



1973

Pre-Operative Teaching: Does it Make a Difference?

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PRE-OPERATIVE TEACHING: DOES IT MAKE A DIFFERENCE?

SPECIAL COLLECTIONS

BY

Susan Jane Wykle

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W82

Submitted for Honors Work
In the Department of Nursing
Illinois Wesleyan University
Bloomington, Illinois
1973

PREFACE

This paper is dedicated with love to my parents who have given me much including my education. Thanks to the entire faculty of Illinois Wesleyan University School of Nursing for giving me my understanding in nursing. Special thanks to Miss Jean Krueger and Miss Wanda Crouse who spent numerous hours working with me and giving me the support necessary to complete this study.

Accepted by the University and the Department of Nursing of Illinois Wesleyan University in fulfillment of the requirement for departmental honors.

May 7, 1973
DATE

May 7, 1973
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May 7, 1973
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May 7, 1973
DATE

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TABLE OF CONTENTS

PREFACE..... 3

LIST OF TABLES..... ..

INTRODUCTION.....1

1. PART I. STATEMENT OF PROBLEM

 I. HYPOTHESIS.....3

 II. LIMITATIONS.....3

 III. OPERATIONAL DEFINITIONS.....4

2. SURVEY OF THE LITERATURE

 PART II. THE RESEARCH PROJECT

 I. METHOD OF RESEARCH.....14

 II. IMPLEMENTATION PHASE.....16

 III. SUBJECTS.....10

 IV. DATA COLLECTION.....17

 V. ANALYSIS OF DATA.....19

 VI. INTERPRETATION OF DATE.....26

4. SUMMARY.....27

5. RECOMMENDATIONS FOR A FURTHER STUDY.....29

APPENDIX A - Patient Instruction Sheet for a Better Recovery

 After Your Surgery.....31

APPENDIX B - Statistical Analysis.....32

Bibliography.....35

LIST OF TABLES

Table	Page
1. List of actual operational procedures for each patient in the control and experimental groups.....	12
2. List of individual operative procedures and the number of patients in the control and experimental groups per procedure.....
3. Number of pre-operative chest X-rays done with results for patients in control and experimental groups.....	18
4. Distribution of antibiotics and purpose of antibiotics among patients in the control and experimental group.....	23
5. Number of patients in control and experimental group per day with IPPB treatment from the day of surgery to post-operative day 6.....	23
6. Chart of each patient in the study and a summary of the criteria of respiratory complications.....	25
7. Total listing of scores given for each patient based on degree of respiratory complications and degree of treatment.....	25

LIST OF GRAPHS

1. Graph of temperatures for the day before surgery through post-operative day 5 for the patient in the control group with an elevated temperature.....	20
2. Graph of temperatures from the day before surgery through post-operative day 5 for the three patients in the experimental group with an elevated temperature.....	21

INTRODUCTION

Instruction and encouragement is particularly important before any operation. If properly carried out this may not only improve the patient's morale, but may affect his physical well-being in the post-operative period, reduce the amount of narcotics needed and shorten the hospital stay.¹

Statements similiar to this are frequently seen in nursing publications and textbooks. The value of pre-operative patient teaching has been stressed in many ways and many nurses acknowledge its importance. Yet when the time for the actual teaching comes many questions arise why the teaching cannot be done. Perhaps the problem is that nurses are not thoroughly convinced that pre-operative teaching will be the magical factor in the surgical patient's course of recovery from his surgery. The reason for this skipticism is that there has been very little supportive research in this area.

In brief this study proposes to test the hypothesis that pre-operative teaching will actually decrease the post-operative respiratory complications.

In order to limit the scope of this study, subjects were limited to patients who had surgery which involved the gallbladder. The researcher felt that gallbladder surgery would serve as an adequate test of the effects of pre-operative teaching of coughing and deep breathing in regard to respiratory complications, since the patients who has had gallbladder surgery is more likely to have an incidence of atelectasis than other surgeries.²

¹H. H. Bendixen, Respiratory Care (St. Louis: C.V. Mosby Co., 1965) p. 89.

²Peter Safar (ed.), Respiratory Therapy (Philadelphia: F.A. Davis Co., 1965), p.264.

These patients also tend to be overweight which is a favorable condition for post-operative respiratory complications.³ The incision is located in the upper abdomen which hinders the coughing process for these patients.⁴ Because of the above factors it is more likely for patients who have had gallbladder surgery to develop respiratory complications than patients with other kinds of abdominal surgery. For these reasons the author's hypothesis is that patients having surgery which involves the gallbladder who receive specific pre-operative teaching in coughing and deep breathing will have fewer respiratory complications than those who do not receive this specific pre-operative teaching.

³E. H. Vain, "Obesity in Surgery" Aorn Journal, (September, 1972) p. 88.

⁴B. P. Benbou, "Insidious Post-operative Pulmonary Complications," Aorn Journal, (October, 1971), p. 53.

CHAPTER I

STATEMENT OF PROBLEM

STATEMENT OF PROBLEM

Hypothesis

The purpose of this study is to test the hypothesis that a structured pre-operative teaching plan in coughing and deep breathing alone will decrease respiratory complications as evidenced by: (1) sputum which is not clear sputum, (2) pyrexia over 99.5° F. at least twice in twenty-six hours, (3) a positive culture of bacteria in the sputum, (4) antibiotics prescribed for chest congestion, (5) Intermittent Positive Pressure Breathing treatment which is ordered after the day of surgery, (6) any notation of respiratory complications in the doctor's progress notes or discharge summary and (7) the evidence of lung congestion noted in an X-ray post-operatively which was not present pre-operatively.

The most serious limitations to this study were: (1) Insufficient time was available since it was necessary to formulate the problem, develop a method of research, collect the data and write the report in only five months. (2) Because of the insufficient time, the number of patients was also limited. The sample size, although it involved every possible patient who had surgery involving the gallbladder from December 14 through February 15 was small. The small number of patients limits the statistical significance of the project.

OPERATIONAL DEFINITIONS

Structured pre-operative teaching plan in coughing and deep breathing-

The researcher followed a set lesson plan and distributed a prepared written sheet of instructions and reviewed this sheet of instructions with the patient. The instruction was done the evening before surgery between the hours of 6:00 p.m. and 8:00 p.m. If the patient's family were visiting at the time they were included in the pre-operative instruction. (See Appendix A for written pre-operative instruction sheet).

Coughing- The data pertaining to the incidence and amount of coughing by the post-operative subject were taken directly from the nurses notes. In the pre-operative instruction, a return demonstration of a cough was acceptable to the researcher if the patient inhaled deeply and then coughed deeply using the abdominal muscles.

Deep Breathing- The incidence of frequency of deep breathing by the post-operative subject was also taken from the nurses notes. In the pre-operative teaching, deep breathing was acceptable if the patient inhaled deeply so that the upper abdomen expanded. He then had to hold the breath for three seconds and then forcefully expire the breath orally rather than nasally.

Respiratory Complications- Respiratory complications were considered any one or more of the following: atelectasis of part or all of the lung bronchitis, bronchopneumonia, lobar pneumonia, hypostatic pulmonary congestion as determined by X-rays taken post-operatively or by the doctor's progress notes.

Positive culture of Bacteria in the Sputum- The positive culture of bacteria in the sputum will be determined by culture testing of the sputum of the patient post-operatively.

Gallbladder Surgery- Gallbladder surgery is used to designate a cholecystectomy, choledochotomy, choledochlithotomy, or a combination of these surgeries.

Pyrexia - Pyrexia is a temperature which is above normal. For the purposes of this study pyrexia will be considered a temperature over 99.5° F. for over forty-eight hours or a temperature which is elevated to over 100.2°F. twice in twenty-six hours. These data were taken from the graphic record of the patients' charts.

CHAPTER II

SURVEY OF LITERATURE

SURVEY OF THE LITERATURE

Throughout the author's undergraduate education, pre-operative patient teaching has been stressed as a means to speed surgical patient's recovery and decrease post-operative complications. Although the topic of pre-operative teaching is discussed in articles and textbooks, the research on the effect of pre-operative teaching on a patient's post-operative recovery is limited. As mentioned previously the author was unable to locate any research on the effect of pre-operative teaching specifically on post-operative respiratory complications. The author found only two studies on pre-operative teaching in her survey of the International Nursing Index, the Survey of Nursing Literature, and MEDLARS from 1968 to the present. The author also reviewed available articles listed in any of the bibliographies of the articles she surveyed from the above listings.

Two recent studies have determined the effects of pre-operative teaching on post-operative recovery. The first of these was a study done by Healy in 1968.⁵ She investigated "If pre-operative instruction really make much difference in a patient's recovery as measured by amount of analgesics and the patients' discharge dates."⁶ She conducted a comparative study using 321 patients admitted for elective surgery over a four month period. Because the

⁵Kathryn H. Healy, "Does Pre-operative Instruction Make a Difference?" American Journal of Nursing. 68: 62-67, (January, 1968).

⁶Healy - p. 62.

nurse has less time to give explicit detail in teaching on busy evenings, the control group consisted of patients admitted on busy evenings and the experimental group were patients admitted on less busy evenings when the nurses had time to give explicit instruction.

The patients in the control group received no special pre-operative teaching. They received routine care. The patients in the experimental group received individual pre-operative teaching including methods of deep breathing, turning, coughing, body mechanics, and an explanation of the procedures expected with the particular operation. The instruction of deep breathing and coughing was demonstrated and then practiced by the patients in the control group. A specific post-operative nursing care plan was devised the evening before surgery for each patient in the experimental group. Each of these patients was assigned one nurse who would do both the pre-operative teaching and the post-operative care. There were 181 patients in the experimental group and 140 patients were in the control group. Data showed 135 patients in the experimental group were discharged 3-4 days prior to the expected discharge date. Only 3 control patients were discharged earlier than expected. The 160 patients in the experimental group began oral narcotics on the fourth post-operative day. The 127 patients in the control group did not begin oral narcotics until the sixth or seventh post-operative day and 13 of these patients were still on medication on the day of discharge. Three patients developed complications in the experimental group and 16 in the control group. Healy concluded that a definite time set aside for pre-operative teaching was of value for the patients and his family. The data was not tested for significance.

Lindeman arrived at a similiar conclusion in her study.⁷ She used a static group pretest-posttest designed in her study. Patients admitted from May 24, 1970 through June 18, 1970 served in the control group and patients admitted from November 1, 1970 trthrough November 27, 1970 served in the experimental group. All patients involved in the study were over 15 years of age, admitted for elective surgery with a general anesthetic, not on IPPB treatment, and were able to comprehend the instructions. The 135 patients in the control group received unstructured pre-operative teaching and the 126 patients in the experimental group received structured pre-operative teaching. Structured pre-operative teaching refers to the implementaltion of a teaching plan of standardized content and method. The structured teaching was begun after a description of the stir-up regeime was written and extensive staff development programs in patient teaching were begun. The staff was instructed on the post-operative stir-up regieme. The significance of the post-operative deep breathing and coughing was intensified by the emphasis placed on this pre-operatively and by the conferences to make this post-operative care consistent.

Tests of ventilatory function was administered to each patient both pre-operatively and post-operatively. The data was tested for statistical significance using the t test of significance.

⁷Carol A. Lindeman, "Nursing Intervention with The Presurgical Patient-The Effects of Structured and Unstructured Pre-operative Teaching," Nursing Research. Vol. 20, No. 4, (July-August, 1971), p. 319-332.

In reviewing both these studies it seems evident that the nursing staff was intimately involved in the patient care in the experimental groups both pre-operatively and post-operatively. In Healy's study a post-operative plan of care was devised for the patients in the control group. In Lindeman's study the staff was instructed in post-operative care to insure consistency of patient care.

This author believes that this involvement of the hospital staff in both these studies might have had a halo effect on the studies, thereby skewing the results. To prevent this halo effect, this author did not include the hospital staff in the structured pre-operative teaching in coughing and deep breathing.

CHAPTER III

THE RESEARCH PROJECT

SUBJECTS

Patients meeting the following criteria served as subjects:

1. Those admitted under nonemergency conditions so pre-operative teaching could be done the evening before surgery; 2. Those scheduled for surgery which involved the gallbladder. This limited the study to one type of incision site, an upper abdominal incision site.

Those subjects admitted from December 14, 1972, through January 2, 1973 served as the control group. Those subjects admitted from January 16, 1973 through February 15, 1973, served as the experimental group. The post-operative care of both the experimental and control groups was not directly affected by the researcher. The only central difference in the two groups was the pre-operative patient teaching done for the experimental group of patients. The average age of the control group was 43.3 years and the average age of the experimental group was 40.4 years. The experimental group contained 8 female subjects and 2 male subjects. The control group contained 7 female subjects and 3 male subjects. The control group averaged 18 pounds overweight and the experimental group averaged 3 pounds overweight. It is medically recognized that smoking contributes to post-operative respiratory complications, therefore, the smoking history of the patients was noted.⁸

In the control group, there were 7 subjects who did not smoke, one who smoked a pipe and 2 who smoked one-half package of cigarettes a day. In the

⁸Bessbrow, p. 53.

experimental group there were 5 subjects who did not smoke, and 5 who did smoke. Four of these who smoked, smoked more than one package of cigarettes a day. The extent of the surgery was considered to have some effect on the subjects ability to cough and deep breathe after surgery and therefore, the types of surgery involving the gullbladder which were done are listed in tables 1 and 2.

TABLE 1. List of actual operational procedures for patients in the experimental and control groups.

Type of surgery	Number of patients in the control group	Number of patients in the experimental group.
Cholecystectomy and appendectomy	2	2
Cholecystectomy	2	4
Exploratory laparotomy, cholecystectomy, operative cholangiogram, and appendectomy	1	
Cholecystectomy, common duct exploration, operative cholangiogram and appendectomy	1	
Exploratory laparotomy, cholecystectomy, operative cholangiogram, appendectomy, and choledochostomy	1	
Cholecystectomy, choledochotomy, removal of common duct stone, and operative cholangiogram	1	
Abdominal laparotomy, cholecystectomy, operative cholangiogram, release of intraabdominal adhesions	1	
Removal of cystic duct stump, common duct exploration and cholangiogram	1	
Exploratory laparotomy, cholecystectomy, common duct exploration, operative cholangiogram, duodenectomy, and sphincterotomy		1
Cholecystectomy, common duct exploration, and operative cholangiogram		1
Cholecystectomy and operative cholangiogram		1

Table 2. List of Individual operative procedures and number of patients in experimental and control group per procedure.

Type of Operative Procedure	Number of Subjects in in the Control Group	Number of Subjects in the Experimental Group
Cholecystectomy	9	9
Appendectomy	5	2
Exploratory Laparotomy	3	1
Operative Cholangiogram	6	3
Common Duct Exploration	2	2
Choledochotomy	1	
Removal of Common Duct Stone	1	
Release of Intraabdominal Adhesions	1	
Removal of Cystic Duct Stump	1	
Duodenectomy		1
Sphincterotomy		1
Choledochostomy	1	

THE RESEARCH PROJECT

METHODOLOGY

After surveying and reviewing the literature a pre-operative teaching plan for coughing and deep breathing evolved for the use in this study. The instruction was completely carried out by the researcher thereby insuring consistency in technique and information in the instruction period. If the family of the subject was present during the time of pre-operative teaching as occurred with 5 of the 10 experimental subjects, they were encouraged to stay in the room to watch the demonstration and ask any questions they might have. They were also encouraged to help the subject cough and deep breathe after surgery and were shown various methods they could use to assist the patient in coughing and deep breathing. These techniques of assistance were also explained to the patients. An instruction sheet was distributed to each patient. See Appendix A.

This instruction sheet was discussed with the patients. Terms which might be ambiguous such as "up and around," which meant that the patient was to be up in the room for at least four hours a day and up to the bathroom, were explained to the patient. As each subtopic in the sheet was read, the procedure was demonstrated by the researcher to the patient and a return demonstration by the subject was required. The instruction about deep breathing was first followed by the topic of coughing. The various means of decreasing the discomfort of coughing such as the support of the incision by hand, bedclothes, or pillow were experienced by the patient with the help

of the researcher during the instruction periods. The patients was told that deep breathing and coughing could best be accomplished in an upright position and that, although, the incision may feel that it might "split", it will not. In working with the patients and their families it was stressed that the nurse would be available for assistance and would remind the patient to cough and deep breathe although the patients were not to wait for the nurse to do these exercises. The patients were to perform the exercises on their own every hour. The patients were also informed that medications to decrease the pain were available if they were needed and to ask staff nurses if they needed any analgesics. An explanation of the reasons behind each exercise was given to the patient. At this point in the instruction, the researcher spent time answering any questions the subject might have had concerning his surgery.

The physicians of the subjects who were involved in this study were contacted and requested to write in the hospital chart's progress notes any changes in the patient's respiratory condition which might indicate complications after surgery.

IMPLEMENTATION PHASE

All patients who met the previously stated requirements of the study were instructed according to the teaching plan. Subjects were instructed on the evening before surgery by the researcher. They were instructed on an individual basis although at times the patient's family was present. The instruction sheet was distributed to each subject during the instruction period and was discussed. A demonstration by the researcher and a return demonstration by the patient in coughing and deep breathing were done during the instruction period.

DATA COLLECTION

All data was collected from the patient's chart after his discharge. The nurses notes were checked for any notation of cough or sputum. This information was noted on a master chart by the researcher. The graphic records were checked and noted for any notation of pyrexia over 99.5°F. for over 48 hours or elevated over 100.2°F. twice in 26 hours. Laboratory culture reports were checked and noted by the researcher for any notation of bacteria in the sputum. The doctor's orders and the medication was checked for any antibiotics prescribed for chest congestion. Any antibiotics ordered were noted on the master chart. The researcher totaled the frequency and types of antibiotics ordered for the patients. Doctor's orders and the Intermittent Positive Pressure Breathing record were read and notation was made of the date on which the IPPB treatment was begun and the results of the treatment. The physicians whose patients were involved in the study were requested to particularly note any lung congestion which they detected and their progress notes and discharge summaries were read and noted in regard to these remarks. X-ray reports were read and noted for any evidence of lung congestion not evident before surgery. Pre-operative X-rays were also read and noted. (See Table 3.) Doctor's history and physicals were read in relationship to the condition of the lungs before surgery. For all patients in both the control and experimental groups, the lungs pre-operatively were determined to be clear by the physicians.

TABLE 3. Number of Pre-operative Chest X-rays done with results for patients in control and experimental groups.

Pre-operative X-Rays	Number of patients in Control Group	Number of patients in Experimental Group
X-rays, clear	3	3
X-rays, congestion	0	0
No X-rays	7	7

ANALYSIS OF DATA

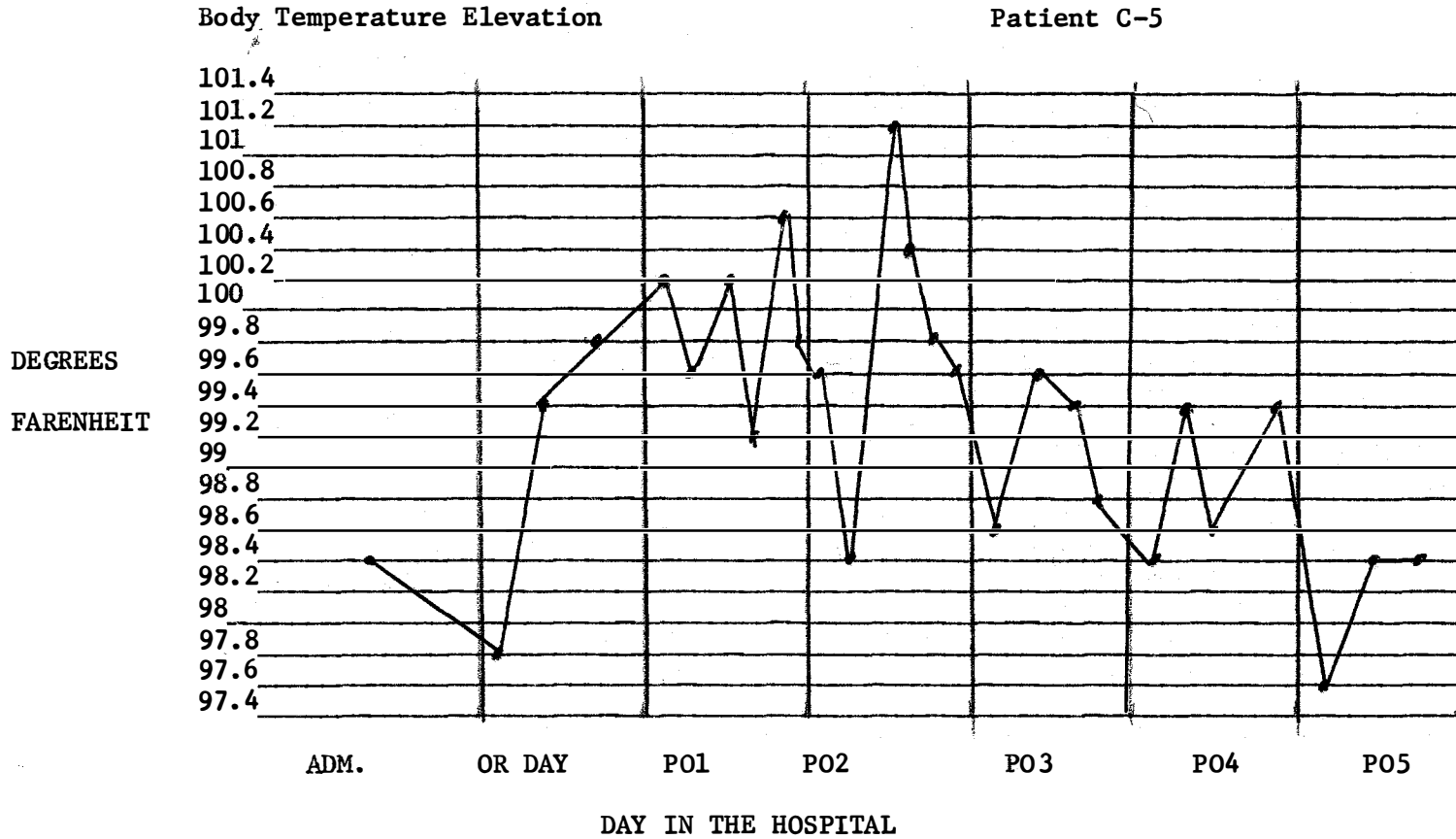
RESULTS

Temperature - There were four patients (E-1, E-2, E-3) and E-5) with elevated temperatures in the experimental group. One patient (C-5) in the control group had an elevated temperature. C-5's fever was attributed to a respiratory infection. The fevers of E-1 and E-2 were related to respiratory complications and the fevers of E-3 and E-5 were of unknown origin. (See Graphs 1-2).

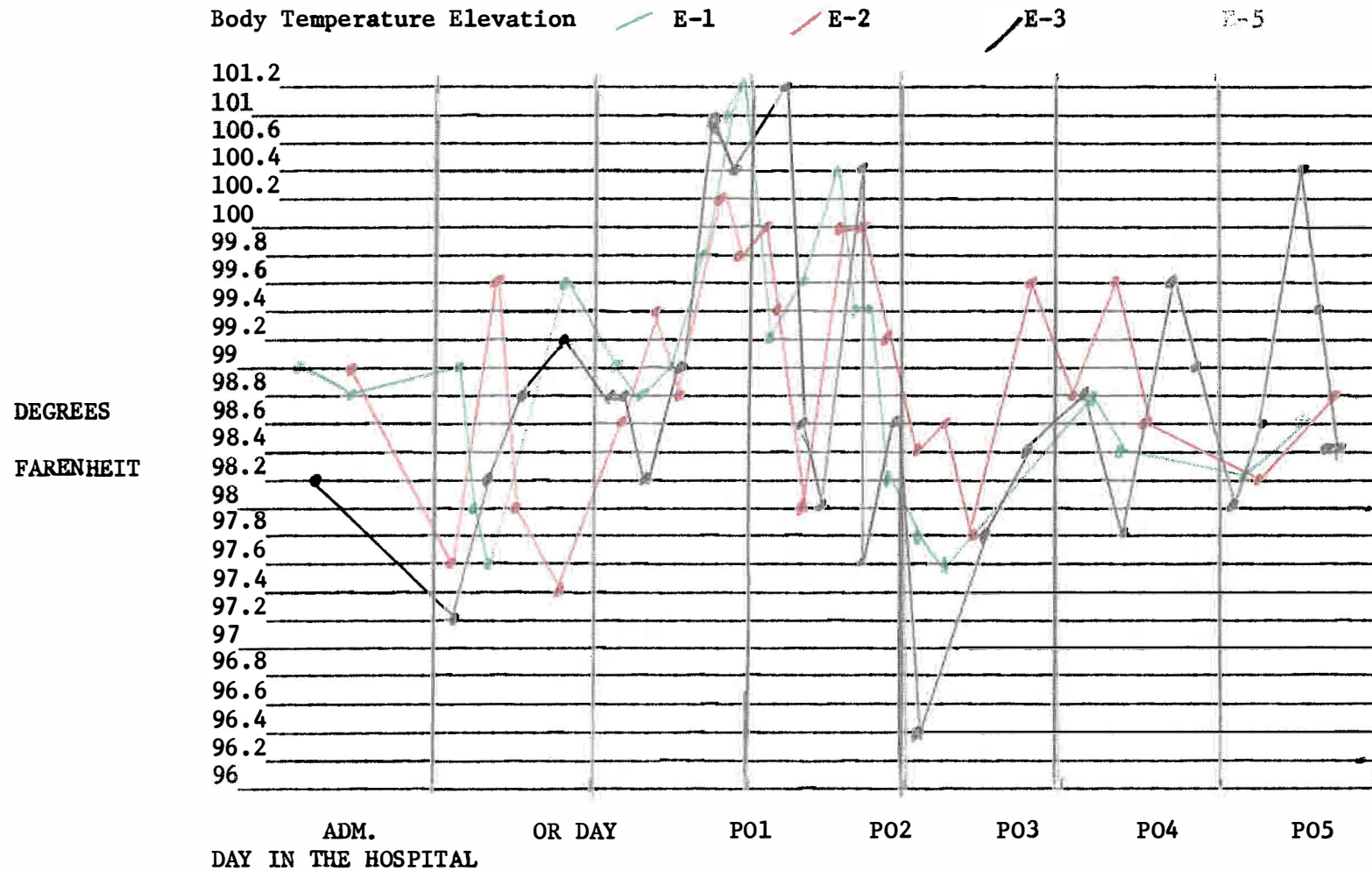
Sputum - Sputum other than clear, white non-viscous, non-purulent sputum was used as an indication of respiratory congestion. One patient (C-5) in the control group evidenced sputum indicative of respiratory congestion. When she first began IPPB treatment she had a productive cough with viscid yellow mucus with bright red blood. The next day her sputum was red mucus with brown blood and later that same day, it became yellow mucus. The Sputum she produced finally became white mucus and later a viscid clear sputum. During the last of her treatments, she had a non-productive cough. The one patient in the experimental group (E-2) at first had a slightly productive cough while later that day her cough was non-productive. The next day her cough produced a thick white and yellow sputum and still later a tenaceous yellow sputum was produced. The next morning her cough was non-productive.

Positive culture of Bacteria in the sputum - No cultures were done on the sputum of any of the patients in either the control or the experimental group to test for bacterias in the sputum.

GRAPH 1 - Graph of temperature for the day before surgery through post-operative day 5 for the one patient in the control group with an elevated temperature.



GRAPH 2 - Graph of temperatures from the day before surgery through post-operative day 5 for the three patients in the experimental group with an elevated temperature.



Antibiotics prescribed for respiratory complications - There were four subjects in the control group and four subjects in the experimental group who received antibiotics post-operatively. If the antibiotic was ordered for the patient the day of surgery before any sign of infection was present, the antibiotic was considered prophylactic. If there were other signs of respiratory complications, the antibiotics were considered treatment for the respiratory condition. If culture and sensitivity tests were done on a subject's urine sample and the test results were positive, the antibiotic was considered to be treatment for the urinary tract infection. Patients C-2, C-7 and E-4 received Achronycin 250 mg. prophylactically. Patient C-10 received 250 mg. of Achromycin for treatment of gonorrhea as determined by a vaginal culture. Patient C-5 received Achromycin 250 mg. for respiratory complications. In treatment for lung complications Patient E-1 received vibramycin 100 mg. and E-2 received Polycillin 500 mg. Patient E-6 received Achromycin 250 mg. for a urinary tract infection. (See Table 4.)

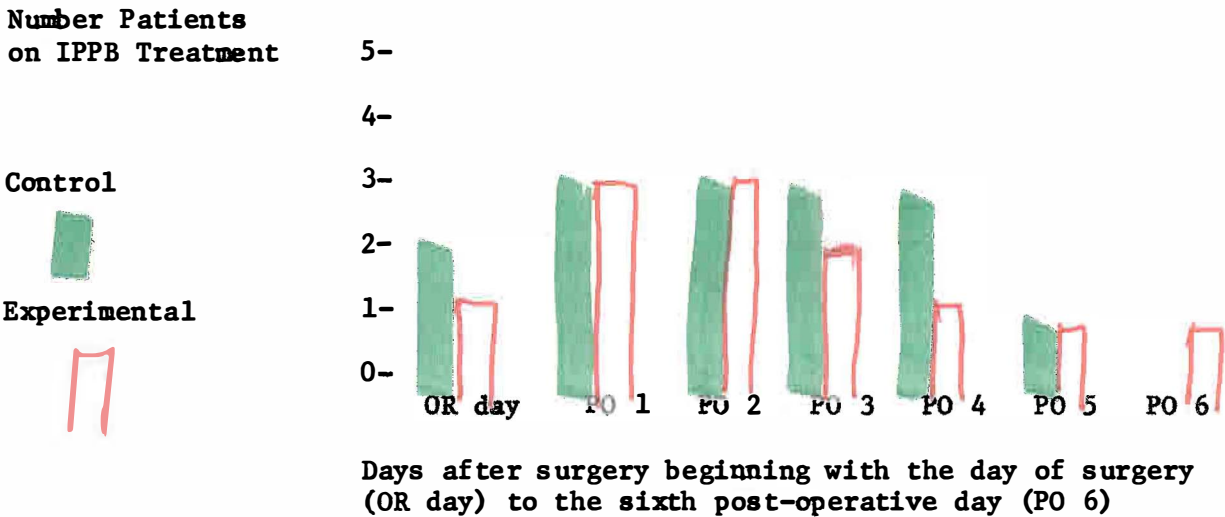
INTERMITTENT POSITIVE PRESSURE BREATHING - IPPB is one method of treating respiratory complication. IPPB can also be used prophylactically. If IPPB was ordered on the day of surgery, the researcher considered it prophylactic treatment. If the IPPB treatment was ordered after the day of surgery, it was considered treatment for respiratory complications. For this study, therefore, it served as an indication that a complication has developed if ordered after the day of surgery. Four subjects in the control group received IPPB treatment after surgery. Two subjects (C-7 and C-10) received treatment starting on the day of surgery, while two subjects (C-4 and C-5) received treatment starting after the day of surgery. Of the three patients in the experimental group receiving IPPB treatment only E-4 started treatment on the

day of surgery. Both E-1 and E-2 received treatment starting on the day after surgery. (See Table 5).

TABLE 4 - A distribution of antibiotics and purpose of antibiotics among patients in the control and experimental groups.

ANTIBIOTICS	NUMBER IN CONTROL GROUP	NUMBER IN EXPERIMENTAL GROUP
Achromycin 250 mg.		
1. Prophylactically	2	1
2. Urinary Tract Infection		1
3. Gonorrhoea	1	
4. Respiratory Complication	1	
Polycillin 500 mg.		
1. Respiratory Complication		1
Vibramycin 100 mg.		
1. Respiratory Complication		1

TABLE 4 - Number of patients in control and experimental group per day with IPPB treatment from the day of surgery to post-operative day 6.



X-Rays - No post-operative X-rays were taken in the control group. In the experimental group, two patients had post-operative X-rays. E-1's X-rays showed no sign of atelectasis.

Doctor's Progress Notes - Progress notes and discharge summaries serve as one method of verifying the interpretation of other data from the patient's chart. The discharge summary for E-1 served to reiterate the X-ray diagnosis that she had left lower lobe atelectasis. The remaining discharge summaries reported normal recovery during the post-operative period.

All the data were compiled and the patients were divided into three groups and given a score: (1) those with no sign of respiratory complications were given a score of "0", (2) those with some sign of respiratory complications but which were not treated received a score of "1", and (3) those with evidence of respiratory complications and treatment were given a score of "2". (See Tables 6 and 7.) One patient in the control group (C-5) and two patients in the experimental group (E-1 and E-2) developed respiratory complications after their gallbladder surgery. Using the scores, the standard deviation and the variance of each group were calculated. Comparison of variance, standard error of per cent, comparison of the means and the chi square test were then computed. See Appendix B for statistical data.

TABLE 6 - Chart of each patient in the study and a summary of the criteria of respiratory complications.

Patient's Number	Elevated Temperature	Sputum	Positive Bacteria In Sputum	Antibiotics	IPPB	Post-op Chest X-Rays
C-1				X		
C-2						
C-3						
C-4						
C-5	X	X		X	X	
C-6					X	
C-7				X		
C-8					X	
C-9						
C-10				X		
E-1	X	X		X	X	
E-2	X	X		X	X	X
E-3	X				X	X
E-4				X	X	
E-5					X	
E-6				X		
E-7 ¹						
E-8						
E-9						
E-10						

TABLE 7 - Total listing of scores given for each patient based on degree of respiratory complications and degree of treatment.

<u>Control Group</u>		<u>Experimental Group</u>	
C-1	0	E-1	2
C-2	0	E-2	2
C-3	0	E-3	0
C-4	0	E-4	0
C-5	2	E-5	0
C-6	0	E-6	0
C-7	0	E-7	0
C-8	0	E-8	0
C-9	0	E-9	0
C-10	0	E-10	0
2 Total score of control group		4 Total score for experimental group	

0 = No sign of respiratory complications.

1 = Two of following: elevated temperatures, abnormal sputum, bacteria in sputum, and X-ray results indicating respiratory complications.

2 = All of number 1 plus treatment.

INTERPRETATION OF DATA

The following information about the patients was collected and arranged: elevated temperatures, abnormal sputum, positive culture of bacteria in the sputum, administration of antibiotics, IPPB treatment, results of post-operative chest X-rays, and any specific notation about respiratory complications in the doctor's progress notes. The author felt it was necessary for the patient to meet more than one of the above criteria of respiratory complications before specific scores could be assigned to each patient for any one of these criteria could be due to more than merely respiratory complications. For example, an elevated temperature could be indicative of a urinary tract infection and respiratory complications. The researcher felt that the patient should have no signs of respiratory complications to be scored "0". He should meet at least two of the criteria of temperature elevation, abnormal sputum and bacteria in the sputum and X-ray results which indicate a respiratory to be scored "1". He should not only meet the criteria for a score of one but should also receive treatment of antibiotics or IPPB ordered after the day of surgery to be scored "2". In assigning the scores, the researcher discovered that the only patients meeting the criteria for a score of "1" also received treatment thereby receiving a score of "2". There was one score of 2 in the control group and two scores of two in the experimental group. Although the sample was small, this is still not a very significant difference in the number of "2" scores. All the other scores were "0". When the statistics to the 0.01 significance were used on this data the difference proved insignificant because the statistical difference was so small, it was impossible to tell whether chance or the differences in the uncontrolled variables affected the differences.

SUMMARY

SUMMARY

This research was a comparative study between patients with structured pre-operative teaching and those without this teaching. The author studied the effect of structured pre-operative teaching in coughing and deep breathing on the post-operative respiratory complication of patients with surgery which involved the gallbladder. All patients admitted for non-emergency gallbladder surgery from December 14, 1972 through January 2, 1973 were considered the control group and those patients admitted for non-emergency gallbladder surgery from January 16, 1973 through February 15, 1973 served as the experimental group. There were ten subjects in each group.

Pre-operative teaching of the experimental group was done by the research using a prepared teaching plan on coughing and deep breathing. Pre-operative teaching for the control group was left to the hospital staff without any influence from the researcher. They did not follow any definite teaching plan.

Data was collected by the researcher concerning the temperature, sputum, culture of bacteria in the sputum, antibiotics, intermittent positive pressure breathing, results of chest X-rays, and notation of respiratory complications in the doctors notes. A score of zero, one or two was assigned to each patient for statistical analysis. Using the assigned scores the following statistical tests were applied to the data: standard deviation, variance, comparison of variance, standard error of the mean, standard error of the difference, standard error of per cent, chi square, and comparison of the means. The level of significance was set at 0.01. The data did not support

the hypothesis of the study. The study was inconclusive. (See Appendix B).

There are many factors which might have affected the results of the study. First the small size of the sample could affect the results of the study. It is also possible that inclusion of other factors in the pre-operative teaching such as leg exercises might have altered the result of the study. The post-operative environment and care were not controlled in any way and the nurse's notes indicated a great variability in the amount of post-operative coughing and deep breathing performed by the patients with the assistance of the nurses.

RECOMMENDATIONS

RECOMMENDATIONS FOR FURTHER RESEARCH

In doing further research, the author suggests that many of the unknowns be eliminated. The follow-up study might consist of two parts each involving a larger sample of patients than was possible in this study. The first part of the study could be very similiar to this present study in that the person who does the pre-operative teaching would not be involved in the post-operative care of the patients, nor would the hospital staff be involved in this first part of the study so their reaction to the study would not affect the results of the first part. The second part of the study might include the hospital staff. They could be taught to give consistent pre-operative teaching. In addition to the pre-operative the post-operative care might be closely monitored. The staff could be educated in consistent post-operative care of the patients and consistent charting. In comparing the results of these two parts it would be possible to determine whether a consistent follow up program is necessary for pre-operative teaching to affect the recovery of the patient. In both parts of this study the control and experimental might be chosen by random sample during the same period of the time, to elimiate any variance of personnel or physical conditions possible in different periods of time. Also the teacher could spend equal time with both control and experimental patients. Teaching the patients in the experimental group and just socializing with the control groups would eleminate the unknown factor of the influence of time and attention given to the patients.

In order to give good nursing care it is essential for the nurse to understand and utilize the knowledge and research available for her. She needs to understand the purpose for the care she is giving, not merely from textbooks and conjectures but from actual studies of the technique in use. The author believes that the possibilities of research as an aid in understanding care is essential. It is for this reason that she is considering doing this follow-up study to determine if pre-operative teaching alone does make a difference or if pre-operative teaching needs post-operative follow-up to make a difference. To understand and utilize research is to develop a better system of patient care.

APPENDIX A

Patient Instruction Sheet for a Better Recovery After Your Surgery -

Repeat the following exercises every one or two hours until you are up and around. You need not interrupt your night time sleep to do these exercises. If you do wake during the night repeat the coughing and deep breathing before going back to sleep.

DEEP BREATHING

Inhale as deeply as you can. Hold for three seconds. Exhale completely. Repeat four times. This breath should be similiar to sighing very deeply.

THEN COUGH

Inhale deeply. Produce a deep abdominal cough (not a shallow throat cough) by short sharp expiration. Your incision may be splinted by your hands, bedclothes or a pillow. Flexing your knees will relieve the strain on your abdominal muscles. Repeat two to three times. Then take two deep breaths.

Between these hourly exercises, take five deep breaths on the half hour.

APPENDIX B

The statistics below were all computed using the scores listed in Table 7.

Mean:

Mean of the Control Group=0.2

Mean of the Experimental Group=0.4

Standard Deviation:⁹

$$\sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N-1}}$$

x=the score of the patients

N=10=the number of patients in the control or experimental group

S.D. of Control Group=0.633

S.D. of Experimental Group=0.850

Variance:¹⁰

$$\frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N-1}$$

x=the score of the patients

N=the number of patients in the control or experimental group

Variance of Control Group=0.4

Variance of the Experimental Group=0.71

Variance Ratio:¹¹

$$\frac{Sx^2}{Sy^2}$$

Sx²=variance of the experimental group

Sy²=variance of the control group

Tabulated=1.8

Tabled ¹²=5.35

=3.18 for 0.05 significance

⁹ Robert K. Young, Introductory Statistics for the Behavior Sciences, (New York: Holt, Rinehart, and Winston, 1965), p. 83.

¹⁰ Young, p. 84.

¹¹ Young, p. 219.

¹² Young, p. 418.

Standard Error of the Mean:¹³

$$\frac{\text{S.D.}}{\sqrt{N}}$$

S.D.=Standard Deviation
N=Number of patients per group

Experimental Tabulated=0.26

Control Tabulated=0.2

Expected Range=99.8

Range of Experimental=0.07-1.630

Range of Control=0.033-1.233

Standard Error of Difference:¹⁴

$$\sqrt{(\text{S.E.M.}_1)^2 + (\text{S.E.M.}_2)^2}$$

S.E.M.=Standard Error of the Mean

S.E.D.=0.33

Mean for Control Group=0.2

Mean of the Experimental Group=0.4

3 x 0.33=0.99

Actual Difference=0.2

Standard Error of Per Cent:¹⁵

$$\sqrt{(\text{S.E.}_1\%)^2 + (\text{S.E.}_2\%)^2}$$

$$\text{S.E.}\% = \sqrt{\frac{pq}{N}}$$

p=percentage of group with trait
q=percentage of group without trait

S.E.% (Experimental Group)= 12.7%

S.E.% (Control Group)=9.5%

S.E.D.% = 15.9%

$$\frac{\text{Difference \%}}{\text{S.E.D. \%}} = \frac{20\%}{15.9\%} = 0.12\%$$

¹³Abraham N. Franzblau, A Primer of Statistic for Non-Statisticians, (New York: Harcourt, Brace, and World, Inc. 1958), p. 51.

¹⁴Franzblau, p. 56.

¹⁵Franzblau, p. 58-59.

Chi Square with a 2 x 2 table:¹⁶

Yes = with respiratory complications

No = without respiratory complications

$$\chi^2 = N \left(\frac{|BC-AD| - N}{2} \right)^2$$

$$\frac{(A+B)(C+D)(A+C)(B+D)}{N^3}$$

Calculated $\chi^2 = 0$ Tabled $\chi^2 = 6.64$ Comparison of Means:¹⁷

$$F = \frac{BG}{ms}$$

$$\frac{WG}{ms}$$

C.F. = 1.8

TOT_{ss} = 10.2

BG_{ss} = 8.2

WG_{ss} = 2

Source	ss	df	ms	F
BG	0.2	1	0.2	0.4
WG	10	18	0.55	
TOT	10.2	19		

KN=20 Tabled 0.05=significance=4.41
 TOT_{df} 0.01=significance=8.28

¹⁶Young, p. 334.¹⁷Young, p. 271.

BIBLIOGRAPHY

- Aerman, Betty Van and Lindeman, Carol A. "Nursing Intervention with the Presurgical Patient - The Effects of Structured and Unstructured Preoperative Teaching." Nursing Research Journal. Vol. 20, No. 4 August, 1971. pp. 319-332.
- Benbou, B.F. "Insidious Post-Op Pulmonary Complications." AORN Journal. 14-52-6, October, 1971.
- Bendixen, H.H. Respiratory Care. St. Louis: C.V. Mosby Company, 1965.
- Frangblau, Abraham N. A Primer of Statistics for Non-Statisticians. (New York: Harcourt, Bruce, & World, Inc. 1958).
- Healy, Kathryn M. "Does Preoperative Patient Teaching Make a Difference?" American Journal of Nursing. pp. 68: 62-67. January, 1968.
- Healy, Kathryn M. "A Pre-operative Patient Teaching Program." AORN Journal. 10: 37 . October, 1969.
- Linderman, Carol A. "Nursing Intervention with the Pre-surgical Patient." Nursing Research Journal. 21:196-209. May-June, 1972.
- Lisbos, J. M. "Role of the Special Care Unit Nurse in a Pre-op Teaching Program." Nursing Clinics of North America. 7:389-395. June, 1972.
- Safar, Peter. Respiratory Therapy. Philadelphia: F. A. Davis Company, 1965.
- "Take One Deep Breath and Hold." American Journal of Nursing. December, 1966, pg. 2722.
- Vain, E. H. Obesity in Surgery. AORN Journal. 85-88. September, 1972.
- Young, Robert. "Introductory Statistics for the Behavior Sciences" (New York: Halt, Rinehart, & Winston, 1965).

Additional References:

- Adler, R.H. and Brodie, S. "Post-operative Rebreathing Air" American Journal of Nursing. 68:1287-1289. June, 1968.
- "Advice Eases Patient's Minds About Post-Surgery Pain." Today's Health. 45:11. January, 1967.
- Aiken, Linda H. "Patient Problems are Problems in Learning." American Journal of Nursing. Vol. 70, No. 9. September, 1970. pp. 1916-1918.
- Anderson, W. H. and Messrs. "Prevention of Post-operative Pulmonary Complications." JAMA, 186:763-766. November, 1963.
- "Assessment of Patient's Pre-operative Emotional Condition." Nursing Research. 19:402-414. September-October, 1970.
- Brophy, "A Means of Allaying Patient Anxieties," AORN Journal. 7:44. February, 1968.
- Bruegal, M.A. "Relationship of Pre-operative Anxiety of Perception of Post-operative Pain.: Nursing Research. Vol. 20, No. 1, January, February, 1971. pp. 26-31.
- Carnevali, "Pre-operative Anxiety." American Journal of Nursing. 66:1536-1538. July, 1966
- Collart, M.E., Et al. "Preventing Post-operative Atelectasis." American Journal of Nursing. 71:1982-1987. October, 1971.
- Comroe, J.H. Physiology of Respiration. Chicago: Yearbook of Medical Publishers Inc., 1965.
- Comroe, J. H. The Lung. Chicago: Yearbook of Medical Publishers, Inc., 1962.
- Conley, E. M. and Graham, L. E. "Evaluation of Anxiety and Fear in Adult Surgical Patients." Nursing Research. Vol. 20., No. 20. March-April, 1971. pp. 113-122.
- Dalrymple, . "The Effect of Personality on Post-operative Pain and Vital Capacity Impairment." British Journal of Anesthesia. 44:902. August, 1972.
- Dodge, J.S.. "What Patients Should be Told? Patients and Nurses' Beliefs." American Journal of Nursing. 72:1852-1854. October, 1972.
- Dumas, R.G. and Leonard, R.C. "Effect of Nursing on the Incidence of Post-operative Vomiting." Nursing Research. 12:12-15. Winter, 1963.

- Edwards, B.J. "How to Talk with Patients Before and After Surgery." AORN Journal. 14:45-48. November, 1971.
- Egan, Donald. Fundamentals of Inhalation Therapy. St. Louis: C.V. Mosby Company, 1969.
- Egbert, L.D. and Messrs. "Reduction of Post-operative Pain by Encouragement and Instruction of Patients." New England Journal of Medicine. 270:825-827. April 16, 1964.
- Elms, R.R. and Leonard, R.C. "Effects of Nursing Approaches During Admission." Nursing Research. 15:39-48. Winter, 1966.
- Field, Lewis W. "Identifying the Psychological Aspects of the Surgical Patient." AORN Journal. January, 1973, pp. 86-90.
- "Fundamental Breathing Exercises." Nursing Mirror. 130:34-35. February 20, 1970.
- Ginsberg, F. "Providing Emotional Support is Part of the OR Nurses' Job." Modern Hospital. 117:118, February, 1972.
- Goldstein, W.B. "Iatrogenic Hepatic Duct Rupture." American Journal of Roentgenal Radium Therapy: Nuclear Medicine. 116:342-344. October, 1972.
- Kerzishnik, . "Operation Tomorrow.:" AORN Journal. March, 1968.
- Mezzanotte, E.J. "Group Instruction in Preparation for Surgery.:" American Journal of Nursing. Vol. 70, No. 1, January, 1970. pp. 80-91.
- Levine, D.C. and Fieldler, J.P. "Fears, Facts and Fantasies About Pre-and-Post-operative Care." Nursing Outlook. Vol. 18, No. 2. pp. 26-28.
- "OR Nurse and Patient Aided by Pre-operative Education." Modern Hospital. 118:53. March, 1972.
- Palm, M-L. "Recognizing Opportunities for Informal Patient Teaching." Nursing Clinics of North America. 6:669-678 and 6:573-580. December, 1971.
- "Psychosocial Factors in the Welfare of Surgical Patients." Nursing Research. 19:18-29. January-February, 1970.
- Secor, J. Patient Care in Respiratory Problems. Philadelphia: W. B. Saunders Company, 1970.
- Shelter, M.G. "Operating Room Nurses Go Visiting." American Journal of Nursing. 72:1260-1269. July, 1972.
- Solosko. "Nursing Care of the Gallbladder Patient." Bedside Nurse. 1:11. March-April, 1968.

Thesen, E. "Pre-operative Visits--For the Nurse--For the Patient?" AORN Journal. 16:75-81. October, 1972.

Wallis, R.M. "Pre-operative Visits-A Challenge for OR Nurses." AORN Journal. 14:53-56. December, 1971.

Weiler, S.M. "Post-operative Patients Evaluate Pre-operative Instruction." American Journal of Nursing. 68:1465-1467. July, 1968.

Welch, J.P. "Outcome of Cholecystectomy." Surgery, Gynecology, and Obstetrics. 135:717-720. November, 1972.

Wise, . "Gallbladder Disease-An Interdisciplinary Problem." Hospital Practice. 4:59 . June, 1969.