

TWO METHODS OF PATIENT INSTRUCTION
BEFORE CORONARY ARTERIOGRAPHY

by

Anita Beth Clark

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

1 9 7 6

STATEMENT BY AUTHOR

This thesis has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Anita Beth Clark

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

Arlene M. Putt
ARLENE M. PUTT
Professor of Nursing

Sept. 24, 1976
Date

Faith, hope, love abide, these three; but the
greatest of these is love. I Corinthians 13:13

This thesis is dedicated to my parents and family whose love
has given guidance and support to my life.

ACKNOWLEDGMENTS

The author wishes to express appreciation to Dr. Arlene M. Putt who guided the preparation of this thesis. Thanks is given to Dr. Ada Sue Hinshaw and Dr. Alice Longman who also offered guidance and assistance in the development of this thesis.

Particular thanks is given to Dr. Lee I. Schocket and the nursing staff at Tucson Medical Center for their assistance during collection of the data.

Special thanks is given to Dr. Marvin I. Dunn, Dr. David M. Pugh, and the staff of the cardiovascular section of The University of Kansas Medical Center for their friendship and support.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
ABSTRACT	viii
1. PRESENTATION OF THE PROBLEM	1
Statement of the Problem	2
Significance of the Problem	2
Purpose	3
Hypothesis	3
Theoretical Framework	3
Assumptions	6
Definitions	7
2. REVIEW OF THE LITERATURE	8
Coronary Arteriography	8
Stress Reduction with Structured Nursing Approach	9
Audiovisual Tools	11
3. METHODOLOGY	13
Experimental Design	13
The Setting	14
The Sample	15
Protection of Human Rights	15
The Measurement Instruments	16
Pilot Study	18
Data Collection and Analysis	18
4. PRESENTATION OF DATA	20
Characteristics of the Sample	20
Statistical Analysis of the Findings	21
Comparison of Experimental and Control Groups	21
Comparison of Male and Female Sample	23

TABLE OF CONTENTS--Continued

	Page
Comparison of Subject's Previous Knowledge	24
Determination of Relationship between Dependent Variables	26
Subjective Findings	27
Summary	27
5. DISCUSSION OF FINDINGS	28
Discussion of Findings and Theoretical Framework	28
6. SUMMARY AND RECOMMENDATIONS	32
Methodology	33
Findings	33
Recommendations	35
APPENDIX A: FILMSTRIP NARRATION	36
APPENDIX B: AFFECT ADJECTIVE CHECK LIST AND FACE SHEET	40
APPENDIX C: SUBJECT CONSENT FORM	43
LIST OF REFERENCES	45

LIST OF TABLES

Table		Page
1.	Characteristics of the Sample by Treatment Group, Sex, Age, Prior Knowledge and Years of Education	21
2.	Group I (Control, n=15) and Group II (Experimental, n=15) Compared by t Test Using the Affect Adjective Check List (AACL), Heart Rate (HR), and Pulse Pressure (PP)	22
3.	Sex (Male, n=24 and Female, n=9) Compared by t Test Using the Affect Adjective Check List (AACL), Heart Rate (HR), and Pulse Pressure (PP)	23
4.	Previous Knowledge of the Procedure Compared by t Test Using the Affect Adjective Check List (AACL), Heart Rate (HR), and Pulse Pressure (PP)	25
5.	Pearson Correlation Coefficients of Affect Adjective Check List (AACL), Heart Rate (HR), and Pulse Pressure (PP)	26

ABSTRACT

To compare two nursing approaches of delivery of information to persons prior to coronary arteriography, an experimental design with two randomly assigned groups was used. The control group received nursing care and instructional information as presently given by the nursing staff, while the experimental group was shown a filmstrip of instructional information followed by an opportunity to ask questions of a nurse the evening before coronary arteriography. Data was collected using a post-test only control group design.

The hypothesis that persons receiving structured information before coronary arteriography would have a significant reduction in anxiety as measured prior to the procedure by: (a) Affect Adjective Check List, (b) pulse pressure, and (c) heart rate in comparison to persons receiving existing nursing care approaches was not supported. The t test revealed no significant difference in anxiety reduction at the .05 level between the two groups. The Pearson Correlation Coefficient did show a positive correlation with a probability of .02 between heart rate and the Affect Adjective Check List as indicators of anxiety which does have implications for nursing practice.

CHAPTER 1

PRESENTATION OF THE PROBLEM

Professional nurses have a role in helping hospitalized persons allay anxiety and fear. An approach nurses use to reduce anxiety is instruction to persons before stressful events so that they know what to expect. The approach varies from nurse to nurse, and the instructional information is generally inconsistent. To present more consistent information, structured communication in booklets and audiovisual tools is being used to reinforce instruction received by patients regarding stressful events.

Significance has been placed on pre- and postoperative information for persons having open heart operation. However, very little has appeared in the literature related to the cardiac diagnostic procedures, particularly the cardiac catheterization for coronary arteriography.

Persons receive information prior to the cardiac catheterization from the cardiologist before signing the consent form. To clarify a person's understanding of the procedure, nurses may then repeat the physician's information, supplement the physician's information or just answer questions the person may have about the procedure. An audiovisual tool describing the cardiac catheterization for coronary

arteriography could give consistent information regarding the procedure and what is expected of the person.

Statement of the Problem

How does the giving of structured information as an intervention compare with existing nursing care approaches in reducing the degree of anxiety in the person having coronary arteriography?

Significance of the Problem

Because coronary arteriography is a procedure involving the heart and because the implication of possible cardiac surgery exists, coronary arteriography is anxiety-producing and stressful for the person with suspected coronary artery disease. During coronary arteriography, the person is given commands to cough or hold a deep breath which must be followed immediately and accurately. The person will also have hemodynamic measurements which can possibly be distorted by changes in the cardiovascular system due to anxiety.

If the amount of anxiety a person experiences can be reduced, the person can better cooperate and relax during the coronary arteriography. The relevance of the problem to nursing practice is in determining approaches for nursing care that reduce the amount of anxiety experienced.

Purpose

The purpose of this study was to determine if specific measures of physiological and psychological response could be shown to differ when two selected approaches to nursing care were used during preparation of a person for coronary arteriography.

Hypothesis

Persons receiving structured information before coronary arteriography were predicted to have a significant reduction in anxiety as measured prior to the procedure by: (a) Affect Adjective Check List, (b) pulse pressure, and (c) heart rate in comparison to persons receiving existing nursing care approaches.

Theoretical Framework

To examine the reduction of anxiety related to stressful events, the theoretical framework is focused on the stress response, interventions to decrease stress reactions, and audiovisual communication.

Janis (1958, p. 9) wrote the following:

. . . despite whatever social and individual variations may exist, there are a large number of cause-and-effect relationships which will prove to be applicable to the stress behavior of all sectors of contemporary modern society and which might even prove to be valid cross-culturally.

Any stressor which threatens man's sense of wholeness, containment, security and control will bring anxiety into play (Hudak, Gallo, and Lohn 1973). The amount of anxiety associated with disease is

dependent on the meaning the illness has to a person. Any organ may have special significance to a person. Because the heart is essential to survival, it is more likely to have special meaning than other organs (Beland and Passos 1975).

To produce a stress reaction, a stimulus must be symbolically communicated to the psychological system and the stimulus need only be anticipated (Lazarus 1967). For example, mere anticipation of dental procedures produced a stress response measured physiologically, yet was activated by a psychological threat (Lazarus 1967). Often, a person's perception of an event will be distorted by stress and will interfere with his ability to assess reality (Dodge 1969).

Lazarus' interpretation of stress indicated the crucial process is a person's appraisal or the individual evaluation of the significance of the stimulus. He further suggested that by changing the person's appraisal or perceptions, the degree of stress reaction can be changed (Lazarus 1967). Most theorists will agree that anxiety follows from the perception of the threat of occurrence of a danger situation (Izard 1972). Ambiguity concerning the significance of the stimulus configuration will usually intensify the threat because it limits the individual's sense of control or increases the sense of helplessness over danger (Lazarus 1967).

The professional nurse endeavors to reduce stress as perceived by the patient through nursing communication and action (Putt 1970).

Janis (1958, p. 368) wrote the following regarding stress reduction:

. . . to be maximally effective, preparatory communication should presumably have the goal of giving as complete a cognitive framework as possible for appraising the potentially frightening and disturbing perceptions that the person might actually experience.

Persons attend more to information they perceive as central to their physical, psychological, and social survival (Dodge 1969). Less tension is created when a person is given specific information on which he can structure the event of impending stress (Meyer 1964). Abdellah and Levine found that the patient wants an explanation of his care which prepares him not only for what to expect, but also for what is expected of him (Beland and Passos 1975). Understanding is facilitated when a person receives the kind of information that he feels he needs in a particular situation (Dodge 1969).

Nursing intervention can change the perception of a threat and, therefore, change the degree of anxiety a person experiences. Nurses have attempted to influence patient's perceptions of diagnostic tests and surgery for some time by preparatory communication. Studies related to preoperative information have shown that structured information has a greater effect than an unstructured nursing approach in the reduction of anxiety. Lindeman and Van Aernam (1971) stressed the inconsistency and vagueness of existing nursing care approaches to preparatory communication. In their study, an audiovisual tool was used as structured

information to ensure consistency of information in the nursing care approach.

To convey through words the same amount of information contained in pictures or live demonstration is difficult. Persons who lack conceptual skills will benefit less from verbal information than from behavior demonstrations according to Bandura's social learning theory (Bandura 1971). The reaching of two senses--sight and sound--at the same time with the same content has proved more effective than single intake for learners. Studies have indicated some persons learn primarily by auditory intake, while others rely on visual intake (Stevens 1975). The complementary use of an audiovisual tool assures that both kinds of learners are reached.

Assumptions

The following assumptions are made in this study:

1. The person having coronary arteriography is subject to an anxiety-producing experience.
2. Certain degrees of anxiety are destructive and should be reduced.
3. The reduction of the degree of anxiety experienced is within the role of the professional nurse.
4. Degrees of anxiety reduction can be measured.

Definitions

The following definitions of terms were used:

1. **STRESS:** Stress is any threat or perceived threat to the fulfillment of basic needs which evoke a certain physiological or psychological state.
2. **ANXIETY:** Anxiety, a consequence of stress, consists of diffuse, unpleasant, often vague feelings of apprehension.
3. **EXISTING NURSING CARE APPROACHES:** Existing nursing care approaches pertaining to coronary arteriography are the interactions and communications of the nursing staff with persons prior to the procedure informing the person what to expect and what is expected of him.
4. **STRUCTURED INFORMATION:** Structured information refers to an exact, consistent manner of preparatory communication.
5. **CORONARY ARTERIOGRAPHY:** Coronary arteriography is a diagnostic invasive procedure performed in a laboratory similar to an operating suite using local anesthesia so that the patient is alert.
6. **CARDIAC CATHETERIZATION:** Cardiac catheterization is a general name for the procedure which may include coronary arteriography and the measurement of hemodynamic data.

CHAPTER 2

REVIEW OF THE LITERATURE

The following information was compiled from a review of the literature. This review of the literature focused on pre-coronary arteriography instruction, stress reduction by nursing intervention and the use of audiovisual tools in delivering the instructional information.

Coronary Arteriography

Although few studies were in the literature regarding information prior to coronary arteriography, there were a number of authors who made reference to this area of nursing intervention. Kelly and Gensini (1975) reported studies relating a higher incidence of death the twenty-four hours prior to coronary arteriography than within the twenty-four hours immediately following the procedure. They thought fear played "a major part in causing some of these deaths (p. 91)." They continued that when their patients were relaxed and confident during the procedure, they required less medication and had fewer complications. The importance of preparing persons for coronary arteriography was stressed in this article.

In a survey of ninety-six medical-surgical patients having diagnostic tests, Coughy et al. (1963) found most patients wanted information

on how the test would be done, how they could help, and what parts of the body the test involved. Beland and Passos (1975) theorized that as a means to reduce anxiety, the information given to patients about procedures should include the sensations likely to accompany the event. They emphasized the need for a thorough explanation of coronary arteriography because the procedure is performed with local anesthesia.

Stress Reduction with Structured Nursing Approach

Lindeman and Van Aernam (1971) contrasted a structured preoperative teaching approach which was standardized for content and method with an existing nursing care approach for 321 patients admitted for an operation. They found a significant ($p < .05$) improvement in the structured approach as measured by the patient's length of hospital stay and ability to cough and deep breathe after operation.

Foster (1974) compared an existing nursing care approach with an experimental group in twelve patients with arteriosclerotic cardiovascular disease who were admitted for diagnostic tests. The experimental group received thirty to fifty minutes of interpersonal communication which consisted of talking about their feelings regarding the situation. Foster used urine sodium and potassium ratio as an adrenal stress index of the body's biochemical response to stress. The findings were that the treatment group had less stress response than the control group ($p < .01$).

Pride (1968) studied 108 elective hospital admissions to determine the effects of nursing interventions using an adrenal stress index of urine potassium levels. The control group with the existing nursing approach was found to experience more stress ($p < .05$) than either experimental group in which one used a friendly, unfocused approach and another clarified patient's perceptions regarding the hospitalization.

Meyer (1964) studied patient needs for specific information on which to structure threatening events. In a study of seventy-two hospitalized persons, each received the same unknown test consisting of swabbing water on the arm. One group received no communication, one group received irrelevant communication, and the third group was given a carefully structured explanation of the test. The subjects were asked in interviews to tell what they thought was going to happen, what happened, and how they felt, and what equipment had been on the nurse's tray. From the scores compiled, Meyer concluded structured communication was significantly ($p < .05$) desirable in decreasing tension and making the patient more comfortable during stressful events.

Using a sample of thirty-six persons with the diagnosis of peptic ulcer, Putt (1970) compared three types of nursing approaches--instructional, psychologically supportive, and the existing nursing approach. The instructional was more effective ($p < .05$) than psychological support, and psychological support significantly ($p < .05$) more effective than the existing nursing approach in reducing discomfort after admission,

decreasing the length of the hospital stay and in changing the person's perceptions of concepts related to his illness.

Audiovisual Tools

Redman (1972) mentioned the use of television and audiovisual tools in patient instruction to enhance learning. Pohl (1968) added that teaching aids were an adjunct to teaching and not a replacement. She suggested that a nurse discuss the presentation with the viewer after the material is presented. Lindeman and Van Aernam (1971) used an audiovisual aid to insure consistency of the instruction for the patient. Schultz (1962) used a videotape in a clinic setting for instruction of general health habits to patients while they waited for their appointments. Thus, videotape presentation has been used by a number of authors to provide consistent instruction.

Brong (1964), in a review of the advantages and disadvantages of television for education, believed the teacher must follow the audiovisual presentation with a question and answer session to give an opportunity for feedback. One of the advantages she mentioned was the communication of information and skills to many persons at the same time.

Although from the literature structured information has been shown to decrease anxiety, there have been no studies using structured

information in the form of an audiovisual presentation to decrease anxiety prior to a diagnostic procedure.

CHAPTER 3

METHODOLOGY

The following study was a comparison of two nursing approaches, one utilizing an audiovisual tool in addition to the other, the existing nursing care approach, to instruct persons prior to coronary arteriography in an effort by nurses to decrease anxiety. Although structured information has been shown to decrease anxiety, there are no studies using structured information to decrease anxiety prior to a diagnostic procedure and measured prior to that diagnostic procedure.

Experimental Design

To compare two nursing approaches of delivery of information prior to coronary arteriography, an experimental design with two randomly assigned groups was used. The nursing approach with Group I consisted of nursing care and instructional information as presently given by the nursing staff on the unit where the patient was admitted. Group II was shown a filmstrip of instructional information followed by an opportunity to ask questions of a nurse the evening prior to coronary arteriography.

On the day of the coronary arteriography, prior to any pre-medication and approximately one hour before leaving the nursing unit,

each person in the study was asked to complete Zuckerman's Affect Adjective Check List and to have heart rate and blood pressure measurements taken.

The independent variables to be examined were the two nursing approaches: the existing nursing care approach and the filmstrip presentation in the delivery of information prior to coronary arteriography. The filmstrip presentation, "Cardiac Catheterization," was developed by the Trainex Corporation, a subsidiary of Medcom, Inc., and copyrighted in 1975 (Appendix A). The dependent variables under consideration were the levels of stress as indicated by physiological measures of pulse pressure and heart rate, and the psychological measure of the Affect Adjective Check List (Appendix B). The data were collected using a post-test only control group design.

The Setting

The study was conducted on nursing units outside of critical care areas in a large community hospital. The nursing staff consisted of registered nurses, licensed practical nurses, and nurse assistants. The nursing staff on each unit was aware of the researcher's presence; however, to limit the injection of bias, the staff was unaware of the random assignment of the patients. The patients were admitted to the nursing units the afternoon before the performance of the cardiac catheterization for coronary arteriography.

The Sample

The population sample for this study was composed of thirty patients who met the following criteria:

1. Admitted to nursing units designated by the hospital facility for use by the researcher.
2. Scheduled for coronary arteriography for the first time.
3. Literate in English and English speaking.
4. Agreed to participate in the study.
5. All clients of one cardiologist.
6. Not on relaxants or antihypertensive medication twenty-four hours before cardiac catheterization.

Other characteristics of the sample that were considered include sex, age, education, and previous knowledge about the procedure.

Protection of Human Rights

The study was submitted to the Human Subjects Committee of The University of Arizona and also to the department of staff development and the administration of the clinical facility used in the study. The cardiologist whose clients were subjects for the study also reviewed the study.

Only persons who consented to participate in this study were used. The consent forms can be seen in Appendix C. The purpose of the study was explained to each person and each person was assured he could

withdraw from the study at any time, and that withdrawal from the study would not affect the care he received. The confidentiality of the information obtained was insured by assigning each person a number. Permission for the persons to participate in the study was also obtained from the primary physician and/or the consulting cardiologist.

The Measurement Instruments

To evaluate the effectiveness of the two nursing approaches, it was necessary to establish criteria for assessment of the effect. The measurements of stress chosen for this study included the Affect Adjective Check List, heart rate and pulse pressure.

Zuckerman's Affect Adjective Check List was developed as a test of anxiety which could be given quickly, scored objectively and adapted to measure changes in anxiety over short periods of time. The check list consists of sixty-one adjectives (see Appendix B). Twenty-one of these are used to assess anxiety and the other forty are buffer items. The twenty-one adjectives are divided as anxiety-plus and anxiety-minus words. Anxiety-plus words are scored one if checked and anxiety-minus words are scored one if not checked, so the possible score range is zero to twenty-one. Zuckerman used two forms of the test with different time sets. This study used the "today" set to measure anxiety at a definite period in time. Both forms had adequate internal reliability on

a single occasion with the "today" form at $+ .85$ significant below $.001$ level (Zuckerman 1960).

The Affect Adjective Check List was studied by Zuckerman for validity in several settings. In comparison with the Manifest Anxiety Scale, the mean scores correlated significantly ($r = .29$, $p < .05$) when given to college students on ten non-examination days. The check list correlated significantly ($r = .40$, $p < .05$) with the Manifest Anxiety Scale on the one examination day, although the correlation was not significant on two other examination days. In a study of pregnant women, the Affect Adjective Check List and the Manifest Anxiety Scale were highly correlated ($r = .65$, $p < .001$). Zuckerman assumed the anxiety scoring key would be valid regardless of the time set (Zuckerman 1960).

Pulse pressure and heart rate are physiological measurements of anxiety. Anxiety is manifested by high excretion of epinephrine. Parasympathetic responses are generally overwhelmed by the sympathetic response to emotional stress. The most typical responses to emotional stress include increased heart rate and increased blood pressure (Meltzer 1973). Anxiety is associated with a purer epinephrine-like reaction (Martin 1961). Epinephrine leads to an increase in heart rate and systolic blood pressure. Because epinephrine causes a decrease in diastolic blood pressure, the pulse pressure will increase.

To minimize researcher bias and ensure reliability of the blood pressure and heart rate measurements, a portable, automatic unit

manufactured by Filac Corporation was used by the researcher to obtain all measurements. The Filac unit is battery operated and recharged daily. As the cuff on the forearm automatically deflates, the unit displays a digital readout of the systolic and diastolic blood pressure and heart rate.

Pilot Study

A pilot study was carried out with three subjects meeting the study criteria to aid the researcher in working out the mechanics of showing the filmstrip and administering the measurement tools.

Data Collection and Analysis

Data collection was made on the day of the scheduled cardiac catheterization just prior to pre-medication and transportation to the cardiovascular laboratory. The researcher measured blood pressure and heart rate, then each participant in the study was given the Affect Adjective Check List to complete, in addition to a few descriptive questions about the person on the face sheet (Appendix B).

The results of the post-test only control group design for the two groups was compared by use of the Student's t test of significance. The post-test only control group design is a setting in which the t test is optimal (Campbell and Stanley 1963).

To determine the amount of association between the dependent variables, the Pearson product-moment correlation coefficient was used

with the Affect Adjective Check List, pulse pressure and heart rate. The significance level for all analyses was $p < .05$.

CHAPTER 4

PRESENTATION OF DATA

The findings and the statistical analysis of the data collected from the study previously described are presented in this chapter.

Characteristics of the Sample

Of the major study sample of thirty subjects, twenty-one were male and nine were female. A pilot study included three male subjects as reported in Table 1. The study experimental group was comprised of eleven males and four females, while the control group consisted of ten males and five females. The ages ranged from thirty-eight to sixty-eight years with the mean age of 57.15 years. The mean age of the experimental group was 55.21 years and the control group was 61.10 years. Seventeen subjects of the sample had received information prior to the hospitalization regarding the catheterization procedure. Previous information about the procedure had been received by ten subjects in the experimental group and seven subjects in the control group. The mean years of education of the experimental group was 12.00, while the control group had a mean of 11.80 years of education. The biographical data obtained for the subjects in the study is summarized in Table 1.

Table 1. Characteristics of the Sample by Treatment Group, Sex, Age, Prior Knowledge and Years of Education

Group	Total Subjects	Males	Females	Mean Age	Prior Knowledge	Mean Years of Education
Pilot	3	3	0	47.00	2	12.67
Experimental	15	11	4	55.21	10	12.00
Control	15	10	5	61.10	7	11.80

Statistical Analysis of the Findings

The hypothesis of this study stated that the subjects receiving structured information before coronary arteriography would have a significant reduction in anxiety measured prior to the procedure by: (a) Affect Adjective Check List, (b) pulse pressure, and (c) heart rate than persons receiving existing nursing care approaches.

Comparison of Experimental and Control Groups

The Student's t test for significance comparing the experimental group and control group was done using the thirty subjects of the sample excluding the three subjects of the pilot study. The data are summarized in Table 2. The mean score on the Affect Adjective Check List for Group I (control) was 7.27 with a standard deviation of 4.71 and for

Table 2. Group I (Control, n=15) and Group II (Experimental, n=15) Compared by t Test Using the Affect Adjective Check List (AACL), Heart Rate (HR) and Pulse Pressure (PP)

Variable	Group	Mean	Standard Deviation	*t value
AACL	I	7.27	4.71	-.75
	II	8.53	4.55	
HR	I	63.20	11.43	-.18
	II	63.93	11.45	
PP	I	52.73	17.37	.44
	II	49.87	18.34	

*t value of ± 2.04 required at 28 degrees of freedom for $p < .05$ level of significance

Group II (experimental) was 8.53 with a standard deviation of 4.55.

When analyzed for the difference between the means, a t value of $-.75$ was computed. The mean heart rate for Group I was 63.20 with a standard deviation of 11.43, and for Group II was 63.93 with a standard deviation of 11.45. When analyzed, a t value of $-.18$ was computed.

The mean pulse pressure for Group I was 52.73 with a standard deviation of 17.37 and for Group II was 49.87 with a standard deviation of 18.34.

When analyzed, a t value of $.44$ was computed. A t value of ± 2.04 is

required at 28 degrees of freedom for a $p < .05$ level of significance. The analysis does not support the major hypothesis of this study.

Comparison of Male and Female Sample

Student's t test for significance comparing sex was done using thirty-three subjects, twenty-four male and nine female, which included the three pilot subjects. The data are summarized in Table 3.

Table 3. Sex (Male, $n=24$ and Female, $n=9$) Compared by t Test Using the Affect Adjective Check List (AACL), Heart Rate (HR) and Pulse Pressure (PP)

Variable	Group	Mean	Standard Deviation	*t value
AACL	Male	7.25	4.28	-1.47
	Female	9.89	5.37	
HR	Male	62.46	11.00	-.78
	Female	65.78	10.60	
PP	Male	49.75	18.43	-.93
	Female	56.00	13.32	

*t value of ± 2.04 required at 31 degrees of freedom for $p < .05$ level of significance

The mean score on the Affect Adjective Check List for males was 7.25 with a standard deviation of 4.28 and for females was 9.89 with a standard deviation of 5.37. When analyzed for the difference between the means, a t value of -1.47 was computed. The mean heart rate for males was 62.46 with a standard deviation of 11.00 and for females was 65.78 with a standard deviation of 10.60. When analyzed, a t value of -.78 was computed. The mean pulse pressure for males was 49.75 with a standard deviation of 18.43 and for females was 56.00 with a standard deviation of 13.32. When analyzed, a t value of -.93 was computed. A t value of ± 2.04 is required at 31 degrees of freedom for a $p < .05$ level of significance. The analysis found no significant differences between male and female responses.

Comparison of Subject's Previous Knowledge

Student's t test for significance comparing previous knowledge was done using thirteen subjects with no previous knowledge and twenty subjects with previous knowledge of the procedure. The thirty-three subjects included the three pilot subjects. The data are summarized in Table 4.

The mean score on the Affect Adjective Check List for no previous knowledge was 8.38 with a standard deviation of 4.50 and for previous knowledge was 7.70 with a standard deviation of 4.87. When analyzed for the difference between the means, a t value of .41 was computed.

Table 4. Previous Knowledge of the Procedure Compared by t Test Using the Affect Adjective Check List (AACL), Heart Rate (HR), and Pulse Pressure (PP)

Variable	Group	Number of Cases	Mean	Standard Deviation	*t value
AACL	No	13	8.38	4.50	.41
	Yes	20	7.70	4.87	
HR	No	13	66.15	12.39	1.20
	Yes	20	61.55	9.59	
PP	No	13	52.46	14.51	.27
	Yes	20	50.80	19.11	

*t value of ± 2.04 required at 31 degrees of freedom for $p < .05$ level of significance

The mean heart rate for no previous knowledge was 66.15 with a standard deviation of 12.39 and for previous knowledge was 61.55 with a standard deviation of 9.59. When analyzed, a t value of 1.20 was computed. The mean pulse pressure for no previous knowledge was 52.46 with a standard deviation of 14.51 and for previous knowledge was 50.80 with a standard deviation of 19.11. When analyzed, a t value of .27 was computed. A t value of ± 2.04 is required at 31 degrees of freedom for a $p < .05$ level of significance. The analysis found no

significant difference between previous knowledge and no previous knowledge in the subject's responses.

Determination of Relationship between Dependent Variables

Pearson correlation coefficient was utilized to determine the relationship of dependent variables. The variables involved in this analysis were the Affect Adjective Check List, pulse pressure and heart rate. The only significant finding was a correlation of .36 with a probability of .02 between the Affect Adjective Check List, a psychological measure of anxiety and heart rate, a physiological measure of anxiety. Pulse pressure, another physiological measure, did not correlate significantly with the Affect Adjective Check List or with heart rate. The coefficients and probabilities of the dependent variable measures are presented in Table 5.

Table 5. Pearson Correlation Coefficients of Affect Adjective Check List (AACL), Heart Rate (HR) and Pulse Pressure (PP)

Variable	Coefficient	Probability
AACL HR	.36	.02*
AACL PP	.12	.25
HR PP	.08	.33

*significant at $p < .05$

Subjective Findings

While this study did not support the major hypothesis of greater anxiety reduction following structured information about coronary arteriography, the reaction of subjects viewing the structured filmstrip was favorable. The comments were generally similar, including: "film helpful," "recommend it for everyone," "interesting and educational," "it takes a lot of worry from my mind," and "now I can imagine what's going to happen." Although a significant reduction in anxiety was not shown, the subjects appeared to appreciate being informed regarding the procedure.

Summary

The t test of significance revealed no significant difference in anxiety reduction between the group receiving structured information and the group receiving the existing nursing care approaches. There was also no significant difference in anxiety reduction when sex, education, and prior knowledge about the procedure were tested.

The Pearson correlation coefficient showed a significant relationship between the Affect Adjective Check List and heart rate as anxiety measures. Pulse pressure did not significantly correlate with either the Affect Adjective Check List or heart rate.

Additional subjective findings have been reported.

CHAPTER 5

DISCUSSION OF FINDINGS

The following chapter discusses the relationship of the theoretical framework with the findings of the study.

Discussion of Findings and Theoretical Framework

Stressors such as procedures to determine disease processes are anxiety producing. The amount of anxiety produced depends on individual perceptions of the disease. However, cardiac related disease is likely to have special significance to persons because the heart is essential to survival.

Lazarus (1967) wrote that ambiguity concerning stressors usually intensifies the threat as it increases a person's sense of helplessness over danger. Less tension is created when a person has specific information about the event of impending stress (Meyer 1964). Studies related to preoperative information have shown that structured information has a greater effect than unstructured information in the reduction of anxiety.

This study tested the difference in anxiety in two groups, one receiving structured information about coronary arteriography and one receiving information from the existing nursing care approach as measured by the Affect Adjective Check List, heart rate and pulse pressure. This

study did not find a statistically significant difference in the means of the two groups. In addition, testing of the control variables (sex, education, and previous knowledge) did not reveal statistically significant differences with the Affect Adjective Check List, heart rate and pulse pressure. Reasons for these findings may have been the small sample size, a theoretical question of different dimensions of anxiety, the anxiety measurements, and the time of data collection.

Influencing the findings of this study may have been the small sample size. The differences in the mean values, although not significant with thirty subjects, could be of significant value in a much larger sample of this population.

A theoretical question that anxiety may have several dimensions, as yet undefined, is another possible reason for the results. Anxiety may vary related to outcome of a procedure, performance of a procedure, discomfort with a procedure or simply not understanding a procedure. A reduction in one area or type of anxiety might be masked by the others or a global anxiety.

Because the measurement tools of anxiety are not precise as to various types of anxiety, global anxiety is probably the more frequent measurement taken. The tools for measuring anxiety may indicate global anxiety, but are not precise enough to distinguish minute change in anxiety levels.

The data collection occurred approximately one hour prior to the performance of the cardiac catheterization. Again, the possibility is that at this time global anxiety was high and would mask any change in a component of the anxiety that may have occurred as a result of the structured information. Other studies using structured and unstructured information have not measured anxiety prior to a stressor such as cardiac catheterization.

A final consideration may be that structured information is no more effective than unstructured information in the reduction of anxiety prior to coronary arteriography. There may also be other factors involved that are as yet undetermined. The sorting out of a reason for the findings is beyond the scope of this study.

The positive correlation of the Affect Adjective Check List and heart rate with a probability of .02 is an important relationship with nursing implications. The Affect Adjective Check List is a psychological measure which has been used to determine anxiety for over forty years. Positive relationships between psychological and physiological measures are important to nursing practice. The professional nurse endeavors to reduce stress as perceived by the patient through nursing communication and action (Putt 1970). Heart rate is a physiological measurement made by nurses frequently each day. The use of heart rate as a criterion of anxiety in anxiety-provoking situations can alert a nurse to initiate nursing care in an effort to decrease anxiety which can

then be observed by a decrease in heart rate. Pulse pressure did not show a relationship to heart rate and the Affect Adjective Check List in the measurement of anxiety. Other factors may effect pulse pressure such as peripheral vascular resistance; however, these factors were not in the limits of this study to explore.

In conclusion, the findings of this study did not support structured information as more effective in decreasing anxiety than unstructured information about coronary arteriography. The study did show a significant positive relationship between the Affect Adjective Check List and heart rate as indicators of anxiety which does have great implication for nursing practice.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

The purpose of this study was to determine if specific measures of physiological and psychological response could be shown to differ when two selected approaches to nursing care were used during preparation of a person for coronary arteriography. The research problem investigated was: How will structured information compare with existing nursing care approaches in reducing the degree of anxiety in the person having coronary arteriography?

The problem is significant because: (1) coronary arteriography is anxiety-producing, (2) cardiovascular responses and cooperation during the procedure may be effected by high levels of anxiety, and (3) approaches to nursing care that reduce anxiety are important determinations for the practice of nursing.

Although structured information has been shown to decrease anxiety, there are no studies using structured information to decrease anxiety prior to a diagnostic procedure and measured prior to that diagnostic procedure.

Methodology

To compare two nursing approaches of delivery of information to persons prior to coronary arteriography, an experimental design with two randomly assigned groups was used. The control group received nursing care and instructional information as presently given by the nursing staff, while the experimental group was shown a filmstrip of instructional information followed by an opportunity to ask questions of a nurse the evening before coronary arteriography. Data were collected using a post-test only control group design. On the day of the coronary arteriography prior to pre-medication, the study subjects completed the Zuckerman Affect Adjective Check List and measurements of heart rate and blood pressure were recorded automatically using a Filac unit.

The sample for the study included thirty persons and three pilot subjects who met the following criteria: admitted to nursing units designated by the facility for use by the researcher, scheduled for coronary arteriography for the first time, literate in English and English speaking, agreed to participate in the study, clients of one cardiologist, and not on relaxants or antihypertensive medication twenty-four hours before cardiac catheterization.

Findings

The research hypothesis that was tested was: Persons receiving structured information before coronary arteriography will have a

significant reduction in anxiety as measured prior to the procedure by: (a) Affect Adjective Check List, (b) pulse pressure, and (c) heart rate in comparison to persons receiving existing nursing care approaches.

The Student's t test for significance comparing the two groups was done using the thirty subjects of the sample. The t test revealed no significant difference in anxiety reduction between the group receiving the existing nursing care approaches and the group receiving the structured information. There was also no significant difference in anxiety reduction when sex, education, and prior knowledge about the procedure were tested.

Pearson correlation coefficient was utilized to determine the interrelationship of the dependent variable measures: Affect Adjective Check List, heart rate and pulse pressure. A significant finding was a correlation of .36 ($p < .02$) between the Affect Adjective Check List and heart rate. This positive correlation between a psychological and a physiological measure is an important relationship with nursing implications. Nurses use physiological measures daily. If these signs can be used to alert the nurse to the presence of anxiety, then the nurse can implement cares to decrease that anxiety.

The use of a filmstrip can be time saving for staff nurses allowing the nurse to supplement the instruction by responding to individual concerns regarding the information received in a consistent manner.

Using an audiovisual system, the person has the choice or control of whether he receives further information about a procedure.

Recommendations

Recommendations for further investigations include:

1. Replication of the study with a larger sample size.
2. Identification of various dimensions or types of anxiety and measures to discriminate between these types.
3. Replication of the study using other tools for measuring anxiety such as urine potassium levels and urine sodium and potassium ratio.
4. Replication of the study measuring comfort, cooperation and complications during the catheterization procedure.
5. Identification of staff nurse reactions to use of audiovisual tools to supplement existing nursing care approaches in informing persons about diagnostic procedures.
6. Identification of the reactions of persons undergoing diagnostic procedures to receiving information about the procedure by use of audiovisual systems.

APPENDIX A

FILMSTRIP NARRATION*

1. CARDIAC CATHETERIZATION, . . .
2. . . . produced by TRAINEX Corporation.
3. Doctor: "Hmmm . . . take a few more deep breaths . . .
4. . . . relax your arm now
5. . . . OK . . . pick up a little more speed
6. . . . Tom, I've carefully examined you, reviewed your cardiograms, X-rays, and other tests, and I think you do have some heart problems, but I'm not certain about their severity. I'd like you to have a cardiac catheterization."
7. Tom: "Hmmm. Cardiac catheterization. What's that? I've never heard of it. Is it dangerous?"
8. Doctor: "Tom . . . I know you're concerned, but cardiac catheterization is a safe, relatively painless procedure; and for some types of heart problems, such as yours, it's the best method of making an accurate medical diagnosis."
9. Because it requires a special team of doctors, nurses, and technicians, as well as a good deal of specialized equipment, cardiac catheterization must be performed in a hospital.
10. Usually, you'll be admitted a day or two before the catheterization . . . if you're scheduled first thing in the morning, you probably won't be able to eat from midnight until after the procedure. If you're scheduled later in the day, you may be able to have breakfast.
11. Most people are a little apprehensive, especially about the discomfort they might feel. Actually, you should experience very little discomfort--even though a general anesthetic isn't used.

*Permission for the use of the text of the filmstrip CARDIAC CATHETERIZATION was obtained from Trainex Corporation, Garden Grove, California.

12. However, to help you relax before and during the catheterization, you'll be given a sedative either by mouth or injection. A sedative is given instead of general anesthesia because you may need to assist the catheterization team by coughing, deep-breathing, or exercising; so, of course, you must be awake.
13. At first glance, the catheterization lab--with its bright lights, electronic equipment, and team members gowned in scrub suits, may seem a little strange.
14. You'll be placed on a special table . . .
15. . . . and you'll be hooked up to an electrocardiogram so that each heartbeat can be monitored during the procedure.
16. Because most tables rotate, as well as move vertically and horizontally, so that X-rays can be taken easily, you'll be secured to the table so your body won't change position. The red stains on the straps are from the sterilizing solution used.
17. A brace is then fastened to the side of the table to support your arm and shoulder during the procedure.
18. The area where the catheter will be inserted may be shaved, and it will then be cleaned and coated with a sterilizing solution.
19. During catheterization, everything is kept germ-free, so sterilized towels are placed around the sterile skin area. To help maintain this sterility, your arm must be kept still, so the towels won't be disturbed.
20. A sterile towel may be placed like a curtain across your shoulder . . . then, you won't be able to see what's going on. After you receive an injection of a local anesthetic, such as novocainTM, a small incision is made in your arm.
21. Then, one or more catheters--which are simply long flexible tubes--are inserted into a vein or an artery, . . .
22. . . . where each is moved along, . . .
23. . . . until it reaches the heart. The movement of the catheters is watched by the doctor on a fluoroscopy screen. Then, with the help of specialized equipment, precise information about all parts of your heart can be obtained.

24. For example, to find out about the right side of your heart, the catheter is moved from the right atrium to the right ventricle, . . .
25. . . . the pulmonary artery, . . .
26. . . . and even into the small arteries within a lung. The catheter is so flexible that none of the delicate structures within your heart or lungs will be damaged.
27. To find out about the left side of your heart, the catheter is passed through an artery, rather than a vein, to the aorta. From this point, the catheter can be passed into the left ventricle or the two main coronary arteries, the ones that supply blood to the heart itself.
28. Sometimes, to look at the left side of the heart, the catheter is inserted through an artery in the groin.
29. Once the catheters are placed in the area to be tested, an X-ray camera will be lowered over your chest. This machine will take X-ray motion pictures of the catheter placement and the various heart tests. A special dye is used so that everything will show up well.
30. In this X-ray, you see a normal left coronary artery a few seconds after the introduction of the dye. By far, the most common reason for having a cardiac catheterization is to find out the condition of the coronary arteries because they supply the heart muscle with blood. Disease or narrowing of these arteries can cause angina or heart attacks.
31. Here's an X-ray of a normal right coronary artery.
32. Another important part of catheterization is testing blood and measuring the pressure in the various parts of the heart.
33. You may be asked to breathe into a special tube, so that the amount of oxygen in the air you breathe out can be measured. Once all these tests are completed, the catheter will be removed, a few stitches will close the incision; and you'll be taken back to your room.
34. After the procedure, you'll have a bandage on your arm to protect the stitches. To prevent bleeding, your arm may be secured to an arm board.

35. During the rest of the day, you'll rest as the catheterization team carefully evaluates the X-ray motion pictures and other data they've obtained. You will also be examined periodically during the day.
36. Like most people, you'll probably feel well enough to go home on the day after the catheterization although your arm will be sore for several days.
37. Your doctor will inform you of the results: Doctor: "Tom, your catheterization showed that there is some narrowing in one of your coronary arteries; but, this won't require surgery--I think we can handle your particular problem with medication."
38. "I'm going to give you a prescription to lower your blood pressure and a diet I want you to follow carefully. Come into the office next week . . . I'll take out those stitches and we can talk."
39. About a week after the catheterization, the stitches can be removed. You'll have a small scar and a lump in the area of the incision; but the lump will gradually disappear, and the scar will be practically unnoticeable after awhile.
40. But most importantly, the catheterization is a safe and painless procedure that provides your doctor with information that he can obtain in no other way, so he can provide you with the best possible treatment for your heart problem.
41. This concludes CARDIAC CATHETERIZATION, one in a series of health education programs on heart disease, produced by TRAINEX Corporation.

APPENDIX B

AFFECT ADJECTIVE CHECK LIST AND FACE SHEET

Date _____

Code No. _____

Age _____

Sex _____

Education Completed _____

Days of hospitalization prior to procedure _____

Have you known anyone who had a cardiac catheterization?

If so, did they tell you about the procedure?

Who have you talked with about the cardiac catheterization?

Was your family with you when you were told about the cardiac catheterization here in the hospital?

Below you will find words which describe different kinds of feelings. Check the words which describe how you feel at this moment. Some of the words may sound alike, but check all the words that describe your feelings.

- | | |
|------------------------|----------------------|
| 1. _____ ACTIVE | 26. _____ HEALTHY |
| 2. _____ AFRAID | 27. _____ HOPELESS |
| 3. _____ ALIVE | 28. _____ INSPIRED |
| 4. _____ ALONE | 29. _____ INTERESTED |
| 5. _____ AWFUL | 30. _____ JOYFUL |
| 6. _____ BLUE | 31. _____ LONELY |
| 7. _____ CALM | 32. _____ LOST |
| 8. _____ CHEERFUL | 33. _____ LOVING |
| 9. _____ CLEAN | 34. _____ LOW |
| 10. _____ CONTENTED | 35. _____ LUCKY |
| 11. _____ DESPERATE | 36. _____ MERRY |
| 12. _____ DESTROYED | 37. _____ MISERABLE |
| 13. _____ DISCOURAGED | 38. _____ NERVOUS |
| 14. _____ ENTHUSIASTIC | 39. _____ PANICKY |
| 15. _____ FEARFUL | 40. _____ PEACEFUL |
| 16. _____ FINE | 41. _____ PLEASANT |
| 17. _____ FIT | 42. _____ REJECTED |
| 18. _____ FORLORN | 43. _____ SAD |
| 19. _____ FREE | 44. _____ SAFE |
| 20. _____ FRIGHTENED | 45. _____ SECURE |
| 21. _____ GAY | 46. _____ SHAKEY |
| 22. _____ GLAD | 47. _____ STEADY |
| 23. _____ GLOOMY | 48. _____ STRONG |
| 24. _____ GOOD | 49. _____ SUFFERING |
| 25. _____ HAPPY | 50. _____ SUNK |

- | | | | |
|-----|------------------|-----|----------------|
| 51. | _____ TENSE | 57. | _____ UPSET |
| 52. | _____ TERRIBLE | 58. | _____ WHOLE |
| 53. | _____ TERRIFIED | 59. | _____ WILTED |
| 54. | _____ THOUGHTFUL | 60. | _____ WORRYING |
| 55. | _____ TORMENTED | 61. | _____ YOUNG |
| 56. | _____ UNHAPPY | | |

APPENDIX C

SUBJECT CONSENT FORM

Subject Consent (Group I)

A study is being conducted on nursing approaches in presenting instructional information about the diagnostic procedure called cardiac catheterization or coronary arteriography.

If you agree to participate in this study, the researcher will ask you to mark a check list containing items about your feelings. Your blood pressure and pulse rate will be checked before you leave your room to have the diagnostic procedure done. The check list will require about five minutes of your time to complete.

All information obtained will be kept confidential and will be identified by a number and not your name. Your cardiologist is aware of this study. Your participation in this study will not be of obvious benefit to you, but the record of your feelings could provide helpful information to health workers in caring for other patients. There will be no cost to you for this study, nor will there be any remuneration.

I consent to participate in the study described above. The nature, demands, benefits and risks of the study have been explained to me. I understand that I may ask questions and that I am free to withdraw from the study at any time without affecting the care I receive.

Signature _____

Date _____

Investigator _____

Date _____

Subject Consent (Group II)

A study is being conducted on nursing approaches in presenting instructional information about the diagnostic procedure called cardiac catheterization or coronary arteriography.

If you agree to participate in this study, the researcher will ask you to view a ten minute filmstrip explaining the cardiac catheterization. The following day, the researcher will ask you to mark a check list containing items about your feelings. Your blood pressure and pulse rate will be checked before you leave your room to have the diagnostic procedure done. The check list will require about five minutes of your time to complete.

All information obtained will be kept confidential and will be identified by a number and not your name. Your cardiologist is aware of this study. Your participation in this study will not be of obvious benefit to you, but the record of your feelings could provide helpful information to health workers in caring for other patients. There will be no cost to you for this study, nor will there be any remuneration.

I consent to participate in the study described above. The nature, demands, benefits and risks of the study have been explained to me. I understand that I may ask questions and that I am free to withdraw from the study at any time without affecting the care I receive.

Signature _____

Date _____

Investigator _____

Date _____

LIST OF REFERENCES

- Bandura, Albert. Social Learning Theory. New York: General Learning Press, 1971.
- Beland, Irene L. and Joyce Y. Passos. Clinical Nursing. New York: Macmillan Publishing Co., Inc., 1975.
- Brong, Ruth E. "Is Television the Answer?" American Journal of Nursing, 64:77-79, January 1964.
- Campbell, Donald T. and Julian C. Stanley. Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally and Co., 1963.
- Coughy, Alice D.; Sr. Mary B. Erickson; Barbara Jedlicka; Frances Imburgia; Joan Ipanec and Sandra Kiewlich. "What Patients Want to Know About Their Diagnostic Tests." Nursing Outlook, 11:265-267, April 1963.
- Dodge, Joan. "Factors Related to Patient's Perception of Their Cognitive Needs." Nursing Research, 18:502-513, November-December 1969.
- Foster, Sue B. "An Adrenal Measure for Evaluating Nursing Effectiveness." Nursing Research, 23:118-124, March-April 1974.
- Hudak, Carolyn; Barbara Gallo and Thelma Lohn. Critical Care Nursing. Philadelphia: J. B. Lippincott Co., 1973.
- Izard, Carroll E. Patterns of Emotions. New York: Academic Press, 1972.
- Janis, Irving. Psychological Stress. New York: John Wiley and Sons, Inc., 1958.
- Kelly, Ann E. and Gaefredo Gensini. "Coronary Arteriography and Left-heart Studies." Heart and Lung, 4:85-98, January-February 1975.
- Lazarus, Richard. "Stress Theory and Psychophysiological Research." Emotional Stress. New York: American Elsevier Publishing Co., 1967.

- Lindeman, Carol and Betty Van Aernam. "Nursing Intervention with the Pre-Surgical Patient--The Effects of Structured and Unstructured Preoperative Teaching." Nursing Research, 20:319-332, July-August 1971.
- Martin, Barclay. "The Assessment of Anxiety by Physiological Behavioral Measures." Psychological Bulletin, 58:234-255, 1961.
- Meltzer, Lawrence E. "Anxiety in Cardiovascular Disease." Anxiety Factors in Comprehensive Patient Care. New York: American Elsevier Co., Inc., 1973.
- Meyer, Mary. "The Effect of Types of Communication on Patient's Reaction to Stress." Nursing Research, 13:126-131, Spring 1964.
- Pohl, Margaret L. Teaching Functions of the Nursing Practitioner. Iowa: William C. Brown Co., 1968.
- Pride, L. Frances. "An Adrenal Stress Index as a Criterion Measure for Nursing." Nursing Research, 17:292-303, July-August 1968.
- Putt, Arlene M. "One Experiment in Nursing Adults with Peptic Ulcers." Nursing Research, 19:484-494, November-December 1970.
- Redman, Barbara Klug. The Process of Patient Teaching in Nursing. St. Louis: The C. V. Mosby Co., 1972.
- Schultz, Esther. "Television Brings Drama to Clinic Patients." American Journal of Nursing, 62:98-99, August 1962.
- Stevens, Barbara. The Nurse as the Executive. Wakefield, Mass.: Contemporary Publishing, Inc., 1975.
- Zuckerman, Marvin. "The Development of an Affect Adjective Check List for the Measurement of Anxiety." Journal of Consulting Psychology, 24:457-462, 1960.

