.

The communicating nurses were knowledgeable and experienced in making preoperative visits to establish rapport with patients during this presurgical phase. Guidelines for preoperative visits (Appendix I) were formulated by the investigator in a previous study from a set of questions asked invariably by sixteen randomly selected operative patients, of their operating room nurse during preoperative and postoperative visits. These nurses have a thorough knowledge of the procedure

of total hip replacement; its indications, treatment, prognosis, and complications. They utilized the guidelines in their initial meeting with the patient the evening before surgery to ascertain the degree of fear, apprehension, or anxiety, and to guide them in their interview with each patient.

The next encounter of the nurse with patient was in the surgery suite. Initially, the patient was awake and potentially able to respond to the nurse. However, the nurse had no oral communication with the patient. This communication between patient and nurse was entirely nonverbal. In the operating room, after the intravenous fluids were started to maintain fluid balance and provide a vehicle for administering of the initial anesthetic agent of sodium pentothal, the operating room nurse maintained a position beside the patient until he was asleep and positioned. During this time the electrocardiogram machine was connected to the patient's limbs by means of four cable wires with electrodes attached to the ends. This enabled the anesthesiologist to maintain a constant view on the oscilloscope of the electrical activity of the patient's heart. An automatic thermometer cable was placed through the patient's mouth into the esophagus and gave a constant reading. The respirometer gauge attached to the expiration bag on the anesthetic machine measured the patient's breathing. Continuous measurements were

made of the pulse rate, blood pressure and respirations. The nurse then recorded this data at specific intervals: (1) One hour before surgery, (2) At the time of incision, (3) Upon arrival in the recovery room.

Results

The results of the statistical analysis covering the research hypotheses are included in Tables I thru III. Each table summarizes the results of an analysis of variance. The top four lines of each table cover the main effects for nurse and communication variables and interaction between these, and an error term based on a combining of measure from all three points in time. The bottom portion of each table presents the analysis of measures from the three points in time separated as a main effect; hence a new error term and interaction of time with nurse and communication is presented.

Means for the dependent variables in all four conditions are presented in Appendix II.

Hypothesis 1: There will be a significant difference in the temperature of patients undergoing total hip replacement surgery who have had preoperative communication with the operating room nurse and those who have had no communication.

The analysis of variance for temperature measures is shown in Table I. The F ratios for the main effects, nurse and communication and for interaction between these variables did not meet the criterion of the .05 level of significance used for all tests. Thus the research hypothesis

was rejected in favor of the null hypothesis.

TABLE I

ANALYSIS OF VARIANCE FOR TEMPERATURE

Source of Variation	df	M S	F	P
Nurses (A)	1	1.000	2.35	N.S.
Communication (B)	1	1.000	2.35	N.S.
A x B	1	0.500	1.17	N.S.
Error A,B	28	0.426		
Time (C)	2	.750	3.67	.05
A x C	2	0.0	0.0	N.S.
B x C	2	0.250	1.22	N.S.
A x B x C	2	0.500	2.45	N.S.
Error (A,B)C	56	.204		

Hypothesis 1:1 There will be a difference in the temperature before surgery.

Hypothesis 1:2 There will be a difference in the temperature during surgery.

Hypothesis 1:3 There will be a difference in the temperature after surgery.

The F ratios for interaction between time and the experimental variables interaction did not meet the criterion for significance at the .05 level; thus the research subhypotheses are rejected in favor of the null hypotheses. The significant F ratio for the main effect "time" means only that average temperatures were different between at least two of the measuring points, and has no bearing on the hypotheses.

Hypothesis 2: There will be a significant difference in the pulse rate of patients undergoing total hip replacement surgery who have had preoperative communication with the operating room nurse and those who have had no communication.

The analysis of variance for pulse rate is shown in Table II. The F ratio of the nurse variable meets the criterion for significance at the .05 level. The F ratios for communication and interaction were not significant. Thus the research hypothesis was rejected in favor of the null hypothesis. The significance of the F ratio between the nurses indicates that the individual nurse, her styles, etc., is the important factor rather than the communicative visit. Even though the F ratios for the main effect communication and interaction are not significant as shown by the means in Appendix II, the direction of the differences favors the communicative interview.

TABLE II

ANALYSIS OF VARIANCE FOR PULSE RATES

Source of Variation	df	M S	F	P
Nurse (A)	1	1410.500	3.41	.02
Communication (B)	1	600.000	1.45	N.S.
A x B	1	620.000	1.50	N.S.
Error (A,B)	28	413.632		
Time (C)	2	216.000	1.27	N.S.
A x C	2	12.250	0.07	N.S.
B x C	2	122.000	0.72	N.S.
A x B x C	2	338.250	2.00	N.S.
Error (A,B)C	56	169.488		

Hypothesis 2:1 There will be a difference in the pulse rate before surgery.

Hypothesis 2:2 There will be a difference in the pulse rate during surgery.

Hypothesis 2:3 There will be a difference in the pulse rate after surgery.

The F ratio for the interaction between and among the experimental variables did not meet the criterion for significance at the .05 level. Thus the research sub-hypotheses are rejected in favor of the null hypotheses.

Hypothesis 3: There will be a significant difference in the respiration rates of patients undergoing total hip replacement surgery who have had preoperative communication with the operating room nurse and those who have had no communication.

The analysis of variance for respirations means is presented in Table III. The F ratio for the communication main effect meets the criterion for significance at the .05 level, thus providing support for acceptance of the research hypothesis and rejection of the null hypothesis. Also, the interaction between nurse and communication was significant. As the means in Appendix II show, the mean respiration rate for the less experienced nurse was much lower for patients with whom she communicated orally in a preoperative interview than for patients she did not see before attending them in the operating room. Means for patients attended by the more experienced nurse were almost the same under the two communicative conditions.

TABLE III

ANALYSIS OF VARIANCE FOR RESPIRATION

Source of Variation	df	M S	F	P
Nurse (A)	1	19.250	2.18	N.S.
Communication (B)	1	49.594	5.61	.05
A x B	1	41.344	4.67	.05
Error (A,B)	28	8.844		
Time (C)	2	7.031	0.78	N.S.
A x C	2	13.203	1.47	N.S.
B x C	2	10.531	1.17	N.S.
A x B x C	2	11.281	1.26	N.S.
Error (A,B)C	56	8.986		

Hypothesis 3:1 There will be a difference in the respirations before surgery.

Hypothesis 3:2 There will be a difference in the respirations during surgery.

Hypothesis 3:3 There will be a difference in the respirations after surgery.

The F ratios for the interaction of time with the experimental variables did not meet the criterion for significance at the .05 level. Thus the research sub-hypotheses were rejected in favor of the null hypotheses.

An examination of the standard deviations indicated that the respiration and pulse rates of the patients visited by the operating room nurses remained relatively stable compared to those not visited.

Discussion and Conclusions

Both the significant differences in pulse rates of patients attended by the two nurses and the significant

interaction (and means) between nurse and communication variable for respiration measurements indicate that there is a greater variance in the reactions of the patients visited by nurse 2 than those visited by nurse 1. A possible explanation for this finding may lie in the manner of communicating by the two nurses and the amount of nursing experience each has. Certainly the more experienced nurse with a relatively sophisticated grasp of the procedure and surgery in general should be better equipped than her less sophisticated peer to answer patients' questions. Nurse 2, the less experienced, may have tried harder whereas the more experienced nurse may have allowed herself to become more routine in making her visits. Conversely, possible insecurity of nurse 2 in the operating room could have been evident to the patients, thereby increasing the impact of her visit; on the other hand, nurse 1's manner and self assurance may have produced a calming effect on her patients in the operating room regardless of whether or not they had been visited by her in advance.

Failure of the subjects' reactions to nurse or communication to vary significantly among the established times for measurements is a further revelation of the study. It was felt that anesthetic agents and pain upon awakening could reduce variance in the vital signs attributable to the experimental conditions. This stability in effects of experimental variables on measurements of vital signs through times is probably an indication of the

synergistic action of the anesthetic agents and the residual effects.

As a result of this study we can accept with confidence the proposition that preoperative communications between operating room nurses and patients can reduce physiological reactions indicative of anxiety and thereby optimize the overall physiological status of the patient. Whether or not such results will occur is apparently a function of other variables, among which might be the level of experience of the nurse involved and the nonverbal communication style/attitudes. The impact of such a communicative visit by inexperienced nurses may be greater than by experienced nurses.

In this study, two significant differences between the patients undergoing total hip replacement surgery who had preoperative communication with operating room nurses and those who had no communication were shown. Patients had less anxiety as indicated by measures of pulse rate and respirations if they were visited preoperatively by the operating room nurse than if they were not. The patients reacted differently to the varied styles of communication inherently utilized by the nurses as individuals.

Recommendations

The results of this study are of importance in that they give some documentation on which to base

arguments for expanding the role of the operating room nurse. This is the first study showing physiological benefits of preoperative communication between operating room nurse and patient.

It should be recalled that this sample of patients was small and limited to a particular age range and operation, factors to be taken into account when planning further studies using this research design. A larger sample should be taken with different surgical procedures employed to see how far the present findings can be generalized. The number of nurses communicating should be enlarged and their various styles of communicating investigated.

Different measurements of vital signs need to be explored, such as blood analysis and electroencephalogram activity, etc. There are, of course, many unresolved questions relating to the delayed effects of preoperative visits that might be evidenced by early ambulation, reduced dosage of postoperative analgesics, and shortened hospital stay. Variations in the kinds, places and times of the visit also need to be examined for their effectiveness, perhaps utilizing the doctor's office and/or the patient's home. The varying times for measuring the vital signs could be eliminated as they appeared to have no bearing on the results.

This writer sees implications for development of a course on communication for the generic nursing curriculum, stressing the interpersonal relationships between

patients and staff. This course could benefit both the patient and the nurse by developing an awareness within the nurse of effective verbal and nonverbal communication.

APPENDIX I

GUIDELINES FOR OPERATING ROOM NURSES

(Making Preoperative Visits)

Preoperative:

1. Introduce yourself.
2. State the purpose of your visit as routine, so as not to alarm the patient and have him think his condition is so grave as to warrant a special visit.
3. Tell the patient the time his surgery is scheduled for, so that he can relay this to relatives and assure their being there before he is transported to the operating room.
4. Discuss the approximate length of time the procedure may take being careful not to be specific.
5. Impress upon him that he will be sound asleep or unable to feel sensation immediately before surgery starts.
6. Ask the patient in his own words what he understands the surgery to be.
7. Inform the patient of the visit to be made by the anesthesiologist and ask him to reserve all questions regarding anesthesia for him.

8. Mention that there is a waiting room area near the surgery suite for relatives and that periodic reports will be given a volunteer in this area to be relayed to the relatives concerning the patient's condition.
9. Answer specific questions about your duties towards the patient in the operating room; preoperative medications, no food or water, etc.
10. Briefly inform him what to expect post-operatively.
11. Occasionally answer questions regarding surgical procedure. Encourage patient to clarify specifics with his doctor.
12. Discuss patient's and family's feelings (anxiety) regarding surgery, anticipated results, etc.
13. Offer true reassurance when possible, especially communication regarding competency of the staff, and maintenance of hope for the patient.
14. Gather data that is essential to you as an operating room nurse (obesity, deafness, blindness, etc.).

APPENDIX II

MEANS FOR MAIN EFFECTS AND INTERACTION OF TEMPERATURE, PULSE AND RESPIRATIONS

Temperature

Nurse = A^a	1 - 98.371	2 - 98.479
Communication = B^b	1 - 98.404	2 - 98.446
A x B	A_1B_1 - 98.467	A_1B_a - 89.275
	A_2B_1 - 98.342	A_2B_2 - 98.617

Pulse

Nurse = A^a	1 - 79.292	2 - 86.958
Communication = B^b	1 - 80.625	2 - 85.625
A x B	A_1B_1 - 79.333	A_1B_2 - 79.250
	A_2B_1 - 81.917	A_2B_2 - 92.000

Respirations

Nurse = A^a	1 - 19.146	2 - 20.042
Communication = B^b	1 - 18.875	2 - 20.313
A x B	A_1B_1 - 19.083	A_1B_2 - 19.208
	A_2B_1 - 18.667	A_2B_2 - 21.417

a 1. More experienced; 2. Less experienced.

b 1. Preoperative interview; 2. No preoperative interview.

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