

THE EFFECT OF PLANNED PATIENT TEACHING AND PSYCHOLOGICAL SUPPORT
ON THE ADAPTATION OF THE ELDERLY PATIENT TO THE
SURGICAL INSERTION OF A PERMANENT PACEMAKER

by

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B.Sc.N., 1970, McGill

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE IN NURSING

in

The Faculty of Graduate Studies
School of Nursing

We accept this thesis as conforming to the
required standard

The University of British Columbia

May, 1977

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ABSTRACT

An experimental study, using a pretest-posttest control group design, was conducted in a 570 bed acute care teaching hospital. Its purpose was to evaluate the effect of planned patient teaching and psychological support on the ability of the elderly patient to adapt to the surgical insertion of a permanent cardiac pacemaker. Nine subjects, who met the study criteria, were randomly assigned to either the experimental or control group. Each subject was asked if he would like to include a significant other in the project. The members of the experimental group (5 patients, 3 significant others) were seen individually by the nurse investigator on or close to the third, fourth and fifth postoperative day at which time their questions were answered, they were given the opportunity to express their concerns and, they were shown a 15 minute slide-tape programme about pacemakers. The members of the control group (4 patients, 4 significant others) were provided with the usual nursing care given by the ward nursing staff. All patients received a booklet from the company supplying their specific type of pacemaker.

The hypotheses tested were:

1. Patient teaching and psychological support will increase the knowledge base of the patient and his significant other.

2. Patient teaching and psychological support will decrease the state and trait anxiety levels of the patient and his significant other.
3. Patient teaching and psychological support will enable the patient and his significant other to demonstrate pulse taking.
4. Patient teaching and psychological support will maintain or increase the activity level of the patient from his preoperative state.

At approximately two and four weeks after discharge from the hospital, the nurse investigator visited all the patients in the study and their significant others. Knowledge base, anxiety (state and trait) level, activity level and pulse taking ability were measured on all patients; whereas, only knowledge base, pulse taking ability and anxiety (state and trait) level were measured on all significant others. No significant differences were found between the two groups on any of these variables. Some methodological problems and clinical implications of the findings are discussed.

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ACKNOWLEDGEMENTS

To Dave and Christopher for their unending encouragement,

To Ruth and Jack for their wisdom and guidance,

To Stuart and Rose Mary for their many hours of creative
work on the slide-tape programme,

And to the patients and staff at St. Pauls Hospital for
their time and support,

Thank you.

CHAPTER I

OVERVIEW OF THE STUDY

INTRODUCTION

Patient education is an integral, unique and key function of the professional nurse. Kreuter identifies teaching of self-care and counselling on health matters as nursing operations essential to providing care.¹ Henderson implies that nursing involves teaching when she says that nursing assists the sick or well to perform health activities they would do unaided if they possessed the necessary strength, motivation and knowledge.² Lambertsen characterizes nursing as an "educative process" and Peplau describes nursing as an educative instrument.^{3,4}

Now that the teaching component of the nurse's role has become part of the repertoire of basic practice skills,^{5,6} it is important

¹F.R. Kreuter, "What is Good Nursing Care?" Nursing Outlook, 5 (1957), pp. 302-304.

²V. Henderson, "The Nature of Nursing," American Journal of Nursing, 64 (August, 1964), pp. 62-68.

³E.C. Lambertsen, "Nursing Definition and Philosophy Precede Goal Development," Modern Hospital, 103 (September, 1964), p. 136.

⁴H.E. Peplau, Interpersonal Relations in Nursing (New York: C.P. Putman & Sons, 1952).

⁵B.K. Redman, The Process of Patient Teaching in Nursing, 2nd Edition (St. Louis: The C.V. Mosby Co., 1972).

⁶M.L. Pohl, "Teaching Activities of the Nursing Practitioner," Nursing Research, 14 (Winter, 1965), pp. 4-11.

to evaluate the effect that this intervention is having on the well being of the patient and his significant other. The focus of this investigation is elderly patients who have had permanent cardiac pacemakers inserted. The nurse investigator will individually assess the educational and emotional needs of these patients and their significant other and will attempt to meet these needs by employing a nursing intervention that consists of planned patient teaching and psychological support. The investigator will examine how planned patient teaching and psychological support during hospitalization enhance the adaptability of the patient and his significant other after the insertion of a permanent pacemaker.

THE PROBLEM

Statement

The general question which this study is attempting to answer is: Does patient teaching and psychological support enhance the adaptability of the elderly person with a permanent pacemaker?

Specifically; after the insertion of a permanent pacemaker,

1. Will there be a change in the knowledge base of the patient and his significant other after receiving teaching and psychological support?

2. Will there be a change in the anxiety level of the patient and his significant other after receiving teaching and psychological support?
3. Will there be a change in activity level of the patient after receiving teaching and psychological support?
4. Will the patient and his significant other be able to demonstrate pulse taking after receiving teaching and psychological support?

Significance

"The age of patient education is upon us and we are not ready."¹ These words of Dr. Barbara Redman ring true in the nursing profession today. There is an overwhelming feeling of normlessness with respect to health counselling. Patient education, in the past, was a reasonably humane act for which we were not held accountable but currently it is considered to be a form of therapy for which practice laws hold us responsible. According to Redman, no one has systematically tested the amount and kind of patient education that can be provided as part of the care given by an adequately prepared and supported staff.²

A strong belief in the value of health education for the chronically ill is frequently expressed--but is it acted upon? It

¹B.K. Redman, "Guidelines for Quality of Care in Patient Education," Canadian Nurse (February, 1975), p. 19.

²Ibid., p. 20.

was only ten years ago that Canada first attempted to ascertain the problems of the aged. One of the recommendations of the Final Report of the Special Committee of the Senate on Aging said that there is a "need to develop positive and preventive measures which would enable older people to continue to live healthy and useful lives as members of the Canadian Community."¹ The commonest desires as expressed by the elderly people interviewed for that report were to maintain a satisfactory foothold in the community, to maintain a sense of self-worth and to be as independent as possible.² One of the primary goals of health teaching is that of increasing the person's independence.

The number of elderly persons (i.e., over 65 years of age) has increased five times between 1901 and 1961, whereas, the whole population of Canada has increased only three times in that same time period.³ The number of elderly people in Canada in 1961 was approximately 1.5 million.⁴ The proportion of older people in the population was 7.6 percent in 1961 with a projected figure of nine percent in 1981.⁵ The proportion of people over sixty-five years of age by province varies considerably but British Columbia has the highest

¹Final Report of the Special Committee of the Senate on Aging (Ottawa: Queen's Printer and Controller of Stationary, 1966), p. VII.

²Ibid., pp. 8-15.

³Ibid., p. 1.

⁴Ibid.

⁵Ibid.

value of 10.2 percent.¹ This probably reflects the tendency of older people to migrate here because of the climate. The elderly represent a significant percentage of British Columbia's and Canada's population. They are the people who are most likely to be affected by chronic illness in general and heart disease in particular. During 1967, slightly over fifty percent of all deaths in Canada were due to cardiovascular disease with over three-quarters of these deaths occurring in people who were at least sixty-five years of age.² The rise in coronary heart disease reflects, to a great extent, the increasing proportion of older persons in the population.

The number of elderly people who have permanent pacemakers due to heart rhythm disturbances is increasing rapidly. In the United States in 1970, 1/5000 people had a permanent pacemaker (mean age = 70). In 1972, that figure rose to 1/2500.³ A similar situation exists in Canada.⁴ This sharp rise in the number of people with pacemakers can be attributed to an increase in the facilities and personnel capable of inserting pacemakers plus an expansion of the criteria for permanent pacemaker implantation.

In summary, this study is timely because it deals with an often forgotten but ever increasing segment of the population--the

¹ Final Report of the Special Committee of the Senate on Aging (Ottawa: Queen's Printer and Controller of Stationary, 1966), p. 2.

² Vital Statistics - Canada. 1967, Dominion Bureau of Statistics (Ottawa: The Queen's Printer, 1969), p. 22.

³ V. Parsonnet, "A Survey of Cardiac Pacing in the U.S. & Canada," Cardiac Pacing, Proceedings of the Fourth International Symposium on Cardiac Pacing, Thalen, H.J. TH., editor (The Netherlands: Van Gorcum & Co., 1973), p. 43.

⁴ Ibid., p. 44.

elderly; an illness which exists in epidemic proportions on our society-- cardiovascular disease; and a poorly researched but often used mode of nursing intervention--patient education.

DESCRIPTION OF THE STUDY

Purpose

The purpose of this study is:

1. to evaluate a nursing intervention that consists of planned patient teaching and psychological support,
2. to improve the quality of patient care as it relates to patient education,
3. to increase the feeling of independence and self-control on the part of the patient,
4. to provide patients and their significant others with information related to their altered health status, medical regime and subsequent life style.

Hypotheses

The hypotheses to be tested are:

1. Patient teaching and psychological support will increase the knowledge base of the patient and his significant other.
2. Patient teaching and psychological support will decrease the state and trait anxiety levels of the patient and his significant other.
3. Patient teaching and psychological support will enable the patient and his significant other to demonstrate pulse taking.
4. Patient teaching psychological support will maintain and increase the activity level of the patient from his pre-operative state.

Variables

The dependent variable in this study is the patient's ability to adapt to the insertion of a permanent pacemaker as evidenced by his increased knowledge base, his decreased anxiety level, his ability to demonstrate pulse taking and the maintenance or increase in his activity as compared with his pre-operative level. The independent variable is the nursing intervention that provides planned, patient teaching and psychological support.

Rationale for the Choice of Dependent Variables

The measurement of change in knowledge base as an outcome of planned patient teaching and psychological support was chosen as one of the four dependent variables because of its obvious reflection of the various elements in the cognitive domain. The questionnaire which evaluates the knowledge base of the subjects contains items which demonstrate recall of facts, comprehension, application, analysis, synthesis and evaluation.¹

It has been assumed in this study that patients undergoing surgery for the implanaton of a permanent cardiac pacemaker will exhibit some degree of anxiety. Many nurses believe that, by providing patients and their families with information that is tailored to meet the patient's educational needs, anxiety will be reduced. Redman² and Skipper³ support this notion by stressing that there is a direct relationship between health teaching and anxiety reduction. Therefore, a change in anxiety level as an outcome of planned patient teaching and psychological support was considered an appropriate dependent variable.

¹B.K. Redman, The Process of Patient Teaching in Nursing, 1st Ed. (St. Louis: The C.V. Mosby Co., 1968), pp. 52-53.

²Ibid., p. 3.

³J.K. Skipper. "Communication and the Hospitalized Patient," Social Interaction and Patient Care, Skipper, J.K., and Leonard, R.C., editors (Philadelphia: J.B. Lippincott Co., 1965), pp. 61-82.

When considering if learning has occurred, the nurse can evaluate the degree to which the patient has mastered psychomotor skills. In the case of the patient with a permanent pacemaker, the taking of one's pulse is an appropriate task that enables the patient or family member to assess the proper functioning of this electrical device. The lowering in pulse rate over time is a reliable indicator of impending battery failure.¹ Whether or not the patient or family member can perform this psychomotor skill and interpret the significance of the pulse rate was considered to be a criterion of the effectiveness of the teaching programme and the emotional support.

Maddox and Eisdorfer say that there is a positive association between maintenance or expansion of activity and personal adjustment or high morale among the elderly.² Clark and Anderson studied the sources of high morale among the aged and found that the top three items dealt with different kinds of activities. That is, sixty-nine percent of the sample identified entertainments and diversions as a source of high morale, fifty-seven percent mentioned socializing and fifty-four percent replied that productive activity created high morale.³ Kos and Culbert found that activities and restrictions generated the most interest and the greatest number of questions when

¹M. Dunst, "Cardiac Pacemakers," Medical Clinics of North America, 57 (November, 1973), pp. 1515-1524.

²G. Maddox and C. Eisdorfer, "Some Correlates of Activity and Morale Among the Elderly," Social Forces, 40 (1962), pp. 254-260.

³M. Clark and B. Anderson, Culture and Aging (Springfield, Illinois: Charles C. Thomas, 1967), p. 211.

they studied a group of twenty-six patients with permanent pacemakers.⁴ A person's level of activity in this study is seen as an indicator of his perception of his state of health and his morale. It is hoped that patient education and psychological support will be able to dispel fears regarding exercise and heart disease and influence the subject's well being in general and level of activity in particular.

Definition of Terms

Adaptation: A state of being that reflects a change in knowledge and understanding; a change in technical skills and habits; and a change in attitudes and appreciations.

Patient Teaching: Any activity by which the nurse helps the patient and his significant other to learn and understand the various aspects of health and illness.

Psychological Support: An interaction process between the patient, the significant other and the nurse that aims to provide opportunities to express individuality, to feel understood, to express concerns, to explore problems and to seek solutions.

Anxiety: A complex, multidimensional behavioural event influenced by situational, personality and mode of response factors plus

¹B. Kos and B. Culbert, "Teaching Patients About Pacemakers," American Journal of Nursing, 21 (March, 1971), p. 526.

their interactions.¹ Distress, fear, tension and discomfort are considered to be synonymous with anxiety in this study.

State Anxiety: A transitory, emotional state or condition of the human organism characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity.²

Trait Anxiety: A relatively stable individual difference in the tendency to respond to situations perceived as threatening with elevations in state anxiety intensity.³

Nursing Intervention: A combination of patient teaching and psychological support.

Activity Level: The number of activities that the patient reports he can perform as determined by the activity check list. (See Appendix C).

Knowledge Base: The number of correct responses made by the patient and his significant other on a questionnaire based on a slide-tape programme on permanent pacemakers. (See Appendix E).

¹Paul McReynolds, editor, Advances in Psychological Assessment, Vol. 1 (Palo Alto, California: Science & Behaviour Books Inc., 1968).

²C.D. Spielberger, R.L. Gorsuch and R.E. Luschene, STAI Manual (Palo Alto, California: Consulting Psychologist Press, Inc., 1970), p. 3.

³Ibid., p. 3.

Significant Other: Any family member or friend that the patient lives with or describes as being important or close to him.

Assumptions

This study makes the following assumptions:

1. Having a permanent pacemaker inserted is an anxiety provoking event for both the patient and his significant other.
2. Anxiety can be measured.
3. Adaptation to stress or anxiety is basic to the continued well being of the patient.
4. Pulse taking is a simple and reliable means of determining whether or not a pacemaker is functioning effectively.
5. Each person has his own activity level based on his individual pattern of living.

Methodology

An experimental study, using a pretest-posttest control group design, was selected to study the effect of planned patient teaching and psychological support on the adaptability of the elderly patient to the insertion of a permanent cardiac pacemaker. The subjects, if they met certain selection criteria, were randomly assigned to either

the experimental or control group. The members of the experimental groups were seen individually on or about the third, fourth and fifth postoperative day. They were encouraged to express their feelings and concerns and to ask any questions which arose in relation to their pacemaker. They were also shown a slide-tape programme about pacemakers. The members of the control group received the usual nursing care that was provided by the ward nursing staff.

At approximately two and four weeks after the patients were discharged, the nurse investigator visited all of the subjects and measured their knowledge base, anxiety (state and trait) level and pulse taking ability. The activity level of the patients alone was also measured. The data gathered concerning mean changes in knowledge base, anxiety level and activity level over time was analyzed by using a one-tail t test. A Fisher-Yates Exact Probability Test was used to determine the significance of the difference in pulse taking ability between the two groups.

Limitations

Because the sample size is small and will only include patients fifty years of age and over, the generalizability of the results will be restricted. Also, the nurse investigator will be using a nursing intervention that implies that the subjects can read and write English and that they can extract information from a slide-tape programme. Obviously, a very different approach would be needed for the illiterate person or one who does not speak English.

Factors creating limitations for the variables used in this study include the amount of time the nurse investigator spends with the experimental patients, the lack of control over the number of people

who interact with the patient and the nature of the interactions after the surgery, the teachable moment, and, whether the definition of adaptability in this study encompasses measures that are sufficiently sensitive to indicate change.

The patients in this study will be pretested with respect to their knowledge base, activity and state and trait anxiety level. It is possible that the pretesting might enhance their adaptability in the desired direction simply because it has focussed their attention on what the investigator wished to measure. Another question that arises is whether the personality of the investigator affects the desired outcome or not. To ascertain this, the study would need to be replicated using a different investigator.

Limitations are present in the data collecting methods because the nurse investigator is relying on self-report by patients as a means of evaluating their activity level. The nurse investigator will also be the person who administers the posttest and although she will try to be as unbiased as possible, she will be aware of whether the patient is a member of the experimental or control group.

SUMMARY

Chapter I has provided an overview of the study. It has stated the problem to be investigated and its significance in the nursing profession today. The purpose, hypotheses, variables, assumptions and definition of terms that provide a framework for the study have been outlined. The methodology has been briefly described as well as the limitations.

CHAPTER II

LITERATURE REVIEW

INTRODUCTION

The elderly person with a permanent cardiac pacemaker is the subject of this critical review of the literature. The purpose and current status of implanted cardiac pacemakers will first be assessed and then the concerns of those who have a pacemaker will be explored. Pertinent studies from the nursing literature will be critiqued. The concept of anxiety as used in this study will be examined and again relevant nursing literature on anxiety reduction will be cited. Health teaching will be a central focus and various elements of the teaching-learning process will be considered as they relate to physiological, cultural and psychological aging. Means of facilitating learning will also be presented.

IMPLANTED CARDIAC PACEMAKERS

Historical Development

Galvani, in 1791, observed that muscle would respond to electrical stimulation.¹ Galvani's discovery heralded the development of

¹S. Furman, "Fundamentals of Cardiac Pacing," American Heart Journal, 73 (1967), p. 261.

The sophisticated cardiac pacemakers that are used today. The 1800's were a very inactive period as far as further advancement of Galvani's finding were concerned and it was not until the 1930's that Wiggers demonstrated the physiologic effects of stimulating the heart in animals.¹ Zoll, in 1952, developed the technique of closed chest stimulation of the human heart which proved to be life saving in many instances and began the era of the widespread use of devices that electrically stimulated the heart.² Weirich, in 1957, spurred by the occurrence of surgically induced atrio-ventricular dissociation, demonstrated the clinical feasibility of stimulating the heart with wire leads which exited through the chest wall and connected to an external pulse generator.³ The next major change to occur in pacemaker technology was demonstrated by Furman and Robinson in 1958. They showed that the endocardial surface of the human right ventricle could be stimulated on a short term basis by a transvenously introduced unipolar cardiac catheter.⁴ Glenn and his associates in 1959 developed the first implanted pacemaker system for pulsed stimulation of the heart via radio frequencies.⁵ The

¹S. Furman, "Fundamentals of Cardiac Pacing," American Heart Journal, 73 (1967), p. 261.

²Ibid., pp. 261-277.

³Ibid., p. 261.

⁴Ibid., p. 262.

⁵Ibid.

early unreliable component of the pacemaker system were the electrodes. They have now been improved greatly and coupled with self-contained implanted pulse generators possessing the necessary circuit and chemical or nuclear cells for the production of energy adequate to stimulate the heart for many years. Initially, all pulse generators were of the fixed rate mode but later a pacemaker model was developed which could sense the person's intrinsic heart rate and would fire only if the person's own heart rate fell below the rate at which this "demand" pacemaker was set. Nathan and his associates, in 1963, produced a pacemaker which stimulated the ventricle in response to atrial systole, with a cardiac rate sensitive to those physiologic (and sometimes pathologic) stimuli which control the atrial rate.¹

In summary, cardiac pacemaker technology has flourished in the past twenty years. The components of the pacemaker system (pulse generator, lead, electrodes) have undergone many sophisticated changes in order to ensure the safety, comfort and health of the wearer. The present approach of choice is the transvenous positioning of a bipolar catheter so that the tip of the catheter is embedded in the right ventricular wall.² The pulse generator is then implanted subcutaneously in the chest wall under the right or left clavicle. There are other approaches but this is the one most commonly used.

¹S. Furman, "Fundamentals of Cardiac Pacing," American Heart Journal, 73 (1967), p. 262.

²V. Parsonnet, "A Summary of Cardiac Pacing in the U.S. and Canada," Cardiac Pacing, Proceedings of the Fourth International Symposium on Cardiac Pacing, Thalen, H.J. TH, editor (The Netherlands: Van Gorcum & Co., 1973), p. 43.

Types

There are two basic types of pacemakers:

1. Parasystolic (also known as competitive, asynchronous, fixed rate),
2. Nonparasystolic (also known as noncompetitive, synchronous demand).

Parasystolic pacemakers are the oldest type and stimulate the heart at a fixed rate independent of the heart's own electrical activity. The main problem with this type of pacemaker is that it can give rise to competition with the person's intrinsic heart rate and increase the likelihood that a pacemaker spike could fire in the vulnerable phase of the heart cycle and potentially induce ventricular fibrillation.

Nonparasystolic pacemakers are controlled by the intrinsic electrical activity of the heart. Two general subtypes are the ventricular inhibited demand pacemaker and the ventricular triggered demand pacemaker. The former is constructed so that its' pacemaker activity is suppressed by an electrical signal from the heart. The latter emits an impulse into the absolute refractory period of each QRS complex it senses. In the absence, of a signal from the heart, the unit reverts to its own automatic rate and paces. Nonparasystolic pacemakers of the ventricular inhibited subtype are most commonly used.²

¹M. Dunst, "Cardiac Pacemakers," Medical Clinics of North America, 57 (1973), p. 1517.

Indications

About five years ago, the main indication for a permanent cardiac pacemaker was fixed, symptomatic complete heart block.¹ Nowadays, over one-half of the patients with permanent pacemakers have them inserted for sinus arrest, heart block secondary to digitalis therapy, symptomatic second degree heart block, bradycardia-tachycardia syndrome, and suspected block associated with right bundle branch block and left anterior hemiblock.²

Complications

Complications arising from permanent pacemaker insertion can be expected to occur less than five percent of the time in Canada and the United States.³ Battery depletion is the commonest cause of pacemaker malfunction.⁴ The following table extrapolated from an article by Dunst⁵ summarizes the potential complications arising from the various components of the pacemaker system.

¹M. Dunst, "Cardiac Pacemakers," Medical Clinics of North America, 57 (November, 1973), p. 1518.

²V. Parsonnet, "A Survey of Cardiac Pacing in the U.S. and Canada," Cardiac Pacing, Proceedings of the Fourth International Symposium on Cardiac Pacing, Thalen, H.J. TH., editor (The Netherlands: Van Gorcum and Co., B.V., 1973), p. 43.

³Report of the Inter-Society Commission for Heart Disease Resources, Implantable Cardiac Pacemakers, Circulation, 50 (October, 1974), A 21-A 35.

⁴M. Dunst, op. cit., p. 1521.

⁵Ibid., pp. 1521-1522.

TABLE 1

Potential Complications of Permanent Pacemakers

Component of the Pacemaker System	Potential Complication
Pulse generator	battery failure defective pulse generator internal short circuiting
Leads and electrodes	improper connection of leads to pulse generator lead fractures lead displacements myocardial perforation
Myocardial factors	increased threshold of heart muscle to local electrical stimulation increased electrical resistance
Other	wound infection competition between the pacemaker and the heart's own rhythm interference from electromagnetic sources

Follow-Up Care

Long term follow-up of people with permanent pacemakers is mandatory. Different pacemaker models have different projected battery life spans and therefore all patients must have their pacemaker units assessed regularly to diagnosis impending battery failure. Approximately six months before the anticipated end-of-life of the battery, the patient should receive closer surveillance. The commonest methods of detecting impending battery failure are:

1. ECG recording,
2. Electronic waveform analysis, and
3. Transtelephone monitoring.¹

Declining rate has been almost uniformly accepted as evidence of battery end-of-life.²

Current Medical Research

Medical research on cardiac pacemakers has from the beginning provided very good quality control.³ Many lives have been lengthened or saved with the use of a permanent cardiac pacemaker. Survival rates of patients with permanent pacemakers show that at one year, eighty-three

¹Report of the Inter-Society Commission of Heart Disease Resources-Implantable Cardiac Pacemakers, Circulation, 50 (October, 1974), A 21 A35.

²Ibid.

³L.S. Dreifus and D. Cohen, "Implanted Pacemakers - Medicolegal Implications," American Journal of Cardiology, 36 (August, 1975), p. 266.

percent of the patients are still alive; at two years, seventy-seven percent are still alive; at three years, seventy percent are still alive and, at six years, forty-four percent are still alive.¹

Dunst has outlined the current directions that are being taken in pacemaker research. They are:

1. operative approaches other than thoracotomy to achieve more stable electrode positioning,
2. improved electrodes,
3. better power sources (longer lasting, lighter, smaller), and
4. better understanding of the physiology of the electrode-heart intersurface.²

Pacemaker technology has made striking advances based on sound research and a systematic effort to implement these findings in the clinical field. The safety and security of the person wearing the pacemaking device has been the guiding principle for those involved in basic medical research.

¹"Pacemaker People" (Editorial), Canadian Medical Association Journal, 111 (December 21, 1974), p. 1298.

²M. Dunst, "Cardiac Pacemakers," Medical Clinics of North America, 57 (November, 1973), p. 1524.

CONCERNS OF THE SURGICAL PATIENT

Many descriptive studies are available on the pre- and post-operative concerns of the general surgical patient. Briefly summarized, these concerns can be placed in the following broad categories.

Fear

Fear of pain and discomfort, fear of the unknown and fear of altered body image are mentioned by Carnevali as being those issues most commonly expressed by patients as they awaited surgery.¹ Fear of the diagnosis itself is another possible source of anxiety which sometimes is manifested by the reluctance of the patient to even ask questions.²

Time Factors

Many pre-operative patients are concerned about the time factors associated with surgery. Their questions revolve around issues such as when the operation will be performed, how long it will take and when the person should expect to return home.^{3,4}

¹D.I. Carnevali, "Preoperative Anxiety," American Journal of Nursing, 66 (July, 1966), pp. 1536-1538.

²R.E. Alt, "Patient Education Program Answers Many Unanswered Questions," Hospitals, 40 (November 16, 1966), pp. 76-78.

³J.R. Cassidy and J. Altrocchi, "Patient's Concerns About Surgery," Nursing Research, 9 (Fall, 1960), pp. 219-221.

⁴J.S. Dodge, "Factors Related to Patient's Perceptions of Their Cognitive Needs," Nursing Research, 18 (November - December, 1969), pp. 502-513.

The Illness

A third category of commonly expressed concerns are those related to the illness itself. Many people wanted more information about their diagnosis^{1,2,3} and the cause of their present illness.⁴ Over one-half of the patients in one study wanted more information about complications of their present illness if they did not care for themselves and more knowledge about preventative measures.⁵ In terms of the type of information requested, perhaps the most neglected area from the patient's point of view is that of the effect of the illness on the future life style of the person in general and his activity level in particular.^{6,7,8,9}

¹J.S. Dodge, "Factors Related to Patient's Perceptions of Their Needs," Nursing Research, 18 (November - December, 1969), p. 508.

²R.E. Alt., op. cit., p. 77.

³J.R. Cassidy and J. Altrocchi, op. cit., p. 220.

⁴J.S. Dodge, op. cit., p. 508.

⁵N.J. Pender, "Patient Identification of Health Information Received During Hospitalization," Nursing Research, 23 (May - June, 1974), pp. 262-267.

⁶Ibid., p. 265.

⁷R.E. Alt, "Patient Education Program Answers Many Unanswered Questions," Hospitals, 40 (November 16, 1966), pp. 76-78.

⁸J.S. Dodge, "Factors Related to Patient's Perceptions of Their Cognitive Needs," Nursing Research, 18 (November - December, 1969), pp. 502-513.

⁹N.A. O'Leary, "An Assessment of Patient's Activity, Knowledge and Anxiety After Prosthetic Aortic Valve Replacement." Unpublished Master's Thesis, University of Toronto, 1974, p. 50.

These findings demonstrate that in preparing patients for surgery perhaps the nurse is spending too much time discussing concrete, present oriented, procedural, in-hospital issues with the patient and is unable to hear his more abstract, future oriented, out-of-hospital concerns. All of the topics mentioned are generalizations from various patient samples and the nurse must remember that each patient's concerns must be assessed individually and not assumed.

KEY EXPERIMENTAL STUDIES ON THE PRE-OPERATIVE PREPARATION OF GENERAL SURGICAL PATIENTS

Dumas and Leonard in 1963 demonstrated that the use of the problem solving approach in caring for gynecologic surgery patients pre-operatively reduced the incidence of post-operative vomiting.¹ This study marked a change in focus of nursing research from that of the nurse herself to the practice of nursing. Perhaps the most significant contribution was that it fostered the belief that clinically based experiments in nursing practice were feasible and profitable.

Clinical nursing research can be undertaken by any inquisitive, thoughtful nurse as is so aptly shown by the work of Healy in

¹R.G. Dumas and R.C. Leonard, "The Effect of Nursing on the Incidence of Postoperative Vomiting," Nursing Research, 12 (Winter, 1963), pp. 12-15.

1968. She found that by instructing surgical patients in deep breathing, coughing and turning that they had fewer post-operative complications and remained in the hospital for a shorter period of time than another group of surgical patients who did not receive the pre-operative instruction.¹ The internal validity of Healy's study can be questioned because of the lack of control over variables such as age, diagnosis, type of surgery, timing of the pre-operative planned instruction and the fact that her experimental and control group patients were not in the hospital during the same time period. But, Healy's study did stimulate further studies in pre-operative teaching of a much more sophisticated nature and she made an excellent case for the need for nurses to set aside a certain amount of time for pre-operative instruction.

In 1971, Lindeman and Van Aernam conducted a similar study, using a pre-experimental design, on all surgical patients over fifteen years of age admitted for elective surgery (other than EENT). They found that structured, pre-operative teaching to the individual patient improved the ability of that patient to deep breathe and cough as reflected by ventilatory function studies, reduced the mean length of hospitalization and had no differential effect on the need for post-operative analgesia.² From a research point of view, because this

¹K.M. Healy, "Does Preoperative Instruction Make A Difference?" American Journal of Nursing, 68 (January, 1968), pp. 62-67.

²C.A. Lindeman and B. Van Aernam, "Nursing Intervention with the Presurgical Patient - The Effects of Structured and Unstructured Preoperative Teaching," Nursing Research, 20 (July - August, 1971), pp. 319-332.

study used a static group comparison, one has to question the threat to internal validity that is created by such factors as history and maturation. From a clinical point of view, Lindeman and Van Aernam's study was exciting because of the very favourable reaction it elicited from both the patients and the nursing staff, because they used a sound-on-slide programme to demonstrate a skill, because it was the ward nurses who actually carried out the research after an extensive staff development programme and finally because it demonstrated that nurses, physicians and surgeons could work in a collaborative, collegial relationship to enhance the well being and recovery of the patient.

In 1972, Lindeman conducted another study on pre-operative instruction in deep breathing, coughing and bed exercises but this time she was examining the effects of group versus individual methods of instruction. The study concluded that group pre-operative instruction was as effective as and more efficient than individual instruction.¹ This study employed a pretest-posttest control group design and randomly assigned members to the various experimental conditions. This design is much sounder than the static group comparison Lindeman used in her last study because it controls for history, maturation and selection and their interactions. It must be remembered that only one content area of pre-operative preparation (coughing, deep breathing

¹C.A. Lindeman, "Nursing Intervention with the Presurgical Patient - Phase II," Nursing Research, 21 (May - June, 1972), pp. 196-209.

and leg exercises) has been studied and one cannot generalize about the effectiveness of group versus individual teaching methods for other pre-operative concerns. Also, Lindeman noted that "older patients were able to compensate for the physiological effects of aging upon the respiratory function if given the opportunity to learn and practice appropriate exercises."¹ This finding has relevance for the patient population that this thesis is examining in that it points to the fact that age is not a barrier to new learning. Finally, Lindeman did include family members in her study if they wished to be involved in the pre-operative teaching sessions. Only forty-five out of 351 subjects had family members present so that no conclusive results could be obtained as to the influence of their presence. Perhaps the teaching sessions were held at an inconvenient time for family members to be present.

Schmitt and Wooldridge in 1973 conducted an experimental study on the psychological preparation of surgical patients that differed from those previously done in that it focused on a nursing intervention that provided psychological support and health teaching in small groups as well as on a one-to-one basis and patients having major and minor surgery. The results were evaluated across a broad spectrum of verbal, somatic and interactional variables. Their study indicated that those

¹C.A. Lindeman, "Nursing Intervention with the Pre-Surgical Patient - Phase II," Nursing Research, 21 (May - June, 1972), p. 209.

patients who received the experimental nursing intervention slept better the night before surgery, recalled more facts of a less threatening nature about their experiences on the day of surgery and were discharged sooner than those who did not receive the experimental nursing intervention.¹ One of the most significant aspects of this study, as this nurse investigator sees it, is that Schmitt and Wooldridge demonstrated the association between pre-operative preparation and reduced anxiety.

CONCERNS OF THE PATIENT WITH A PERMANENT PACEMAKER

Hunn is one of the few nursing authors who makes specific reference to the patient with a permanent pacemaker. She has identified the following patient concerns:

1. fear of sudden death due to pacemaker failure,
2. fear that the heart is fragile,
3. fear that physical exercise and exertion may traumatize the heart,
4. anxiety about the permanent pacemaker because it is viewed as a foreign object upon which the patient is totally dependent for life,
5. the cosmetic effects of the surgery, and

¹ F.E. Schmitt, and P.J. Wooldridge, "Psychological Preparation of Surgical Patients," Nursing Research, 22 (March-April, 1973), pp. 108-116.

6. selecting comfortable clothing.¹

The Report of the Inter-Society Commission on Heart Disease Resources found that patients with permanent pacemakers often complained about the large size of the pacemaker and its heaviness.²

Another issue sometimes raised by concerned patients with permanent pacemakers is that they wonder what happens to the pacemaker when they die. One patient thought that the pacemaker might bring him back to life when he was in his grave.³ A common misconception with some people with pacemakers is that they think that the pacemaker will prevent them from having another myocardial infarction.⁴ These very real concerns of having a permanent pacemaker are very important for the nurse to be aware of.

The Kos and Culbert Study

No research has been done on the nursing interventions that potentially could meet the educational and emotional needs of the person

¹V. Hunn, "Cardiac Pacemakers," American Journal of Nursing, 69 (April, 1969), pp. 749-754.

²Report of the Inter-Society Commission on Heart Disease Resources - Implantable Cardiac Pacemakers, Circulation, 50 (October, 1974), p. A-22.

³This incident was reported to the author by Ms. Jean Anderson, Clinical Instructor, Willow Chest Pavillion, Vancouver General Hospital.

⁴No literature has appeared with this problem stated but this author and Dr. Ruth Zitnik, in their clinical experience, have encountered this misconception frequently.

with a permanent pacemaker. Kos and Culbert have done the only study on evaluating the teaching given to elderly patients who have had permanent pacemakers implanted. Their purpose was to determine whether there would be a difference in knowledge related to pacemaker therapy and application of that knowledge to daily living between a group of patients who had participated individually in a post-operative teaching program and a similar group of patients who had not participated. With the aid of a booklet especially designed for the study, the patients and family members (if they wished) were given information about simple cardiac physiology and pathology, pacemaker functioning, pulse and medication taking, dietary restrictions and activity restrictions. Twenty-six patients, of both sexes, over sixty-five years of age participated in the study and demonstrated that the members who received the instruction knew more about pacemaker functioning and related self-care and applied that knowledge to their lifestyles than the patients who did not receive the planned, teaching programme.¹

The preceding studies on the preparation of the surgical patient in general and the pacemaker patient in particular demonstrate the following trends:

1. that the nursing intervention is usually carried out pre-operatively with little emphasis put on discharge planning,

¹B. Kos and P. Culbert, "Teaching Patients About Pacemakers," American Journal of Nursing, 71 (March, 1971), pp. 523-527.

2. that group as well as individual teaching methods have been used,
3. that the family is excluded or included in a haphazard way,
4. that the outcome variables used to evaluate the nursing intervention are largely of a short term and physiological nature (e.g. post-operative vomiting, need for analgesia),
5. that there is an increased use of audio-visual methods to enhance learning, and
6. that the concept of anxiety and anxiety reduction as it relates to the surgical patient has only been examined peripherally.

It has been difficult to compare the studies on the effect of teaching the patient because, as Tagliacozzo says, "there is a substantial variance in the selection of the dependent variables, measurement tools, population, programme structure, roles of the nurse or nurses and the timing of the intervention."¹

¹D.M. Tagliacozzo, D.B. Luskin, J.C. Lashof and K. Ima, "Nurse Intervention and Patient Behaviour," American Journal of Public Health, 64 (June, 1974), p. 597.

THE CONCEPT OF ANXIETY

To venture causes anxiety, but not to venture is to
lose oneself.

Anxiety is the fear of nothingness.

Kierkegaard¹

The dilemma of anxiety has been an issue among philosophers, historians, writers and everyday man for hundreds of years. The theologian and philosopher, Kierkegaard, in developing his concept of ✓ fread, discusses many of the salient characteristics of anxiety as we conceive of them today. Until Freud, in the early thirties, began to write about his views on the nature of anxiety, this concept was mainly considered to be a philosophical issue. From 1930-1950, most of the research done on anxiety was conducted in laboratory settings using various animal species but no humans. It was only since the publication of the Taylor Manifest Anxiety Scale in 1953,² That many more studies on human anxiety were able to be performed. Anxiety is now approached from a more scientific viewpoint and today is one of the key notions being investigated by behavioural scientists.

In order to understand how the concept of anxiety has developed, it is necessary to briefly review various researcher's definitions.

¹R. May, *The Meaning of Anxiety* (New York: Ronald Press Co., 1952), p. 13.

²E. Levitt, *The Psychology of Anxiety* (Indianapolis: The Bobbs-Merrill Co., Inc. 1967).

Freud (1936) described anxiety as "something felt," that is, a fundamental, unpleasant affective state characterized by apprehension.¹ He felt that anxiety could be distinguished from other affective states by the unique combination of phenomenological and physiological qualities.

Anxiety resulted from a discharge of repressed, unrelieved, somatic and sexual tensions. Mowrer (1950) viewed anxiety as originating, not from acts which the individual would commit if he dared, but from acts which he had committed but wished he had not.² Sullivan (1953) hypothesized that anxiety arose from experiencing disapproval in interpersonal relationships³ and May (1950) thought that anxiety was precipitated by a threat to some value which the individual held essential to his existence as a personality.⁴ It becomes obvious from the above definitions of anxiety that there is no one source or theory of its origin and that none of the definitions mentioned so far allude to the multifaceted nature of anxiety. McReynolds (1961) describes anxiety as a complex, behavioural event influenced by situational, personality and mode of response factors and their interaction.⁵ Lesse also uses a broad biopsychosocial definition of anxiety much like

¹I.G. Sarason and Charles Spielberger, Stress and Anxiety, Vol. 1, (New York: John Wiley, 1975), p. 130.

²C. Spielberger, editor, Anxiety and Behaviour (New York: Academic Press, 1966), p. 20.

³Ibid., p. 21.

⁴Ibid., p. 23.

⁵Paul McReynolds, "The Assessment of Anxiety: A Survey of Available Techniques," Advances in Psychological Assessment, Vol. 1, P. McReynolds, editor (Palo Alto, California: Science and Behaviour Books, Inc., 1968), p. 246.

McReynolds but where they differ is in the area of the specific components of the concept of anxiety. Lesse (1970) firmly believes that one must evaluate the presence of anxiety by considering all four of its components which are motor, affective, autonomic and verbal.¹ Lader and Marks best sum up the current status of the notion of anxiety when they say that "anxiety is an emotion with protean manifestations about which there is no agreed corpus of theory."²

This study is fundamentally concerned with normal anxiety and the effect that it has on the behaviour of people who experience it. Normal anxiety is viewed as not disproportionate to the objective threat, not involving repression or other mechanisms of intrapsychic conflict, not requiring neurotic defense mechanisms for its management and implying that it can be confronted constructively (i.e., with an expansion of awareness and re-education) on a level of conscious awareness. Normal anxiety can also be relieved if the objective situation is altered.³ Basically normal anxiety can be seen as the expression of the capacity of an organism to react to threats.

Cattell and Sheier (1961), using a multidimensional concept of anxiety, were the first to apply factorial analysis to the development of an anxiety testing tool.⁴ Their Inventory for Personality and

¹Stanley Lesse, Anxiety: Its Components, Development and Treatment (New York: Grune and Stratton, 1970), p. 13.

²M. Lader and I. Marks, Clinical Anxiety (London: William Heinemann Medical Books Ltd., 1971), p. 157.

³Rollo May, The Meaning of Anxiety (New York: Ronald Press Co., 1952), p. 194.

⁴R.B. Cattell and I.H. Sheier, The Meaning and Measurement of Neuroticism and Anxiety (New York: The Ronald Press Co., 1961).

✓ Ability Testing Inventory (IPAT) Anxiety Scale is widely used to measure trait anxiety or anxiety proneness.

Charles D. Spielberger and his associates were the first to introduce an anxiety measuring device which evaluated both trait and state anxiety. Spielberger (1972) views anxiety as a transitory state, a relatively stable personality trait and complex cognitive-emotional-motivational process.¹ Lader and Marks have developed a model of normal anxiety based on the work of Spielberger.² It is depicted on the following page (Figure 1).

As can be seen on page 38, Spielberger feels that anxiety can be divided into three components--heredity, past experience, and current status. These components interact to produce anxiety proneness or "trait" anxiety. The individual's anxiety proneness then influences the sequence of events which produces or results from anxiety. Incoming external stimuli (and in the case of this study it would be illness and surgery) are screened for their real or potential danger qualities. The person's cognitive appraisal of the threat is then influenced by his "trait" anxiety. If the external stimuli are judged to be threatening then the central nervous system is aroused, anxiety is felt and coping mechanisms are mobilized. The central nervous system arousal produces physiological changes which in turn increase arousal. Awareness of the physiological

¹I.G. Sarason and C.D. Spielberger, Stress and Anxiety, Vol. 2 (New York: John Wiley, 1975).

²M. Lader and I. Marks, Clinical Anxiety (London: William Heinemann Medical Books Ltd., 1971), p. 156.

"TRAIT ANXIETY"

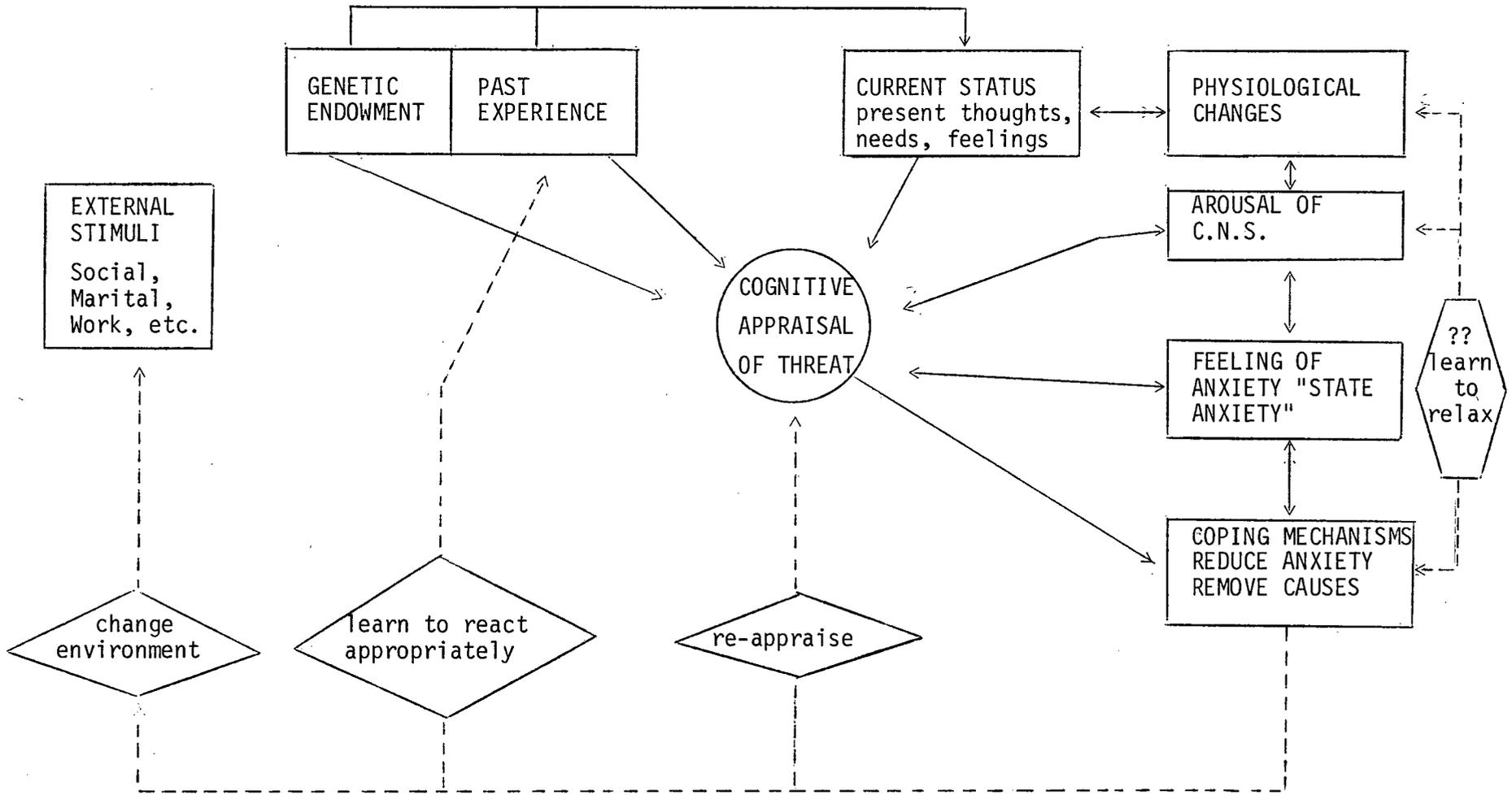


Figure 1 A Model of Normal Anxiety. Pathways which may increase anxiety are shown with solid lines; those reducing anxiety are shown with broken lines

changes also alters the cognitive appraisal of the threat and the person is made aware that he is anxious. The person attempts to cope by changing the threatening situation, reacting appropriately, re-appraising the threat and modifying his physiological status directly by various psychotherapeutic techniques (e.g., relation therapy, transcendental meditation, hypnosis). The success of the various coping responses will change the way "past experience" will be used to meet future threats. Spielberger's model of normal anxiety is useful because it gives the clinician not only an overall framework with which to view normal anxiety but also it provides information as to what type of and where intervention can occur.

The preceding section has dealt with a selected review of the concept of anxiety as it has developed over the past fifty years. The notion of anxiety has changed from being a philosophical to a scientific issue. The complexity and multidimensionality of anxiety has been recognized and researchers are struggling to find the appropriate qualitative and quantitative means of measuring this concept. Anxiety is central to our everyday life and is a powerful determinant of much of our behaviour. It is crucial for practitioners of nursing to have an in-depth understanding of the nature of anxiety so that it can be appropriately and effectively dealt with.

KEY NURSING STUDIES ON ANXIETY REDUCTION

The concept of anxiety and anxiety reduction have been examined in the nursing literature in a variety of clinical settings. Anxiety and psychological distress are terms that have been used interchangeably in the following studies. These studies will be reviewed with the following questions in mind:

1. How was anxiety measured?
2. What nursing interventions were used to reduce anxiety?
3. Were these nursing interventions effective?
4. Was the methodology sound?

Dumas and Leonard (1963) measured anxiety indirectly by assessing another variable--the incidence of postoperative vomiting. They showed that by using the nursing process to encourage the expression of concerns preoperatively that the incidence of postoperative vomiting was reduced among gynecologic surgery patients.¹ They maintain that psychic distress is a major cause of postoperative vomiting. If one is willing to accept that premise, then their results are valid. It must also be noted that they were unable to control for the type of anaesthetic agent used or the type of surgery and certainly both of these factors might influence the incidence of post-operative vomiting. Another feature of their study

¹R.G. Dumas and R.C. Leonard, "The Effect of Nursing on the Incidence of Postoperative Vomiting," Nursing Research, 12 (Winter, 1963), pp. 12-15.

which must be questioned is that they conducted three different experiments and when each experiment's results were statistically analyzed, the probability that the result was due to one of the randomized variables rather than the experimental treatment was found to be high ($p = .13$, $p = .19$, $p = .08$).¹ Yet, when they combined the results of the three experiments, (which seems inappropriate since they were different) they obtained a result which was significant at the .05 level. The changes made in the three experiments included increasing the length of time the investigator spent with the experimental patient; having a different nurse, as opposed to the investigator, assess the post-operative status of the patients in the recovery room; and assessing the pre-operative emotional state of the control patients. This author feels that these changes are of a great enough magnitude to consider that the three experiments were in fact different. The results were in the predicted direction but the sample size was too small to make them statistically significant. In spite of the criticism of the methodology, this study represents a preliminary effort to re-focus nursing research to clinical matters; and therefore, its results warrant further study.

Meyers (1964) conducted an experimental study to examine the effect of different types of communication on the patient's reactions to stress. One pattern of communication was structured; that is, a

¹R.G. Dumas and R.C. Leonard, "The Effect of Nursing on the Incidence of Postoperative Vomiting," Nursing Research, 12 (Winter, 1963), pp. 12-15.

simple explanation of the procedure was given. Another pattern provided no communication other than informing the patient that this test was done routinely. A third type of communication consisted of the investigator making irrelevant comments about the weather as she performed the procedure. She found that less tension was created when the patient was given specific information about a procedure so that he could cognitively structure the impending stressful event.¹ The nursing intervention used was giving the patient different types of information about a new procedure. Anxiety or stress was measured by the patient's subjective response to what he perceived was about to happen to him, his recall of items of equipment on the procedure tray and his feelings during the procedure. From a methodological viewpoint, several concerns arise. The subjects for this study were not randomly assigned to each of the three experimental conditions as described above. Although Meyers maintains that each group had approximately the same age and sex distribution, there might be another uncontrolled variable present which could have accounted for the difference in the responses of the subjects. Another point to consider is that the investigator was the one who provided the experimental treatment as well as the one who conducted the post experiment interview. She was then well aware of which patient received which form of

¹M.E. Meyers, "The Effect of Types of Communication on Patient's Reaction to Stress," Nursing Research, 13 (Spring, 1964), pp. 126-131.

communication. Presumably to minimize this bias, the post experimental interviews were also attended by another registered nurse trained and supervised by the investigator but it is still unclear as to whether both of these nurses conducted each interview or whether they each did some. Apart from these methodological issues, Meyer's study points out the great importance of treating the patient as a person of intelligence whose cooperation is being sought by the nurse. The communication approach to patient care, as seen in Meyer's study, minimizes some of the stress inherent in hospitalization.

Nield (1971) conducted an experimental study to measure the effects of health teaching on the anxiety level of patients with chronic obstructive lung disease attending an outpatient clinic. She had three groups of patients--those who were taught individually, those who were taught in a group and those who were given the routine clinic care. No significant differences in the anxiety level were found among the three groups.¹ The nursing intervention was health teaching which included a description of the chest clinic programme, the disease process, treatment modalities and healthful living practices. This health teaching unit was administered via two--thirty minutes each-- audio-slide programmes over a period of two weeks. The subject's state anxiety level was measured by the Affect Adjective Check List and the trait anxiety level was measured by the Institute for Personality

¹M.A. Nield, "The Effect of Health Teaching on Anxiety Level Patient's with Chronic Obstructive Lung Disease," Nursing Research, 20 (November - December, 1971), pp. 537-541.

and Ability (IPAT) Anxiety Scale. This study was well designed and executed and the fact that statistically significant results were not obtained does not detract from its value. Possible explanations of the lack of significance are that like health, health teaching is a low priority conscious need for the general population and especially for those patients who have not been recently diagnosed or who are in a stable phase of their disease. Also, in Nield's study there was a very short time between completion of the health teaching and measurement of the criterion. Perhaps a longer time was necessary to incorporate and consolidate the information. From the point of view of this thesis, Nield's finding that the subjects who received the health teaching on an individual basis had the lowest mean trait and state anxiety scores, suggests that there is a trend toward the preference of individual over group instruction when the goal is reduced anxiety.¹

Johnson (1972) conducted a laboratory and clinical experiment which showed that accurate expectations about sensations reduced distress in college students experiencing ischemic pain and patients having a gastroscopy tube passed.² Her nursing intervention consisted of taped recordings of messages which differed by having the content of one described sensations that could be expected to occur and having the other describe the procedure per se. Distress of the subjects was

¹M.A. Nield, "The Effect of Health Teaching on the Anxiety Level of Patient's with Chronic Obstructive Lung Disease," Nursing Research, 20 (November - December, 1971), pp. 537-541.

²J.E. Johnson, "Effects of Structuring Patient's Expectations on their Reactions to Threatening Events," Nursing Research, 21 (November - December, 1972), pp. 499-503.

measured by the amount of tranquillizer needed, the degree of tense-ness observed in the hands and arms and the degree of restlessness. Johnson's study is well done and emphasizes the important contribution of psychological theories such as cognitive dissonance and Janis' theory of stress to nursing research.

Schmitt and Wooldridge (1973) showed that psychological preparation of the pre-surgical patient would decrease tension and anxiety.¹ Schmitt met with the experimental patients in a group the day before surgery and individually the morning of surgery and provided them with orientation-type information, health teaching, knowledge about the disease process and she encouraged the expression of feelings. Verbal indicators of tension and anxiety were measured in the study by asking the subjects whether they slept well the night before surgery, if they felt anxious the morning before surgery and what items or events surrounding the surgery they could recall. Physiological variables such as incidence of urinary retention, incidence of vomiting, blood pressure and pulse were also used to indicate the stress levels of the patients. Schmitt and Woolridge's study is important because it demonstrates not only that anxiety can be measured but that many parameters can be used to explore this concept and its relation to patient care.

No studies exist at present which deal with anxiety reduction in patients who have had permanent pacemakers inserted. Most of the nursing literature on anxiety and the pre-surgical patient or chronically

¹F.E. Schmitt and P.J. Wooldridge, "Psychological Preparation of Surgical Patients," Nursing Research, 22 (March-April, 1973), pp. 108-116.

ill medical patient has suggested that anxiety can be allayed by providing health teaching and/or psychological support. Anxiety has been measured using physiological and verbal indicators and on several occasions, psychological tests. The results have generally been favourable.

INFORMATION SHARING AND THE PATIENT'S RIGHT TO KNOW

Most people want to know what is going on about them so that they can have some degree of control over their situation.^{1,2} Patients share the right to know what is happening to them or what they might anticipate occurring so that they can participate in decisions concerning their well being.³

Gregg maintains that the patient experiences reassurance when someone he trusts gives him authentic information when he needs it.⁴

¹C.A. Baden, "Teaching the Coronary Patient and His Family," Nursing Clinics of North America, 7 (September, 1972), p. 564.

²M.A. Neuman, "Identifying and Meeting Patient Needs in the Short-Span Nurse-Patient Relationship," Nursing Forum, 2 (1963), p. 25.

³L.E. Rozovsky, Canadian Hospital Law, Canadian Hospital Association (Toronto: Southam Murray, 1974).

⁴D. Gregg, "Reassurance," American Journal of Nursing, 55 (1955), p. 174.

Redman¹ and Skipper² both stress that there is a direct relationship between information sharing and reduced anxiety. Redman also emphasizes that instruction should help the individual to find meaning in illness as well as to conserve health and to control the symptoms of disease.³ As Tagliacozzo says, the patient's response to this form of nursing intervention indicates less that the patient is complying with the expectations of a "significant other" and more that the treatment process is providing meaningful ways for him to confront his illness.⁴ According to Mohammed, the well informed patient generally participates in tests, treatments and self-care more effectively, safely and comfortably than the poorly informed patient.⁵

Consumer rights in health care matters are a very important issue in today's society. One such right that has been discussed at length is the patient's right of access to the information on his medical record. At the May, 1976 general meeting of the Registered

¹B.K. Redman, The Process of Patient Teaching in Nursing, 2nd edition (St. Louis: The C.V. Mosby Co., 1972).

²J.K. Skipper, "Communication and the Hospitalized Patient," In: Social Interaction and Patient Care, edited by J.K. Skipper and R.C. Leonard (Philadelphia: J.B. Lippincott Co., 1965), pp. 61-82.

³R.K. Redman, op. cit., p. 3.

⁴D.M. Tagliacozzo et al., "Nurse Intervention and Patient Behaviour," American Journal of Public Health, 64 (June, 1964), p. 596.

⁵M.F.B. Mohammed, "Patient's Understanding of Written Health Information," Nursing Research, 13 (Spring, 1964), p. 100.

Nurses Association of British Columbia, a resolution was passed which states not only that the RNABC supports in principle the fact that the consumer has a right of access to his medical record but that a full explanation of the information on the medical record be given to the consumer in language that he can understand.¹

The above articles and books support the patient's right to information about himself and demonstrate the benefits accrued by providing health teaching.

PHYSIOLOGICAL AGING AND ITS INFLUENCE ON THE TEACHING-LEARNING PROCESS

The majority of patients who have permanent pacemakers implanted are elderly; therefore, it is important to examine the concepts of teaching and learning as they relate to this age group. The following sections will discuss physiological, cultural and psychological aging and their influence on the teaching-learning process.

Shock's model for aging² provides a physiologic framework for discussing changes in the cognitive, affective and psychomotor functions

¹RNABC News, 8 (July, 1976), p. 7.

²N.W. Shock, "The Physiology of Aging," Scientific American (January, 1963), p. 101.

as a part of a generalized cellular and system decline. Normal aging will be examined in terms of its effect on the teaching-learning process of the elderly patient.

Shock's analysis consists of the following physiological parameters:

Metabolic Rate

Metabolic rate is an indicator of endocrine capability and thyroid and pituitary function. Changes in metabolic rate over time parallel the process of aging. There occurs a slight decline from a possible 100 percent level at thirty years of age, to approximately 80 percent at 80 - 90.¹ Somewhat related is a decreased ability to cope with physical and psychological stress due primarily to lessening adrenal activity. The pace at which the body acts and reacts is generally slowed in old age.

Donahue and Stoll say that older adults anticipate difficulties in learning and appear anxious when approaching a learning task.² The nurse must keep this in mind when she is considering teaching the patient as the older person will need a longer time and perhaps more support in attempting to cope with the learning experience.

¹N.W. Shock, "The Physiology of Aging," Scientific American (January, 1962), p. 101.

²W. Donahue and M.R. Stoll, "Psychologic Aspects," In: The Care of the Geriatric Patient, E.V. Cowdry, editor, 2nd edition (St. Louis: C.V. Mosby, 1963), p. 43.

Cardiac Output

Cardiac output is markedly decreased with either rest or exercise in the older person despite an increase in heart rate and blood pressure. This is primarily due to structural changes which have occurred in the heart such as the increased laying down of pigments, starches and fats and arterial elongation, fibrosis and calcification. Decreased cardiac output causes congestive heart failure and may produce myocardial ischemia which in turn manifests itself in patients as lethargy, weakness, shortness of breath and chest pain. If these symptoms have newly developed and are uncontrolled, it will probably be very difficult and even unwise to consider a formal, comprehensive teaching programme. That is not to say that the patient's questions should not be answered but that his physical needs may need to be given greater priority than his educational needs at that point in time.

Lung Performance

Lung performance in the elderly is reduced by lessened mechanical efficiency, decreased capacity for oxygen uptake by red blood cells and disease. Decreased oxygenation of vital organs may produce symptoms such as confusion, recent memory loss and disorientation. If the patient's mental status is altered as described above, the teaching-learning process would be drastically affected.

Nerve Conduction Velocity

There is a decrease of up to fifteen percent in nerve conduction velocity with aging. A general loss of speed of functioning results that is central in origin rather than the result of changes in the peripheral (sensory and motor) end organs.

Organization of behaviour becomes progressively more difficult, accuracy is stressed over speed and if additional time is not taken to achieve the central organization of material, as may happen under the circumstances of hospitalization, quality as well as quantity of response may be seriously affected.

Visual and Auditory Changes

All sensory modes are less effective in old age. Because this thesis is concerned with patient education, only visual and auditory senses will be discussed. Visual changes include presbyopia, reduced visual fields, increased threshold for light stimulation due to decreased pupil size, and increased intraocular pressure. These changes in combination often result in diminished activity and enjoyment of life.

When teaching the elderly patient whose visual acuity is decreased, one must ensure that the environment and materials to be used are geared to poor vision. For example, adequate lighting is necessary to compensate for diminished pupil size^{1,2} and written

¹P.A. Culbert and B.A. Kos, "Aging: Considerations for Health Teaching," Nursing Clinics of North America, 6 (December, 1971), pp.605-614.

²V. Stone, "Give the Older Person Time," American Journal of Nursing, 69 (October, 1969), p. 2125.

material should be in large print with wide spacing of words.¹

Hearing losses that develop with age spread from higher to lower frequencies. Some of the auditory changes that occur are attributed to nervous system impairment or structural or atrophic involvement. Stone reminds us that diminished auditory perception may delay reaction time. To compensate for this, the nurse should speak slowly and enunciate syllables clearly to give the person time to comprehend and process the information.²

Cellular Changes in the Brain

With old age comes certain cellular changes in the brain such as fatty infiltration and accumulation of sulphur and pigment. Many physiologists agree that there is an actual loss of neurons as well as "the development of uneven thickening, splitting and granular fragmentation."³

Some practical implications of these physiological changes in the brain are that the attention span shortens, and conceptualization becomes more difficult. Because of this, materials to be learned must be presented in a concise, concrete manner. Written materials should have short, clear sentences and extraneous information should be deleted. The vocabulary must be matched to the learner's ability

¹P.A. Culbert and B.A. Kos, "Aging: Considerations for Health Teaching," Nursing Clinics of North America, 6 (December, 1971), pp. 605-614.

²V. Stone, "Give the Older Person Time," American Journal of Nursing, 69 (October, 1969), p. 2126.

³Culbert and Kos, op. cit., p. 606.

and all terms must be clearly defined. Mohammed suggests that a 4th grade level of vocabulary be used to facilitate comprehension of written materials but one must keep in mind that her study sample consisted of mostly female, Negro, semi-unskilled workers from a lower socio-economic background.¹

CULTURAL AGING AND ITS INFLUENCE ON THE TEACHING-LEARNING PROCESS

Aging is a cultural process as well as a biological process. Personal adaptation to it depends on self-perception which is a product of cultural norms and values. Most certainly the self-perceptions of the aged are shaped by societal expectations. This section will examine the personal goals of the aged, the value orientations within them and their relationship to motivation and learning.

Clark and Anderson identified six major clusters as a system of personal goals against which the aged seem to judge themselves.

They are:

1. Independence.
2. Social Acceptability.

¹M.F.B. Mohammed, "Patients Understanding of Written Health Information," Nursing Research, 13 (Spring, 1964), p. 100.

3. Adequacy of personal resources.
4. Ability to cope with self change.
5. Having significant goals or meaning in later life.
6. Ability to cope with external threats or losses.¹

Independence

The ability to provide for one's needs was considered to be very important regardless of the person's state of health. Perceiving oneself as independent is an expression of self respect, pride and the elimination of the fear of becoming a burden. The elderly desire ways to maintain their independence. Perhaps, health teaching is one of the best ways to foster this need for independence.

Social Acceptability

In Clark and Anderson's study, social acceptability was defined as approval of others. In our culture, it is derived from health, youth, vigor and physical fitness. This creates problems for the elderly and has influenced the value which we ascribe to their contributions. Many elderly people are fit and have functioning potential. Health teaching can channel this potential and perhaps promote a greater degree of rehabilitation among the elderly who are less well.

¹M. Clark and B. Anderson, Culture and Aging (Springfield, Illinois: Charles C. Thomas, 1967), p. 177.

Adequacy of Personal Resources

Personal resources, both internal and external, were viewed as important by the aging adult in assessing his current status. The aged have well developed life patterns which include regularity of habits, self-discipline and conservation of physical, emotional and economic strength. Donahue and Stoll say that a decrement in the ability to learn is very noticeable when older people attempt to learn new habits particularly if they require that the old ones be unlearned, modified or integrated with new ones.¹ The nurse must be aware of this and incorporate it into her plan for health teaching. Perhaps she must, in consultation with the patient, seek alternative solutions working with the old habits.

Ability to Cope with Self Change

Self change can be seen as a positive or negative force. It indicates resilience and realism in dealing with the inevitable aging process. The nurse's accurate assessment of the readiness for health teaching is essential. She can promote health teaching by clarifying alternatives, exploring substitutions in life space, encouraging verbalization of unrealistic goals and self demands and supporting accomplishments.

¹W. Donahue and M.R. Stoll, "Psychologic Aspects," The Care of the Geriatric Patient, E.V. Cowdry, editor, 2nd edition (St. Louis: C.V. Mosby Co., 1963), p. 51.

Having Significant Goals or Meaning in Later Life

The elderly people in Clark and Anderson's study felt that significant goals and meaning could be obtained by engaging in life activities in a whole-hearted yet less competitive manner. They looked for opportunities to enjoy or appreciate life's smaller pleasures. In order to accomplish this, there is a need to maintain optimal health or management of chronic acute illness through health teaching.

Ability to Cope with External Threats or Losses

The value orientation inherent here is again that of resiliency. It is best characterized as "rolling with the punches" and making the best of things. It includes such qualities as endurance, forbearance and stamina. The source of self esteem in this area derives from the skill and strength to find contentment in the face of adversity. These attitudes may motivate the elderly person to be more accepting of his illness as a concomitant of old age and may make him more receptive to health teaching as a means of self control.

Clark and Anderson's descriptive survey of the lifestyle and thoughts of those people over sixty-five residing in the cities and villages across the United States is a fine piece of work because:

1. It obtains the opinions of a large sample of aged individuals, sick and well and compares them.
2. It has tremendous implications for those working with the elderly as is shown above in relation to the teaching-learning process.

One interesting issue to consider is whether this study of the American elderly person can be generalized to the Canadian elderly population.

PSYCHOLOGIC AGING AND ITS INFLUENCE ON THE TEACHING-LEARNING PROCESS

Psychological aging as it relates to the teaching-learning process will be examined from the point of view of the concept of loss and Maslow's theory of the hierarchy of needs.

The elderly person will have suffered many losses in his lifetime. Some of these losses are concerned with roles, status, family members, friends, health, economic security and familiar surroundings. The common denominator of all these kinds of losses is loss of self esteem. Does this feeling of loss of self esteem cancel out readiness to learn as a means of adjusting to a new health status? Culbert and Kos think not and say that the nurse will have to spend more time highlighting the person's accomplishments and strengths.¹ The nurse should strive to create an atmosphere of acceptance, caring and empathy in order to enhance readiness to learn and self confidence.

¹P.A. Culbert and B.A. Kos, "Aging: Considerations for Health Teaching," Nursing Clinics of North America, 6 (December, 1971), p. 612.

She must assess each elderly person within his life space, identify the losses experienced, their effect and the person's coping abilities.

Memory loss in particular can affect the success of the teaching-learning process when the information presented is new and unrelated to the person's past experience. Memory loss for recent events among the elderly has been well documented.^{1,2} It is interesting to note that memory of past events is much less impaired. The author interprets this finding to mean that the remembered events of the remote past probably have great psychological significance for the elderly person. What the older person remembers might give the nurse valuable insight into the patient's psychological makeup. When attempting to transmit new information to older persons, the nurse should present it, if possible, within the context of the patient's meaningful, past experience.

Maslow defined a hierarchy of needs for all human beings which progresses from physical or survival needs to security, love and belonging, self-esteem and finally self-actualization.³ Often the elderly, despite former realization of higher growth needs, when faced with the crisis of acute illness, regress to the basic safety and security level. This regression is needed to mobilize their inner resources so that the situation can be coped with. The nurse first must look at where the patient is in his adaptation process and then evaluate his readiness or need to learn. Mild anxiety and the awareness of a need to learn can be highly motivating factors.

¹N.W. Shock, "The Physiology of Aging," Scientific American (January, 1962), p. 108.

²E.V. Cowdry, editor, The Care of the Geriatric Patient, 2nd edition. (St. Louis: C.V. Mosby Co., 1963), p. 52.

³A.H. Maslow, Motivation and Personality (New York: Harper and Bros., 1954).

FACILITATING LEARNING AMONG THE ELDERLY

Botwinick in his book, Aging and Behaviour, has outlined practical information about the learning capabilities of the aged. In order to facilitate learning, the nurse must be aware that:

1. elderly people need more time to absorb, organize, consolidate and respond to new inputs,
2. elderly people prefer concrete tasks,
3. elderly people need to have explicit knowledge of the goal, and
4. elderly people are more susceptible to interference effects.¹

Motivation

Motivation of the individual plays an important part in his ability or desire to learn new ideas and/or ways of living. Kos and Culbert, in their study of geriatric pacemaker patients, found that most often the patients were well motivated and that this factor did not pose a significant problem in their learning.² Perhaps this finding can be explained by Nield's work on anxiety reduction. She

¹Jack Botwinick, Aging and Behaviour (New York: Springer Publishing Co., 1973), p. 230.

²B.A. Kos and P.A. Culbert, "Teaching Geriatric Patients with Implanted Cardiac Pacemakers." Unpublished Master's Thesis, Adelphi University, 1969, p. 3.

suggests that illness recently diagnosed and in an unstable phase may be critical factors influencing motivation to learn.¹ Botwinick reminds us that the more meaningful the task and the more personally relevant it is, the higher the motivation can be expected to be.²

Ausubel introduces the idea of "retroactive" motivation and maintains that it is unnecessary to delay learning until the appropriate interests or motivation have developed. He has found that by focusing on cognitive aspects of a situation rather than motivational ones that motivation will develop retroactively.³

Methods

To promote learning, a variety of methods can be used to facilitate this task. Packard and Van Ess use the concept of role-delineated teaching as a means of arousing and maintaining an appropriate psychological set.⁴ They found that learning increased with the use of planned clarification of the nurse's role as teacher, the patient's role as student and the interaction as that of a teaching situation. Canestrari in his study used "self-paced" learning with elderly subjects and found that when no time limit was imposed that

¹M.A. Nield, "The Effect of Health Teaching on Anxiety Level," Nursing Research, 20 (1971), p. 3.

²J. Botwinick, Aging and Behaviour (New York: Springer Pub. Co., 1973), p. 230.

³D.P. Ausubel, The Psychology of Meaningful Verbal Learning (New York: Gruen & Stratton, 1963), p. 226.

⁴R.B. Packard and H. Van Ess, "A Comparison of Informal and Role-Delineated Patient Teaching Situations," Nursing Research, 18 (1969), pp. 443-446.

the elderly learned faster.¹ The generalizability of Canestrari's results must be questioned though, because his subjects were well outside of the hospital situation, and were performing reality unrelated tasks. Dodge points out that individuals attend to information which they perceive as being central to their physical, psychological and social survival.² The understanding and acceptance of this information is facilitated when an individual receives the kind of data that fits into his frame of reference and has individual meaning.

Audiovisual Aids

Audiovisual technology has greatly expanded in the past ten years. Increasingly, educational institutions and organizations are using a variety of audio-visual techniques to present facts, procedures, concepts and personal experiences to their membership. Research on the learning process indicates that people remember:

- 10% of what they read
- 20% of what they hear
- 30% of what they see
- 50% of what they see and hear
- 80% of what they say
- 90% of what they say as they do a thing.³

¹R.E. Canestrari, "Paced and Self-Paced Learning in Young and Elderly Adults," Journal of Gerontology, 18 (1963), pp. 165-168.

²Joan S. Dodge, "Factors Related to Patient's Perceptions of Their Cognitive Needs," Nursing Research, 18 (November-December, 1969), pp. 502-513.

³C.M. Hudak et al., Critical Care Nursing (Philadelphia: J.B. Lippincott Co., 1973), p. 320.

In reviewing the education literature, many books and articles are available that deal with the application of audio-visual learning aids in primary and secondary schools but no data are available on the utility of audio-visual aids for the adult never mind the aged learner. The nursing literature demonstrates a similar pattern. Most audio-visual techniques have been employed by nursing schools to enhance the learning of the student nurse. Several nurse researchers^{1,2,3} have used slide-tape programmes, booklets or tape recordings as part of a nursing intervention but the audio-visual aid per se was not what was systematically evaluated by the study.

The main source of information concerning slide-tape programmes which this nurse researcher has used is Mr. Victor Doray, Head of the Biomedical Communications Department at the Vancouver General Hospital and the University of British Columbia. Mr. Doray outlined the following advantages of slide-tape programmes:

¹C.A. Lindeman, "Nursing Intervention with the Pre-Surgical Patient-Phase 11," Nursing Research, 21 (1972), p. 196.

²C.A. Lindeman and B. Van Aernam, "Nursing Intervention with the Pre-Surgical Patient - The Effects of Structured and Unstructured Preoperative Teaching," Nursing Research, 20 (1971), p. 319.

³B. Kos and P. Culbert, "Teaching Patients About Pacemakers," American Journal of Nursing, 71 (1971), p. 523.

1. the learner can proceed at his own speed,
2. the learner can review the slide-tape programme as needed,
3. the slide-tape programme can save time in terms of one person having to repeat the same information,
4. the nursing staff can have more time for individualized contact with persons viewing the slide-tape programme, and
5. the slide-tape programme is less costly than other audio-visual aids and can be simply and cheaply updated as needed.¹

Another important point that Mr. Doray stressed was that the slide-tape programme never replaces the teacher. In summary, facilitation of learning in the aged can be accomplished by understanding the effects of old age on the learning process, by using the appropriate teaching techniques, by assessing the motivation of the learner and by employing selected audio-visual aids.

Involving the Significant Other

The behaviour of the individual cannot be viewed in total isolation as that person is also a member of a family. The extent to

¹This information was obtained from Mr. Doray at a Workshop which he gave at the Vancouver General Hospital, February 4, 1976.

which he interacts with his family members or significant others must be assessed. A change in health status, knowledge base and skills of the individual will create an effect on his relationship with his significant others.

Craven and Sharp insist that the nurse must broaden her perspective and view the problems of the family as well as the patient. The nurse must recognize the importance of the patient-family network and encourage the family members active participation whenever possible.¹ Bain stresses that an important aspect of the nursing care of a pacemaker patient is dealing with the patient's family. She maintains that much of the nurse's time is occupied by listening to the fears and apprehensions of the family and teaching them that the patient needs to be as self-sufficient as possible.² Royle's study showed that the needs of patients and families for relevant information regarding their heart disease and prescribed therapy were not adequately identified or met during their hospitalization or initial period at home. When specific instructions were given to patients and their spouses about prescribed therapeutic measures, they experienced less anxiety initially upon returning home.³

Baden found that when working with groups of cardiac patients a large number of families were unable to provide the support the

¹R.F. Craven and B.H. Sharp, "The Effects of Illness on Family Functions," Nursing Forum, 11 (1972), pp. 186-193.

²B. Bain, "Pacemakers and the People Who Need Them," American Journal of Nursing, 71 (August, 1971), pp. 1582-1585.

³J. Royle, "Coronary Patients and Their Families Receive Incomplete Care," Canadian Nurse, 69 (February, 1973), pp. 21-25.

patient needed because they lacked the necessary information about heart disease and the patient's medical regimen.¹ Adsett and Bruhn found that wives of patients who had myocardial infarctions were overly protective and had guilt feelings about their husbands illness.²

One of the major changes in family life, according to Adsett and Bruhn, is that the person who was ill tends to become the center of the household and often controls the family as other members are afraid to express feelings to him for fear of provoking distressful cardiac symptoms.³

Kos and Culbert invited family members to participate in their study (they do not say how many family members actually participated) and reported that the family members found it to be a beneficial experience.⁴ Lindeman concluded that the presence of a family member during pre-operative teaching did not increase the effectiveness of that teaching.⁵ She points out that only forty-five out of three hundred and fifty-one subjects had family members present and that her conclusions should be considered tentative and in need of further research.

¹C.A. Baden, "Teaching the Coronary Patient and His Family," Nursing Clinics of North America, 7 (1972), pp. 563-571.

²C.A. Adsett and J.G. Bruhn, "Short Term Group Psycho-Therapy for the Post M.I. Patients and Their Wives," Canadian Medical Association Journal, 99 (1968), pp. 577-584.

³Ibid., p. 584.

⁴B. Kos and P. Culbert, "Teaching Patients About Pacemakers," American Journal of Nursing, 71 (1971), pp. 523-527.

⁵C.A. Lindeman, "Nursing Intervention with Presurgical Patient - Phase II," Nursing Research, 21 (1972), p. 208.

Redman¹ and Tyzenhouse² both emphasize that families need to assume a supportive rather than directive role in attempting to help the patient adjust to his illness. The family members or significant others must be given the opportunity to express their feelings, ask their questions and to explore their concerns in order to create a home atmosphere of warmth, understanding and acceptance.

Individual Teaching and Counselling

Humans are not alike. Their differences are real, inevitable, more subtle and numerous than we often recognize.³

When individualizing instruction, the teacher must promote individual interests, allow for individual styles and respond to individual needs.⁴ Frase says that individualized instruction has four basic elements: pacing, objectives, materials and personalization.⁵ The purpose of individualizing the instruction of a potential learner is to foster the development of critical thinking, self-direction, creativity and one's self concept.⁶

¹B.K. Redman, The Process of Patient Teaching in Nursing, 2nd edition (St. Louis: The C.V. Mosby Co., 1972), p. 4.

²P.S. Tyzenhouse, "Myocardial Infarction: Its Effect on the Family," American Journal of Nursing, 73 (1973), p. 1013.

³R.E. Keuscher, "Why Individualize Instruction?" Individualization of Instruction - A Teaching Strategy, V.M. Howes, editor (New York: The Macmillan Co., 1970), p. 6.

⁴B.J. Wolfson, Individualization of Instruction - A Teaching Strategy. V.M. Howes, editor (New York: The Macmillan Co., 1970), p. 101.

⁵L.E. Frase, "Open Space," Individualized Instruction - A Book of Readings, E. Gene Talbert and L.E. Frase, editors (Ohio: Charles E. Merrill Pub. Co., 1972), p. 38.

⁶Keuscher, op. cit., pp. 9-13.

These notions of the concept of individualized teaching have been studied extensively in the nursing literature. Dalzell evaluated a pre-natal teaching programme and found that individual counselling appeared better than group work for patients who had or had not received prior teaching.¹

Putt conducted an experiment with patients who had peptic ulcers in order to determine the effects of different types of nursing intervention on the patient's well being. She found that individual instruction of the patient was more effective than psychological support which was, in turn, significantly more effective than the usual routine nursing care in reducing discomfort after admission, in decreasing the length of hospital stay and in altering the patient's perception of selected concepts relating to his illness.² Goodman demonstrated the effectiveness of planned, individual instruction on the self-medication practices of ambulatory cardiac patients.³ Those who received the individual instruction made fewer medication errors than those who did not. Skelton showed that providing structured, individualized teaching with the aid of a diabetic teaching tool, improved the knowledge and skills of the experimental patients.⁴

¹I. Dalzell, "Evaluation of a Prenatal Teaching Programme," Nursing Research, 14 (Spring, 1965), pp. 160-163.

²A.M. Putt, "One Experiment in Nursing Adults with Peptic Ulcers," Nursing Research, 19 (1970), pp. 484-494.

³G.W. Goodman, "An Experimental Study to Evaluate the Effect of Planned Teaching on Self-Medication Practices of Older Ambulatory Cardiac Patients." Unpublished Master's Thesis, University of British Columbia, 1972.

⁴J.M. Skelton, "An Experimental Study to Evaluate the Effectiveness of a Diabetic Teaching Tool." Unpublished Masters Thesis, University of British Columbia, 1973.

Power provided planned, individualized instruction to mothers of children seen in the emergency department for cast application to fractured limbs. She found that the mothers who received this nursing intervention were better able to cope with the after care of the child than mothers who received no planned, individual teaching.¹ Kos and Culbert studied a group of elderly patients with implantable cardiac pacemakers who had been taught individually and found that they knew considerably more about pacemaker functioning and related self-care than those who had not received the same structured teaching programme.²

These studies have been well designed and have sampled a large number of subjects. They have successfully demonstrated the value of individual and individualized teaching not only among various age groups but also during different phases of wellness and illness and within the hospital, outpatient department and home setting.

Dodge reminds us that understanding is facilitated when an individual receives the kind of information that he feels he needs in a particular situation.³ Palm maintains that group teaching cannot in any way meet the learning needs of each and every patient.⁴ Several

¹D.M. Power, "The Effectiveness of Planned Teaching of Mothers with Children Treated in Emergency Departments." Unpublished Master's Thesis, University of British Columbia, 1972.

²Ibid.

³J.S. Dodge, "Factors Related to Patient's Perceptions of Their Cognitive Needs," Nursing Research, 18 (1969), pp. 502-513.

⁴M.L. Palm, "Recognizing Opportunities for Informal Patient Teaching," Nursing Clinics of North America, 6 (1971), pp. 669-678.

studies^{1,2} have compared group versus individual instruction in the area of preoperative preparation but neither of them show that group teaching is any more effective than individual instruction. Lastly, Kos and Culbert say that

When the teaching-learning process involves an elderly person, goals, methods of teaching, tools and methods of evaluating must be tailor-designed for each individual if learning is to occur. . . . The older learner benefits from continuous interaction during teaching sessions. For these reasons, teaching on a one-to-one basis is usually most effective.³

SUMMARY

A critical review of the literature on the elderly patient who has had a permanent pacemaker inserted, has established the concerns of the surgical patient in general and the patient with a permanent pacemaker in particular. Many of the issues raised stem from the

¹C.A. Lindeman, "Nursing Intervention with the Presurgical Patient - Phase II," Nursing Research, 21 (1972), pp. 196-209.

²C. Baines, An Experimental Study to Compare the Effectiveness of Individual and Group Preoperative Instruction. Unpublished Master's Thesis, University of British Columbia, 1974.

³P.A. Culbert and B.A. Kos, "Aging: Considerations for Health Teaching," Nursing Clinics of North America, 6 (1971), p. 613.

presence of anxiety. Health teaching has been suggested as a major nursing intervention to combat this psychological reaction. The teaching-learning process has been viewed in terms of the age group to which the educational experience is directed. Facilitating learning among the elderly was discussed in terms of motivation, methods, audio-visual aids, involving the significant other and providing individual teaching and counselling. By reviewing the studies that have been carried out, different avenues of approach to the problem have been suggested. The subsequent study will focus on the use of audio-visual and written teaching aids, participation by significant others, and discharge planning. The results of each of these foci will be evaluated by a variety of criterion measures.

CHAPTER III

METHODOLOGY

INTRODUCTION

This chapter will examine the research design chosen to study the problem; the setting in which the study was carried out, the sample selected for testing; the procedure used to implement the project; and, the data gathering tools employed to accumulate the necessary information.

THE RESEARCH DESIGN

A pretest-posttest control group design, with repeated measures, was used. This design controls for the effects of testing, maturation, history, instrumentation, regression and selection mainly through the process of randomization. What it cannot account for is the unique intrasession history that the patients in the experimental group experienced. This design also was appropriate because the dependent variables chosen for this study were such that baseline information was needed in order to determine if adaptation had occurred. A potential threat to the external validity of this "before and after" design was

accounted for by having the subjects tested not only two weeks after their discharge from the hospital but also at the four to six week period. By doing this, it was hoped that the effects of being tested in the hospital as opposed to their own home would be minimized.

THE SETTING

The study was conducted at a 570 bed, acute care teaching hospital in British Columbia. There are four cardiologists and three cardiovascular surgeons on staff whose responsibility it is to determine the need for a permanent pacemaker and to carry out the insertion. No clinical specialist in nursing is assigned to patients who have had permanent pacemakers inserted. The patients are cared for by a great variety of Intensive Care Unit and Ward nursing staff. Most of the patients who have had permanent pacemakers inserted have temporary transvenous pacemakers in place before their surgery. These patients are usually in the intensive care unit preoperatively but occasionally they can be found on the general medical or surgical wards. The patient is seen preoperatively by the anaesthetist and the cardiovascular surgeon at which time the procedure is explained to him and he is asked to sign the consent form. The procedure is usually done under general anaesthetic and takes about one hour. Most of the permanent pacemaker insertions are done late in the day or when they can be scheduled in a busy operating room. All of the patients return from the operating room with a temporary, completed identification card and a booklet

about the pacemaker model which they have. The hospital purchases permanent pacemakers from four different companies. The decision regarding which pacemaking system to use is dependent upon the individual surgeon and the patient's condition.

The first twenty-four hours postoperatively is spent by all patients in the Intensive Care Unit in order to establish that their pacemakers are functioning properly. Upon transfer from the Intensive Care Unit, the patient is relocated on a general medical or surgical ward until his discharge home. During his stay on the ward, the patient (and his family if present when the doctor makes his rounds) is informed, in more detail, by his cardiologist, about his pacemaker, its purpose and any lifestyle alterations required. There is no formal education programme carried out by the nursing staff for patients and their families. The teaching that is done by the nursing staff regarding pacemakers is on an informal, sporadic, one-to-one basis. The amount of time spent teaching patients and their families is highly variable depending on the priorities of the ward, the patient census and the expertise of the nursing staff on duty at any one time.

The followup care patterns of patients with permanent pacemakers at this hospital include three to six monthly checkups (or more frequently depending on the age of the battery) at the pacemaker clinic and if the patient is from out of town, bimonthly checkups via a telephone screening system to the pacemaker clinic. The latter method of followup requires that the patient purchases the cardiac screener (1977 cost = \$100.00 plus 7% sales tax) and that he

be taught how and when to use it. This instruction is done by the screener salesman.

THE SAMPLE

A random sample of nine patients, who met the following criteria, were included in this study:

1. Patients who were fifty years of age or over.
2. Patients who could see, hear, speak and read English.
3. Patients who were hospitalized for their first permanent pacemaker insertion.
4. Patients who were able to answer a questionnaire (that is, were not unconscious, severely mentally retarded, had not had a serious cerebrovascular accident).
5. Patients who had not had open heart surgery at the same time as the permanent pacemaker was inserted.
6. Patients who willingly consented to participate after an explanation of the study was provided by the investigator.

When the nurse investigator was informed that a patient, who met the study criteria, actually had the permanent pacemaker inserted, she randomly assigned that patient to either the experimental or control group. The nurse investigator then approached the patient

and his significant other and sought their written, informed consent to participate. (See Appendix A) No patient or significant other refused to participate at the beginning of the study. One patient refused to be seen at the six week post discharge visit and another patient, after completing the pretests, did not want to be followed up post discharge. Both of these patients belonged to the control group.

ETHICAL CONSIDERATIONS

In addition to obtaining written, informed consent from all of the subjects, the nurse investigator made it clear that each person was free to withdraw from the project at any time. The raw data was identified by initials only and was examined by members of the nurse investigator's thesis committee alone. When the subjects requested feedback on their progress as reflected in the questionnaires, they were told that they would be provided with that information at the completion of the project. The patients who were members of the control group were given the option of viewing the slide-tape programme, which the experimental group subjects saw in the hospital, at the final home visit.

THE SLIDE-TAPE PROGRAMME

A slide-tape programme (Appendix B) was prepared by the nurse investigator for the Vancouver General Hospital, under the auspices of a Local Initiatives Project Grant, in order to graphically illustrate certain baseline information about permanent pacemakers. The objectives of the programme were:

Part 1 - "Your Heart Has Nine Lives."

To help the patient and his significant other understand and accept the rationale for the insertion of a permanent pacemaker.

(Length: 5 minutes)

Part 2 - "Living With Your Pacemaker."

To help the patient and his significant other understand and accept a change in lifestyle.

(Length: 12 minutes)

The goals of the slide-tape programme were to meet the educational needs of the patient and his significant other and to serve as a focus for discussion. The content of the programme was determined by reviewing the literature to establish the expressed needs and concerns of people with pacemakers. The programme was deliberately short so that the nurse investigator would have sufficient time to interact therapeutically with the patient and his significant other. Using

this audio-visual medium ensured that each patient and his significant other received the same amount of factual information and in the same manner.

THE PROCEDURE.

This study was conducted between November, 1976 and April, 1977. The nurse investigator was informed by the Head Nurse in the Intensive Care Unit when a potential candidate was admitted. At that time the nurse investigator randomly assigned the potential patient to either the experimental or control group. The Head Nurse, not knowing to which group the patient belonged, introduced the nurse investigator by saying the following:

(Patient's name), I would like you to meet Valerie Shannon. She is a nurse from the University of British Columbia and is a specialist in pacemakers. She wants to ask you to take part in a special project.

The Head Nurse then left and the nurse investigator explained the study using the consent forms (Appendix A) as guides. When the patient agreed to participate and signed the consent form, the nurse investigator made an appointment to see the patient and his significant other on the third, fourth and fifth post operative day (or when it was convenient for them) if they were members of the experimental group. If they were randomly assigned to the control group, the nurse investigator made an appointment to see the patient and his

significant other on the third post operative day (or also when it was convenient for them). Usually during this introductory interview, the nurse investigator conducted the first two pages of the Activity Interview Schedule (see Appendix C) and completed the Patient Data Sheet. (See Appendix D) This first session usually lasted about twenty minutes to one-half an hour.

The Experimental Group

The patients and their significant others in the experimental group experienced the following nursing intervention provided by the nurse investigator.

Interview No. 1 - Third Postoperative Day

1. Greeting
2. Administer (in this order) -
 - (a) State Anxiety Inventory
 - (b) Knowledge Base Questionnaire
 - (c) Trait Anxiety Inventory
3. Ask if they know why the patient has a pacemaker.
 - (a) Listen
 - (b) Positively reinforce correct response and explore misconceptions
4. Show Part One of the slide-tape programme
5. Encourage questions, concerns, and feelings.
6. Terminate the interview and arrange a meeting time for the next session.

Interview No. 2 - Fourth Postoperative Day

1. Greeting
2. Encourage questions. Inquire as to whether the patients doctor or nurse has discussed the effect of the pacemaker on way of living
3. Show Part Two of the Slide-tape programme
4. Go over pulse taking if it is appropriate.
5. Encourage questions
6. Terminate the interview and arrange a convenient time for the next session.

Interview No. 3 - Fifth Postoperative Day

1. Greeting
2. Elicit questions about going home
3. Have the patient and his significant other demonstrate pulse taking
4. Make an appointment to see patient and significant other two weeks after discharge

Interview No. 4 - Two Weeks Post Discharge - In the Patient's Home

1. Greeting
2. Administer Activity Interview Schedule
3. Administer (in this order)
 - (a) State Anxiety Inventory
 - (b) Knowledge Base Questionnaire
 - (c) Trait Anxiety Inventory

4. Encourage the expression of concerns or feelings
5. Stress that the next visit will be the last and make the necessary time arrangements

Interview No. 5 - Four Weeks Post Discharge - In the Patient's Home

1. Same as 1-4 above
2. Bring results of the knowledge base questionnaire and anxiety inventory should the patient or significant other request feedback
3. Thank the patient and significant other for participating in the project.

The Control Group

The patients and their significant others in the control group received the usual nursing care provided by the ward staff. On the third postoperative day, the nurse investigator met with the patient and his significant other to administer the questionnaires and conduct the interview regarding the patient's activity level. The questionnaires were given in the following order: Activity Check List, State Anxiety Inventory, Knowledge Base Questionnaire, Trait Anxiety Inventory. At least once before the patient was discharged, the nurse investigator paid him a social visit and reminded him of the two week post-discharge home visit. The first home interview was begun by asking the subject how he or she was getting along. Subsequently, the Activity Interview Schedule was conducted. The nurse investigator then administered three questionnaires

in the following order: State Anxiety Inventory, Knowledge Base Questionnaire, Trait Anxiety Inventory. The subject was reminded that the next visit, two weeks hence, would be the final visit. The nurse investigator also made it clear that she would be prepared to discuss the content of the questionnaires if the subjects desired. The subjects were also told that a slide-tape programme on pacemakers was available and that they could view it at the final home visit.

The final interview with the members of the control group was conducted in the same manner as the first interview and included the administration of the three questionnaires and the activity interview schedule. The nurse investigator was prepared to show the slide-tape programme and to answer any queries about the questionnaires. The subjects were thanked for their participation.

THE DATA GATHERING TOOLS

Three different tools were used to evaluate the knowledge base, anxiety level and activity level of the subjects and their significant others. The knowledge base questionnaire and activity checklist were developed by the nurse investigator expressly for this study. Spielberger's State-Trait Anxiety Inventory, an established measuring device, was chosen to assess the subject's anxiety level.

Knowledge Base Questionnaire

Initially, a twenty-three-item questionnaire was developed by the nurse investigator. The choice of questions was determined by the content of the slide-tape programme. The questions reflected a basic understanding of the purpose of the heart; the reason for inserting an artificial pacemaker; signs of pacemaker malfunction; and, activities in which one can expect to participate if one has a pacemaker. Once again, the content of the slide-tape programme was based on the expressed needs and concerns of patients with pacemakers as described in the current literature.

In order to assess the validity and sensitivity of the knowledge base questionnaire, the following pretest was conducted. The nurse investigator met with two similar groups of eight people each and gave them the knowledge base questionnaire. One group saw the slide-tape programme before completing the questionnaire and the other did not. None of the members of either group had a permanent pacemaker but several people in each group knew of someone who had a pacemaker. Some of the members in each group had a diagnosed heart ailment but that would be expected since all members of the pretest group were fifty years of age or over. No members of the pretest group were hospitalized when they completed the questionnaire.

The following analysis was made:

Sample	Mean Scores on Knowledge Base Questionnaire	Standard Deviation
Saw Slide-Tape Programme	20.75	1.28
Did Not See Slide-Tape Programme	18.88	1.81

A t-test was done on the above scores and it showed that the results were significant at the .05 level. ($T=2.393$, $df=14$).

An item analysis of the questions revealed that one question was answered incorrectly 8/8 times in the group that saw the slide-tape programme and 7/8 times in the group that did not; therefore, that question was removed. Another question was answered incorrectly 3/8 times in the group who saw the slide-tape programme and 6/8 times in the group that did not; that question was reworded. The final draft of the knowledge base questionnaire used in the study consisted of twenty-two items and appears in Appendix E.

The Activity Check List (ACL)

The nurse investigator developed an Activity Interview Schedule, (Appendix C) the first two pages of which contain the Activity Check List. The purpose of the Activity Interview Schedule was to evaluate the kind and frequency of common activities of daily living, the physical and emotional responses to those activities, the degree of compliance with specific pacemaker related activities, (e.g., regular pulse taking, carrying a pacemaker identification card, reporting complications to the doctor), and the patient's reported degree of satisfaction with his pre and post-illness activity levels.

In order to determine if the activities selected by the investigator were representative of those which an elderly, discharged pacemaker patient did perform, the list was shown to seven people (males and females), over sixty-five years of age, living in a

residential home for retired senior citizens. They were asked to respond to each activity by checking one of three options: (1) yes, I did perform this activity; (2) I am unable to perform this activity; (3) does not apply. The results are tabulated in Table 2.

Because only seven people responded, the investigator examined only those activities which no one was able to perform. They were:

1. working at a regular job
2. gardening
3. washing floors/walls
4. doing minor household repairs
5. bowling
6. recreational swimming, and
7. walking one mile.

This convenience sample of seven had to be at least age sixty-five and retired in order to live in that particular apartment complex. The apartment was a high rise which not only prevented them from having a garden but also provided them with housekeeping and maintenance facilities. The apartment was within several blocks of a variety of stores so that they had no need to walk long distances. A bus stopped outside the door of the building. Due to the inherent characteristics of the sample selected for pretesting, it is understandable that the aforementioned activities were not part of their daily living pattern.

The investigator gave the same list of activities to four nurses considered to be experts on the postoperative and followup care of people with permanent pacemakers. The results can be found in Table 3.

TABLE 2

Senior Citizens' Response to Activity Check List (A.C.L.)

(N = 7)

Activity	Did Perform	Did Not Perform	Does Not Apply	Failed to Respond
walking 1 block	6	1		
walking 5 blocks	4	3		
walking 1 mile	0	5	2	
grocery shopping	5	1	1	
gardening	0	6	1	
lawn mowing	1	6		
dressing oneself	7			
feeding oneself	7			
using the washroom alone	7			
bathing	6	1		
showering	5	2		
climbing stairs	3	3	1	
sexual activity	1	3	3	
vacuuming	2	5		
dusting	5	2		
washing dishes	6	1		
washing clothing by hand	5	2		
washing clothing by machine	5	1		1
washing floors/walls	0	6	1	
cooking	3	3	1	
minor repairs to the house	0	4	2	1
using all electrical appliances	4	3		
driving a car	2	4	1	
taking a bus	5	2		
taking a plane	5	2		
taking a boat	6	1		

Activity	Did Perform	Did Not Perform	Does Not Apply	Failed to Respond
taking a train	5	1	1	
visiting with friends in your home or theirs	5	2		
playing cards	6	1		
watching T.V.	7			
listening to the radio	7			
bowling	0	7		
recreational swimming	0	7		
attending senior citizen's meetings	4			3*
working	0	4		3*
taking your pulse	3		1	3*
hobbies	4			3*
Other activities listed by respondents (N = 4)*				
listening to music	1			
knitting	3			
sewing	1			

*Three respondents failed to answer the second page of ACL.

Each nurse was asked to estimate the probability, on a scale of 1-10, of a person age fifty or over, with a permanent pacemaker, being able to perform each of the listed activities. Most of the activities were given a high rating, that is, the average score/activity was 8/10 or over. Those activities rated below eight were:

1. walking a mile
2. washing floors/walls
3. bowling
4. recreational swimming, and
5. mowing the lawn.

Since there were so few activities which were deemed unperformable by either the senior citizens who were pretested or the panel of expert nurses whose opinion was obtained, all of the activities on the original checklist were retained. The criteria for the selection of the study sample included people who were fifty and over who would probably be working, living in their own home, and perhaps would be more physically active; therefore, it seemed reasonable to include the more strenuous activities listed above.

Administration of the Activity Check List (ACL)

When the ACL was given as a pretest, the nurse investigator said to the patient, "During the month prior to your hospitalization, did you perform any of these activities?" When the ACL was given as

TABLE 3

Nurses' Opinion of Pacemaker Patient's Activity Capabilities*

Activity	Mean	Activity	Mean
dress oneself	10	watch TV	10
feed oneself	10	listen to radio	10
use the toilet alone	10	bowl	5.0
bath	9.5	recreational swimming	6.75
shower	9.75	attend Senior Citizen's meetings	10
climb stairs	8.75	return to previous job	10*
walk 1 block	9.75	return to lighter job	10*
walk 5 blocks	9.0	take own pulse	8.5
walk 1 mile	6.25	hobbies (e.g., reading, golf woodworking, knitting, etc.)	10
resume sexual activity	10	playing bingo	10
vacuum	8.0	going to church	10
dust	10	wash dishes	10
wash clothing by hand	9	wash clothing by machine	9.75
wash floors/walls	5.75	garden	10*
cook	10	mow the lawn	6.0
do minor house repairs	9.75	use all electrical appliances	8.3*
grocery shop	9.5	drive a car	9.0
take a bus	9.5	take a train	9.5
take a plane	9.3*	take a boat	9.5
visit with friends	10	play cards	10

*
n = 3

** Nurses' opinion as to the chance that a person, age fifty or over, with a permanent pacemaker, could perform the following activities of daily living (n = 4).

Mean = 9.15

Median = 9.75

Mode = 10

Range = 5 - 10

a posttest, the nurse investigator asked, "Since your discharge from the hospital, have you been able to perform any of these activities?." The posttest also included the completion of the Activity Interview Schedule.

Scoring of the Activity Check List

The main message in the slide-tape programme is that regular exercise is good for the patient both physically and psychologically. Therefore, the activity check list looked at the usual self-care and social activities of the patients to determine if their frequency had changed. Two points were awarded if an activity was done regularly; one point if it was done occasionally; and, zero points if it was not done at all. The total score obtained was considered to be that person's activity level.

State-Trait Anxiety Inventory (Self Evaluation Questionnaire)

The State-Trait Anxiety Inventory (STAI) was developed by Charles D. Spielberger, Richard L. Gorsuch and Robert E. Luschene between 1964 and 1970. It was designed as an objective, self-report research tool to measure both state and trait anxiety in normal (nonpsychiatrically disturbed) adults, junior and senior high school students, and neuropsychiatric, medical and surgical patients. The questionnaire is comprised of separate, twenty items each, self-report scales for measuring the two distinct anxiety concepts. The two scales are

printed on the opposite side of the same test sheet. A copy of the STAI can be found in Appendix F.

Administration of the STAI

The STAI can be self-administered and may be given either individually or in groups. Complete instructions are printed on the top of each side of the test form. There are no time limits imposed on the respondent. According to the experience of Spielberger, Gorsuch and Luschene, college students generally require only six to eight minutes to complete either the Anxiety-State or the Anxiety-Trait scale, and less than twenty minutes to complete both. Less educated and/or emotionally disturbed persons may require ten to twelve minutes to complete one of the scales and approximately twenty minutes to complete both.¹ The validity of the STAI is based on the assumption that the respondent clearly understands the instructions which are different for each scale. The A-State inventory asks him to report how he feels *at this moment* and the A-Trait inventory asks him to indicate how he *generally* feels.

If both of the scales are given at the same time, it is recommended that the A-State scale be given first, followed by the A-Trait scale.² Because the A-State scale is designed to be sensitive

¹C.D. Spielberger, R.L. Gorsuch, R.E. Luschene, State-Trait Anxiety Inventory Manual (Palo Alto, California: Consulting Psychologists Press, Inc., 1970), p. 4.

²Ibid.

to the conditions under which the test is given, scores on this scale can be influenced by the emotional atmosphere that may be created if the A-Trait scale is given first.

Scoring of the STAI

The respondents can obtain a score ranging from twenty to eighty on each part of the anxiety inventory by rating themselves on a four-point scale. Some of the items (e.g., I am tense) are worded in such a way that a rating of four indicates a high level of anxiety, while other items (e.g., I feel pleasant) are worded so that a high rating indicates low anxiety. The scoring weights for items on which high ratings indicate high anxiety are the same as the blackened out number on the test form. For items on which a high rating indicates low anxiety, the scoring rates are reversed. A template purchased from the Consulting Psychologists Press was used to score the A-State and A-Trait scales by hand. The values for each item were written at the side of the page and were added.

The potential problem of acquiescence set on the STAI responses was dealt with on the A-State scale by having ten directly scored and ten reversed items. However, it was impossible to develop a balanced A-Trait scale from the original item pool and so there are seven reversed items and thirteen directly scored items on the A-Trait scale.

Most individuals with a fifth or sixth grade reading ability spontaneously respond to all of the STAI items without special

instructions or prompting.¹ Should the subject omit one or two items on either the A-Trait or A-State scale, his prorated full scale score can be obtained by:

1. determining the mean score for the items to which the subject has responded;
2. multiplying that value by twenty; and
3. rounding the product to the next higher, whole number.²

If three or more items are omitted, the validity of the scale must be questioned.

Normative Data for the STAI

Normative data are available for college students, high school students, male psychiatric, general medical, surgical patients and young, male prisoners. Although the STAI norms are not based on representative or stratified samples, they can still be used as a means of comparison with scores obtained from experimental groups or individual clients.

The normative data, used as a point of comparison for this thesis, were based on the general medical and surgical patients without psychiatric complications. (N = 110) All subjects were males; their mean age was 55 years; and their mean educational level was grade ten.³

¹Ibid., p. 5

²Ibid.

³Ibid., p. 9.

The mean score which they had on the A-Trait scale was 41.33 and on the A-State scale was 42.68.¹

Reliability

The test-retest reliability of the STAI was documented by studying a group of male and female undergraduate college students. The correlations for the A-Trait scale ranged from .73 to .86, whereas, those for the A-State scale ranged from .16 to .54.² The low correlation for the A-State scale are expected because of the nature of the test which should reflect the unique situational factors operating at the time of testing.

Because anxiety states are so fleeting, the alpha coefficient measure of internal consistency provides a more appropriate index of reliability of the STAI. Using a modified K-R 20 formula, the alpha reliability coefficients for the A-State scale are .83 to .92 and for the A-Trait scale, .86 to .92.³ Spielberger concluded that both the A-Trait and A-State scales have a high degree of internal consistency.

¹Ibid., p. 9.

²Ibid., p. 8.

³Ibid.

Validity

The construct validity of the A-State scale was determined by testing a large number of male and female undergraduate college students under "normal" and "stressful" conditions. The mean scores for both males and females were considerably higher in the stressful condition.¹

Concurrent validity of the A-Trait scale was established by comparing the scores of male and female college students and neuro-psychiatric patients on the Institute for Personality and Ability Testing (IPAT) Anxiety Scale, the Taylor Manifest Anxiety Scale (TMAS), and the Zuckerman Affect Adjective Check List (AACL). The correlations between the STAI - A-Trait Scale, the IPAT and the TMAS ranged from .75 to .85.² In contrast, the AACL, General Form, was only moderately correlated with the other A-Trait measures (range = .41 to .58).³ Since the intercorrelations among these scales approached the scale reliabilities, Spielberger et al. concluded that the IPAT, TMAS and STAI A-Trait scale could be used as alternate measures of anxiety trait.

The STAI was selected as a measuring device of the patient's anxiety level because of its validity, reliability, length, and ease of administration and scoring.

¹Ibid., p. 11.

²Ibid., p. 10.

³Ibid.

CRITERIA USED TO DETERMINE PULSE TAKING ABILITY

The following behavioural criteria were used to establish whether the patient and his significant other could demonstrate pulse taking. If the patient and his significant other performed all three acts, they were considered to be able to take their pulse.

1. Placed first two fingers of the opposite hand on radial side of the opposite wrist at the base of the thumb,
2. Counted the pulse for 60 seconds, and
3. Was accurate within three beats when the subject's pulse was checked by the nurse investigator.

DATA MANAGEMENT

A one-tail t test of the differences between sample means across the experimental and control groups was measured with respect to knowledge base, trait and state anxiety and level of activity. The results of the ability of members of the experimental and control group to demonstrate pulse taking were assessed by using the Fisher-Yates Exact Probability Test.

The significance of the data was determined at the .05 level. This value was chosen because of the small sample size, the low degree of control of all variables in the study setting, the

fact that this research explored a set of interrelations for the purpose of developing additional hypotheses and that with this level of significance, fewer Type II errors (failing to reject the false null hypothesis) will be made. The .05 level also was appropriate because empirical evidence supports the conclusion of the alternative hypotheses and because no drastic or serious long term effects of possible error can be foreseen.

SUMMARY

This chapter has described the methodology used in this study. A pretest-posttest control group design was selected to explore the problem of the adaptability of elderly patients to the insertion of a permanent cardiac pacemaker. A 570 acute bed, teaching hospital provided the setting for the project and all patients who met the study criteria were asked to participate. Those who accepted were randomly assigned to either the experimental or control group. The experimental group subjects received planned patient teaching and psychological support from the nurse investigator and the control group received the usual nursing care given by the ward staff. The health status of all subjects was evaluated before and after their pacemaker insertion by having them respond to the Activity Check List, the Knowledge Base Questionnaire, and the State-Trait Anxiety Inventory. Their pulse taking ability was measured against the aforementioned behavioural criteria.

CHAPTER IV

THE FINDINGS

INTRODUCTION

This chapter will present the data that was collected in relation to the hypotheses to be tested. In addition, the investigator will examine selected correlations among the dependent variables. Clinical observations that were made during the course of the study will also be included when appropriate.

THE SAMPLE

Over a five month period, a total of sixteen subjects (nine patients, seven significant others) were followed from the time that the patients had their permanent pacemakers inserted until they had been home from the hospital for approximately four weeks. The demographic data pertaining to this sample of nine patients is presented in Table 4.

TABLE 4
Demographic Data - Patients

	Experimental Group	Control Group
Total Number	5	4
Mean Age (years)	78.8	76.8
Mean Number of Years of Schooling	9.0	9.0
Ratio of Males/Females	3/2	1/3
Ratio of Married/Widowed	2/3	2/2

A t-test, done on mean age ($t = .376$, $df = 7$) and mean number of years of schooling ($t = 0$, $df = 7$) between the two groups, showed no significant difference at the .05 level on these two variables. A Fisher-Yates Exact Probability Test was done on the variables of sex and marital status and, again revealed no significant difference. In summary, there was no significant difference between the experimental and control group on the variables of age, sex, marital status and years of schooling. No demographic data was collected concerning the significant others. Three out of five patients in the experimental group and 4/4 patients in the control group had significant others who were willing to participate in the study. The significant other's relationship to the patient is shown in Table 5.

TABLE 5

Relationship Between Patient and Significant Other

Experimental Group		Control Group	
Patient	Significant Other	Patient	Significant Other
Husband	Wife	Mother	Daughter
Father	Daughter	Mother	Daughter
Mother	Son	Mother	Daughter
		Husband	Wife

Using a pretest-posttest control group design the following hypotheses were tested.

1. Patient teaching and psychological support will increase the knowledge base of the patient and his significant other.
2. Patient teaching and psychological support will decrease the state and trait anxiety levels of the patient and his significant other.
3. Patient teaching and psychological support will enable the patient and his significant other to demonstrate pulse taking.
4. Patient teaching and psychological support will maintain or increase the activity level of the patient from his preoperative state.

HYPOTHESIS ONE

Patient teaching and psychological support will increase the knowledge base of the patient and his significant other.

From Tables 6 and 7 it is clear that the control group had a higher mean pretest knowledge base score than the experimental group. A possible explanation for this is that 5/8 people in the control group and only 2/8 people in the experimental group had read a booklet on pacemakers before they did the pretest. The nurse investigator first saw the patient after his pacemaker had been inserted. It is also possible that the ward nurses or the patient's physician may have done some pre-operative teaching. Another confounding variable which probably influenced the knowledge base scores of the control group is that two significant others were nurses and one patient had heart disease for ten years and read avidly all he could on the subject.

Both groups learned more about pacemakers during their hospitalization and retained that knowledge over a four week post discharge time period. However, a significant correlation coefficient, $r = .96$, between knowledge base at two weeks post discharge and four weeks post discharge was only available for the experimental group (see Table 8). There were no significant correlations at the .05 level in the control group because the sample consisted of only three people. When a t-test was done on the mean difference between

TABLE 6
 Knowledge Base Scores* - Two Weeks After Discharge

	Pretest	Posttest	Difference
E X P E R I M E N T A L G R O U P	17	16	-1
	21	21	0
	15	20	+5
	19	20	+1
	21	21	0
	20	20	0
	22	22	0
	18	18	0
N = 8			
Mean	19.125	19.750	+0.625
C O N T R O L G R O U P	22	22	0
	20	21	+1
	22	21	-1
	18	20	+2
	15	21	+6
	18	19	+1
	22	22	0
	20	22	+2
N = 8			
Mean	19.625	21.000	+1.375

* Highest possible score = 22

TABLE 7

Knowledge Base Scores - Four Weeks After Discharge

	Pretest	Posttest	Difference
E X P E R I M E N T A L N = 7 G R O U P*	17	17	0
	21	21	0
	15	21	+6
	19	22	+3
	21	21	0
	20	21	+1
	18	20	+2
Mean	18.71	20.43	+1.71
C O N T R O L N = 6 G R O U P**	22	21	-1
	20	21	+1
	22	22	0
	18	18	0
	22	22	0
	20	22	+2
Mean	20.67	21.00	+0.33

* One significant other was unavailable for testing.

** One patient and her significant other refused to complete the questionnaires the second time.

the two groups on knowledge base scores at two weeks post discharge, the results were nonsignificant at the .05 level ($t=0.876$, $df=14$). Likewise, a t-test done on the mean difference between the two groups on knowledge base scores at four weeks post discharge revealed no significance at the .05 level ($t=1.616$, $df=9$).

Each patient, after surgery, was given a booklet prepared by the company which made his pacemaker. All patients in the study reported that they had read the booklet and that at least one other member of their family had done so. The reaction to the booklet by patients and family members was very favourable. The investigator did not inquire about the subject's response to the slide-tape program which those in the experimental group saw in the hospital but no member of the experimental group offered any spontaneous comments.

TABLE 8

Correlation Coefficients Among Selected Dependent Variables for the Experimental Group

Variables	Knowledge - P	Knowledge - 2	State Anxiety - P	State Anxiety - 2	Activity - P
Knowledge - P	1.00				
Knowledge - 2	.20	1.00			
Knowledge - 4	.28	.96*			
State Anxiety - P	-.42	.23	1.00		
State Anxiety - 2	-.23	.44	.90*	1.00	
State Anxiety - 4	-.25	.53	.95*	.94*	
Trait Anxiety - P	-.59	.30	.59	.76	
Trait Anxiety - 2	-.56	.11	.86	.90*	
Trait Anxiety - 4	-.43	.74	.72	.77	
Activity - P	.87	.59	-.10	.04	1.00
Activity - 2	.47	.37	-.73	-.67	.51
Activity - 4	.96*	.43	-.34	-.16	.96*

P = Pretest

2 = Posttest - 2 weeks after discharge

4 = Posttest - 4 weeks after discharge

* Significant at the .05 level

HYPOTHESIS TWO

Patient teaching and psychological support will decrease the state and trait anxiety levels of the patient and his significant other.

The mean trait anxiety scores of the experimental group were higher than those of the control group on the pretest, two week post discharge posttest and the four week post discharge posttest. (Tables 9 and 10). When a t-test was done on the mean change between the two groups at two and four weeks after discharge, respectively, ($t = .298$, $df = 7$; $t = .454$, $df = 12$) the result was not significant. According to Spielberger,¹ trait anxiety scores should be stable over time and should reflect the person's characteristic level of anxiety. This has been demonstrated by the data. The hypothesis, though, as it relates to trait anxiety, has not been supported.

The mean state anxiety scores (Tables 11 and 12) are higher for the experimental group than the control group on the pretest, two week post discharge posttest, and the four week post discharge posttest. The mean state anxiety scores for the control group steadily decrease over time; whereas, they are decreased two weeks after discharge but rise again to almost the pretest level four weeks after discharge for the experimental group. Again, when a t-test was done

¹C.D. Spielberger et al., Manual for the State-Trait Anxiety Inventory. (California: Consulting Psychologists Press, 1970), p. 3.

TABLE 9

Trait Anxiety Scores - Two Weeks After Discharge

E X P E R I M E N T A L G R O U P	Pretest	Posttest	Difference
	N=8	58	56
33		35	+2
40		43	+3
54		52	-2
51		24	-27
37		41	+4
40		57	+17
38		27	+11
Mean	43.875	41.875	-2
C O N T R O L G R O U P	33	36	+3
	37	35	-2
	30	29	-1
	37	36	-1
	38	34	-4
	26	25	-1
	35	39	+4
	27	29	+2
Mean	32.875	32.875	0

TABLE 10

Trait Anxiety Scores - Four Weeks After Discharge

E X P E R I M E N T A L G R O U P *	Pretest	Posttest	Difference
		58	67
	33	26	-7
	40	38	-2
	54	39	-15
	37	47	+10
	40	52	+12
	38	39	+1
N = 7			
Mean	42.86	44.00	+1.14
C O N T R O L G R O U P **	33	37	+4
	30	35	+5
	37	32	-5
	35	29	-6
	27	24	-3
N = 5			
Mean	32.4	31.4	-1.0

* Family member unavailable

** One patient omitted the trait questionnaire and one patient and her significant other refused to be seen four weeks after discharge

TABLE 11

State Anxiety Scores - Two Weeks After Discharge

	Pretest	Posttest	Difference
E X P E R I M E N T A L G R O U P N = 8	50	57	+7
	35	25	-10
	28	28	0
	40	51	+11
	22	22	0
	45	51	+6
	60	33	-27
	26	25	-1
Mean	38.25	36.50	-1.75
C O N T R O L G R O U P N = 8	39	39	0
	47	35	-12
	33	25	-10
	34	20	-14
	41	47	+6
	35	41	+6
	27	27	0
	41	27	-14
Mean	37.13	32.63	-4.75

TABLE 12
State Anxiety Scores - Four Weeks After Discharge

	Pretest	Posttest	Difference
E X P E R I M E N T A L N = 8	50	63	+13
	35	26	-9
	28	25	-3
	40	42	+2
	22	21	-1
	45	57	+12
	60	44	-16
	26	24	-2
Mean	38.25	37.75	-0.5
C O N T R O L N = 6	39	37	-2
	47	38	-9
	33	31	-2
	34	33	-1
	27	20	-7
	41	21	-20
	Mean	36.83	30.00

* One patient and her significant other refused to answer the posttests four weeks after discharge

on the mean difference between the experimental and control group on the state anxiety scores two and four weeks after discharge, no significant differences were established ($t = .119$, $df = 14$ (2 weeks); $t = 1.097$, $df = 14$ (4 weeks)).

The mean state and trait scores of the experimental and control group can be compared with the normative data supplied by Spielberger on 110 male, medical-surgical patients who do not have psychiatric complications. The general medical-surgical patient's mean state anxiety score was 42.68 and their mean trait anxiety score was 41.33.¹ At no time did either the experimental or control group reach the mean state anxiety level shown in the normative data. A somewhat different pattern appears for the mean trait anxiety scores. The control group mean trait anxiety scores over time are much lower than the value taken from the normative data (32.88 vs. 41.33); however, the mean trait anxiety scores for the experimental group are slightly higher (44.0 vs. 41.33). Perhaps this suggests that the anxiety level of the patients studied was not high enough to be a more powerful motivating force to seek new information about their altered health status. Another possible conclusion might be that the normative data from Spielberger is not an appropriate population for comparison. His sample consists only of males, whose average age is 55, with an unspecified variety of general medical-surgical problems. On the other hand, the sample from this study is composed of males and females

¹Ibid., p. 8.

whose average age is between 76.8 and 78.8 years, and who all suffered from heart block requiring surgical intervention. The age factor alone could account for the lessened degree of state anxiety exhibited in this study, for perhaps the older person is more willing to accept declining health as a concomitant of old age.

In terms of the anxiety components in the subjects of this study, a strong positive correlation was established in the experimental group between pretest state anxiety and two week posttest state anxiety ($r = .90$); between pretest state anxiety and four week posttest state anxiety ($r = .95$); and between two week posttest state anxiety and four week posttest state anxiety ($r = .94$) (Table 8). These findings reinforce the fact that the nursing intervention of planned patient teaching and psychological support did not reduce the state anxiety level of members of the experimental group. A possible reason for this can be found when the trait anxiety scores of the experimental subjects are examined (Tables 9 and 10). The mean trait anxiety scores of the experimental group are higher than those of the control group. If the experimental subjects were inherently more anxious perhaps providing them with information about their condition would not serve to reduce their anxiety. Perhaps the nurse investigator did not spend enough time with the patients to provide the needed psychological support or it is very possible that the teachable moment was missed. By the teachable moment, the investigator is referring to the nurse's ability to detect and act on the patient's demonstrated readiness to learn. Also, the patient was being bombarded with information from

a variety of sources. (The nurse investigator, ward nurses, physicians, and booklets). Inevitably some of this information would be contradictory, thereby increasing the patient's feelings of frustration. For example, the issue of the safety of microwave ovens was controversial. Each cardiologist differed in his advice to his patient. Sometimes the investigator's slide-tape programme contradicted the doctor though its content was supported by the current medical literature.

Although no significant correlation was found between state or trait anxiety scores and the patient's knowledge base, it is interesting to speculate about their relationship when examining the raw data (Tables 6, 7, 9, 10, 11, and 12). The experimental group when compared to the control group had higher mean state and trait anxiety scores and lower mean knowledge base scores on the pretest, two week post discharge posttest and four week post discharge posttest. Perhaps the full learning potential of the experimental group was hampered by their correspondingly higher levels of state and trait anxiety.

HYPOTHESIS THREE

Patient teaching and psychological support will enable the patient and his significant other to demonstrate pulse taking.

From Table 13, it can be seen that more members of the experimental group could demonstrate pulse taking than could members of the

control group. When the Fisher-Yates Exact Probability Test was applied by inspection of tables,¹ no significant difference was found between the two groups on the dependent variable of pulse taking ability.

TABLE 13
Pulse Taking Ability - Two Weeks After Discharge

	Experimental Group		Control Group	
	Can Demonstrate	Cannot Demonstrate	Can Demonstrate	Cannot Demonstrate
Patient	3	2	1	3
Significant Other	3	0	3	1
Total	6	2	4	4

Two confounding variables probably had a powerful effect on the results since the sample size was so small. Two out of four significant others in the control group were nurses and had already mastered the skill of pulse taking. Also a patient in the experimental group suffered from subacute combined degenerative disease of the spinal cord which left his fingertips numb. Because of this lack of sensation in his fingertips, he was unable to feel his pulse either before or after the experimental nursing intervention.

¹R.H. Kolstoe, Introduction to Statistics for the Behavioural Sciences, Revised Edition (Illinois: The Dorsey Press, 1973), pp. 342-343.

HYPOTHESIS FOUR

Patient teaching and psychological support will maintain or increase the activity level of the patient from his preoperative state.

From Table 14 it is evident that the members of the control group were more active than the experimental group at the time of the pretest. Both groups decreased their activity level two weeks after discharge but the members of the experimental group decreased their activity level less. Four weeks after discharge (Table 15), both groups' activity level was approaching the pretest level. The members of the experimental group came closer to achieving their pretest level of activity than members of the control group. A point to remember though is that the members of the experimental group were less active than the control group to begin with. Perhaps it was easier for the experimental group to reach their pretest level of activity. Upon examining the kind of activities which members of the experimental group performed, they represented those of a less strenuous nature generally at a subsistence level. When a t-test was applied to the data at two and four weeks post discharge respectively ($t = .87$, $df = 8$; $t = 0.261$, $df = 8$), no significant difference between the two groups on the variable of activity level was established for a one tailed test.

TABLE 14
Activity Checklist Scores - Two Weeks After Discharge

	Pretest	Posttest	Difference
E X P E R I M E N T A L G R O U P N = 5	22	20	-2
	27	14	-13
	21	25	+4
	56	28	-28
	42	47	+5
Mean	33.6	26.8	-6.8
C O N T R O L G R O U P N = 4	33	27	-6
	54	28	-26
	49	24	-25
	26	14	-12
Mean	40.5	23.3	-17.2

TABLE 15

Activity Checklist Scores - Four Weeks After Discharge

	Pretest	Posttest	Difference
E X P E R I M E N T A L G R O U P N = 5	22	19	-3
	27	28	+1
	21	24	+3
	56	43	-13
	42	38	-4
Mean	33.6	30.4	-3.2
C O N T R O L G R O U P *	33	29	-4
	54	43	-11
	26	23	-3
Mean	37.7	31.7	-6.0

* One patient refused to do the posttests four weeks after discharge

Table 16 shows the patient's satisfaction with his activity level before the pacemaker was inserted, two weeks after discharge from the hospital and four weeks after discharge from the hospital. The results were obtained by asking each patient, at the stated time intervals, to say whether he felt satisfied or dissatisfied with his activity level. A Fisher-Yates Exact Probability Test was performed by inspection of tables.¹ No significant difference was found between the two groups with respect to their reported satisfaction/dissatisfaction with their activity level at any time.

TABLE 16

Reported Satisfaction/Dissatisfaction (S/D) With Activity Level

	Pretest		Posttest - 2 Weeks After Discharge		Posttest - 4 Weeks After Discharge	
	S	D	S	D	S	D
E X P E R I M E N T A L G R O U P N = 5	✓			✓		✓
	✓		✓		✓	
		✓		✓		✓
		✓	✓			✓
	✓		✓		✓	
C O N T R O L G R O U P N = 4	✓			✓		✓
	✓		✓		✓	
		✓	✓		✓	
	✓		✓		✓	

¹Ibid.

Another portion of the Activity Interview Schedule dealt with the patient's description of his morale two and four weeks after discharge from the hospital. Table 17 depicts the results.

TABLE 17
Patient's Description of Their Morale

E X P E R I M E N T A L G R O U P	Two Weeks After Discharge	Four Weeks After Discharge
	N = 5	low
low		low
good		high
good		good
low		low
C O N T R O L G R O U P	good	good
	fair	good
	good	good
	good	good
N = 4		

The nurse investigator presented the patients with a scale from which to choose the word which best described their morale. The scale, from left to right, indicated degrees of improvement (low, fair, good, high). No change in morale over time was reported in 3/5 members of

the experimental group and 3/4 members of the control group. Of those subjects reporting no change, all three in the control group said that they were in good spirits, whereas, two out of three in the experimental group said that their spirits were low. When a change in morale was noted, regardless of their group membership, it was consistently in a positive direction.

Morale appears to be more consistently "good" in the control group. Because the sample size was so small, the nurse investigator was able to assess each patient over time very thoroughly. It is the investigator's judgement that the low morale encountered in the experimental group was due to many unresolved problems such as depression, loneliness, fear of dying, loss of appetite, nervousness and lack of energy. These were much more evident in the experimental group as opposed to the control group in spite of the process of randomization.

Last, with respect to activity level, the nurse investigator examined those activities which were given up by the patients and the reasons why. Three out of five members of the experimental group and two out of four members of the control group did not relinquish any of their pre-pacemaker activities. Activities which were given up by members of the experimental group four weeks after discharge were things like vigorous physical exercise, bike riding uphill, living by oneself, sewing and housework. These activities were given up temporarily or permanently because of fear or on their doctor's advice.

Members of the control group gave up either permanently or temporarily activities such as shopping, walking around the block,

light gardening, using a chain saw, lifting over twenty pounds and working with hands over the head. Their reasons for not indulging in these activities were that they were too ill (own decision) and that it had been their doctor's advice to do so.

From Table 8, several significant correlations have been noted. There is a strong positive relationship between the pretest activity level and the four week post discharge activity posttest ($r = .96$). This correlation suggests that if the members of the experimental group were active preoperatively then by four weeks after discharge they were very likely to be as active as they were before their surgery. It is interesting to note that it took four weeks after being discharged for the elderly patient to return to his former activity level.

Also, a strong positive relationship (Table 8) exists between pretest knowledge base and four week post discharge activity level ($r = .96$). This suggests that if the subjects knew that their activity would be unaltered or increased by having the pacemaker inserted, then they were motivated to attempt to return to their previous level of activity. They knew what to expect and realized that expectation.

INCIDENCE OF COMPLICATIONS

The investigator also monitored the occurrence of any pacemaker related complications in the four week post discharge time period. Regardless of group membership, no complications (e.g., wound infection, pacemaker malfunction) were noted.

LENGTH OF HOSPITAL STAY

The mean length of hospital stay for members of the experimental group was 15.8 days; whereas, the mean length of stay for members of the control group was twenty days. A one-tail t-test applied to this data shows no significant difference at the .05 level ($t = .407$, $df = 7$).

SUMMARY

Chapter four presented the findings of this experimental study which sought to determine the effect of planned patient teaching and psychological support on the ability of the elderly patient to adapt to the insertion of a permanent cardiac pacemaker. Four hypotheses were developed in relation to knowledge base, state and trait anxiety level, activity level and pulse taking ability. None of the findings proved to be statistically significant at the .05 level.

CHAPTER V
SUMMARY, CONCLUSIONS AND IMPLICATIONS

Chapter Five will present a summary of the study and the major conclusions arising from the findings. The implications generated by the study itself and from associated problems will be examined in relation to nursing practice, education and research.

SUMMARY

An experimental study, using a pretest-posttest control group design, was conducted in a 580-bed acute care teaching hospital. Its purpose was to evaluate the effect of planned patient teaching and psychological support on the ability of the elderly patient to adapt to the surgical insertion of a permanent cardiac pacemaker. Nine subjects, who met the study criterion were randomly assigned to either the experimental or control group. Each subject was asked if he would like to include a significant other in the project. The members of the experimental group (five patients, three significant others) were seen individually by the nurse investigator on the third, fourth and fifth postoperative day or thereabouts at which time their questions were answered; they were given the opportunity to express their concerns;

and, they were shown a fifteen-minute slide-tape programme. The slide-tape programme was divided into two parts--one five minute segment which dealt with why the permanent pacemaker was inserted and another ten minute segment which examined lifestyle changes and common misconceptions about pacemakers. The members of the control group (four patients, four significant others) were provided with the usual nursing care given by the ward nursing staff to patients having permanent pacemakers inserted. All patients received a booklet about their pacemaker from the company whose brand of pacemaker they had. The specific hypotheses tested were:

1. Patient teaching and psychological support will increase the knowledge base of the patient and his significant other.
2. Patient teaching and psychological support will decrease the state and trait anxiety levels of the patient and his significant other.
3. Patient teaching and psychological support will enable the patient and his significant other to demonstrate pulse taking.
4. Patient teaching and psychological support will maintain or increase the activity level of the patient from his preoperative state.

At approximately two and four weeks after discharge from the hospital, the nurse investigator visited all of the patients in the

study and their significant others. Knowledge base, activity level, state and trait anxiety levels and pulse taking ability were measured on all patients; whereas, only the knowledge base, pulse taking ability and state and trait anxiety levels were measured on all significant others. No significant differences were found between the two groups on any of these variables.

CONCLUSIONS

The data obtained in this study failed to reject the null hypothesis of no difference between the experimental and control group with respect to selected patient outcome variables. In other words, planned patient teaching and psychological support among the members of the experimental group was not shown to significantly increase their knowledge base; decrease their state and trait anxiety levels; increase or maintain their activity level; or, to enable the patient or his significant other to accurately demonstrate their pulse taking ability more often than the members of the control group.

This lack of statistical significance may be due to small sample size. Kerlinger says that "Large samples are not advocated because large numbers are good in and of themselves. They are advocated in order to give the principle of randomization . . . a chance to 'work.'"¹

¹F.N. Kerlinger, Foundations of Behavioural Research, 2nd Edition (New York: Holt, Rinehart and Winston Inc., 1964), p. 128.

Because the process of randomization may not have been able to equalize the two groups on all other variables except those being examined, certain extraneous variables may have had a significant influence on the results. For example, there was twice the incidence of in-hospital cardiac arrest as opposed to fainting at home among the members of the experimental group. Also, not all members of the experimental group had the support of a significant other; whereas, each patient in the control group did have a family member present for the teaching and discussion sessions. These facts combined may have contributed to the unresolved anxieties and subsequent poorer performance on the cognitive and psychomotor tasks by members of the experimental group.

Another possible explanation for the lack of statistical significance could arise out of the patient outcome variables selected for evaluation. Knowledge base, anxiety level, activity level and pulse taking ability are not solely related to nursing care. Obviously, other health care professionals, the patient's prior health status and his attitudes towards health and illness are important confounding variables. Although the author would consider looking at the first four variables again with a larger sample, perhaps process-type information should also be gathered. For example, one could measure patient satisfaction with the nursing care received in hospital as it relates to helping him adjust to his circumstances at home. One could also determine from the patient and family which actions of the nurse facilitated their learning about his pacemaker.

The timing of the nursing intervention in this study should also be re-examined. In the hospital in which this study was done, patient education assumes priority status on many wards. Both doctors and nurses attempt to assess and meet the patient's learning needs in hospital on an informal basis. The first month after discharge is a turbulent one for the elderly patient who has had a permanent pacemaker inserted. Many were depressed, weak and lonely and complained of nervousness, lack of energy and loss of appetite. Several patients made important decisions while in the hospital as to their future living quarters. Not only did they have to adjust to their new pacemaker or the experience of having had a cardiac arrest but they also had to become accustomed to living in a new apartment or nursing home. Perhaps the nurse should assume a counselling and supportive role during the first month after discharge from the hospital when the patient is attempting to reintegrate himself into his former lifestyle.

Another time which might be more appropriate for teaching the patient is during the pacemaker clinic. About three months after the pacemaker has been inserted, most patients return to the clinic for followup care. If the patient expresses the need for information or support or it is otherwise detected, perhaps this is the time to provide it. Rather than individual counselling, group teaching could be considered so that the patients could benefit by sharing their thoughts, feelings and concerns with each other.

IMPLICATIONS

This study has implications for nursing research, education and practice. With respect to nursing research, the investigator suggests that the study, as is, be replicated but that the sample size be increased to at least thirty. Also, if one nurse could do the intervention and another nurse measure the results, any possible bias could be minimized. A similar study could be executed but with the timing of the intervention altered. Assuming that the patient and his significant other do have access to information and support while in the hospital, it might be more therapeutic for the nurse to visit the patient along with his significant other during the first month after discharge. At this time the nurse could ascertain what difficulties they are having and intervene when appropriate. Another possible teachable moment might be during the three month checkup in the pacemaker clinic. A study could be done that would attempt to meet the educational and emotional needs of the pacemaker patient and his significant other either individually or in groups in the clinic setting. Lastly, there is a need for the development of a reliable and valid range of indicators of process and outcome variables to measure the effect of health teaching.

This study also has implications for nursing education and practice. It emphasizes the critical nature of the patient's readiness to learn and the need to find the teachable moment. It demon-

strates that significant others do want to be included in health counselling and want to be supportive to the patient but that they also need to have access to accurate and consistent information. The consumer of health care has demanded the right to know but he also maintains the right to refuse information. The nurse must be able to provide that knowledge when the patient asks for it. Knowledge means power and power implies more control over your own situation. Patient education is one means of giving power to the consumer of health care. It is an integral and unique responsibility of nursing because nursing has the necessary knowledge and skills and most importantly, the patient's support in doing so.

B I B L I O G R A P H Y

BIBLIOGRAPHY

Books

- Ausubel, David P. The Psychology of Meaningful Verbal Learning. New York: Grune and Stratton, 1963.
- Botwinick, Jack. Aging and Behaviour. New York: Springer Publishing Co., Inc., 1973.
- Campbell, D.T. and Stanley, J.C. Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally College Publishing Co., 1963.
- Cattell, R.B. and Scheier, I.H. The Meaning and Measurement of Neuroticism and Anxiety. New York: The Ronald Press Co., 1961.
- Clark, M. and Anderson, B. Culture and Aging. Springfield, Illinois: Charles C. Thomas, 1967.
- Cowdry, E.V. Editor. 2nd Edition. The Care of the Geriatric Patient. St. Louis: C.V. Mosby, 1963.
- Dumas, R.G. "Utilization of a Concept of Stress as a Basis for Nursing." ANA Clinical Sessions, American Nurses' Association, San Francisco, 1966. New York: Appleton-Century-Crofts, 1967.
- Franklin, B.L. Patient Anxiety on Admission to Hospital. London: The Whitefriars Press Ltd., 1974.
- Howes, V.M. Editor. Individualization of Instruction - A Teaching Strategy. New York: The Macmillan Co., 1970.
- Hudak, C.M., Gallo, B.M., and Lohr, T. Critical Care Nursing. Philadelphia: J.B. Lippincott Co., 1973.

- Janis, I.L. Psychological Stress: Psychoanalytic and Behavioural Studies of Surgical Patients. New York: John Wiley and Sons, 1958.
- Kerlinger, F.N. Foundations of Behavioural Research. 2nd Edition. New York: Holt, Rinehart and Winston Inc., 1964.
- Kolstoe, R.H. Introduction to Statistics for the Behavioural Sciences. Revised Edition. Illinois: The Dorsey Press, 1973.
- Labovitz, Sanford. "Criteria for Selecting a Significance Level: A Note on the Sacredness of .05." Stages of Social Research-Contemporary Perspectives. Edited by Dennis P. Forcesse and Stephen Richer, Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1970.
- Lader, M. and Marks, I. Clinical Anxiety. London: William Heinemann Medical Books Ltd., 1971.
- Lazarus, R.S. "Stress Theory and Psychophysiological Research." Stress. Edited by Lennert, L. New York: American Elsevier Publishing Co., Inc., 1967.
- Lesse, Stanley. Anxiety: Its Components, Development and Treatment. New York: Grune and Stratton, 1970.
- Levitt, Eugene. The Psychology of Anxiety. Indianapolis: The Bobbs-Merrill Co. Inc., 1967.
- Maslow, A.H. Motivation and Personality. New York: Harper and Bros., 1954.
- May, Rollo. The Meaning of Anxiety. New York: Ronald Press Co., 1952.
- Meltzer, L.E. "Anxiety in Cardiovascular Disease." Anxiety Factors in Comprehensive Patient Care. Edited by Rees, W. Linford, Excerpta Medica Amsterdam, New York: American Elsevier Co., 1973.

- McReynolds, Paul. "The Assessment of Anxiety: A Survey of Available Techniques." McReynolds, Paul, Editor, Advances in Psychological Assessment. Vol. 1, Palo Alto, California: Science and Behaviour Books, Inc., 1968.
- Parsonnet, V. A Survey of Cardiac Pacing in the U.S.A. and Canada. Cardiac Pacing: Proceedings of the Fourth International Symposium on Cardiac Pacing. Thalen, H.J., Editor. The Netherlands: Van Gorcum & Co., 1973.
- Peplau, H.E. Interpersonal Relations in Nursing. New York: C.P. Putman's and Sons, 1952.
- Redman, B.K. The Process of Patient Teaching in Nursing. 2nd Edition St. Louis: The C.V. Mosby Co., 1972.
- Rozovsky, L.E. Canadian Hospital Law. Canadian Hospital Association: Toronto, Southam Murray, 1974.
- Sarason, I.G. and Spielberger, C.D. Stress and Anxiety. Vols 1 and 2, New York: John Wiley, 1975.
- Sister Olivia. "Aims of Nursing Administration - 1947." Cited by E.L. Brown in Nursing for the Future. New York: Russell Sage Foundation, 1948.
- Skipper, J.K. "Communication and the Hospitalized Patient." Social Interaction and Patient Care. Edited by J.K. Skipper and R.C. Leonard, Philadelphia: J.B. Lippincott Co., 1965.
- Spielberger, C.D. Editor. Anxiety and Behaviour. New York: Academic Press, 1966.
- Spielberger, C.D., Gorsuch, R., and Lushene, R.E. Manual for the State-Trait Anxiety Inventory. Palo Alto, California: Consulting Psychologists Press, 1970.
- Symonds, Percival. The Dynamics of Human Adjustment. New York: Appleton-Century-Crofts Inc., 1942.

Talbert, E.G. and Frase, L.E. Editors. Individualized Instruction - A Book of Readings. Ohio: Charles E. Merrill Publishing Co., 1972.

Articles

Abdellah, F.G. "Criterion Measures in Nursing." Nursing Research 10 (Winter, 1961), 21-26.

Adsett, C.A., and Bruhn, J.G. "Short-term Group Psychotherapy for Post M.I. Patients and Their Wives." Canadian Medical Association Journal 99: 577-584.

Alt, R.E. "Patient Education Program Answers Many Unanswered Questions." Hospitals 40 (November 16, 1966), 76-78.

Baden, C.A. "Teaching the Coronary Patient and His Family." Nursing Clinics of North America 7 (September, 1972), 563-571.

Canestrari, Robert E. "Paced and Self-Paced Learning in Young and Elderly Adults." Journal of Gerontology 18 (1963), 165-168.

Carnevali, D.I. "Preoperative Anxiety." American Journal of Nursing 66 (July, 1966), 1536-1538.

Cassidy, J.R. and Altrocchi, J. "Patient's Concerns About Surgery." Nursing Research 9 (Fall, 1960), 219-221.

Craven, R.F., and Sharp, B.H. "The Effects of Illness on Family Functions." Nursing Forum 11 (1972), 186-193.

Culbert, P.A. and Kos, B.A. "Aging: Considerations for Health Teaching." Nursing Clinics of North America 6 (December, 1971), 604-614.

Dalzell, I. "Evaluation of a Prenatal Teaching Programme." Nursing Research 14 (Spring, 1965), 160-163.

- Dodge, Joan S. "Factors Related to Patient's Perceptions of Their Cognitive Needs." Nursing Research 18 (November - December, 1969), 502-513.
- Dreifus, L.S. and Cohen, D. "Implanted Pacemakers - Medicolegal Implications." American Journal of Cardiology 36 (August, 1975), 266-267.
- Dumas, R.G. and Leonard, R.C. "The Effect of Nursing on the Incidence of Postoperative Vomiting." Nursing Research 12 (Winter, 1963), 12-15.
- Dunst, M. "Cardiac Pacemakers." Medical Clinics of North America 57 (November, 1973), 1515-1524.
- Furman, S. "Fundamentals of Cardiac Pacing." American Heart Journal 73 (1967), 261-277.
- Gregg, D. "Reassurance." American Journal of Nursing 55(1955), 171-174.
- Healy, K.M. "Does Preoperative Instruction Make A Difference?" American Journal of Nursing 68 (January, 1968), 62-67.
- Henderson, V. "The Nature of Nursing." American Journal of Nursing 64 (August, 1964), 62-68.
- Hinkle, L.H. "The Concept of Stress in Biological and Social Sciences." Science, Medicine and Man 1 (April, 1973), 31-48.
- Hunn, V. "Cardiac Pacemakers." American Journal of Nursing 69 (April, 1969), 749-754.
- Johnson, J.E. "Effects of Structuring Patient's Expectations on Their Reactions to Threatening Events." Nursing Research 21 (November-December, 1972), 499-503.

- Kos, B. and Culbert, B. "Teaching Patients About Pacemakers." American Journal of Nursing 71 (March, 1971), 523-527.
- Kreuter, F.R. "What is Good Nursing Care." Nursing Outlook 5 (1957), 302-304.
- Lambertsen, E.C. "Nursing Definition and Philosophy Precede Nursing Goal Development." Modern Hospital 103 (September, 1964), 136.
- Lindeman, C.A. "Nursing Intervention With the Presurgical Patient - Phase 11." Nursing Research 21 (May-June, 1972), 196-209.
- Lindeman, C.A. and Van Aernam, B. "Nursing Intervention with the Pre-Surgical Patient - The Effects of Structured and Un-Structured Preoperative Teaching." Nursing Research 20 (July-August, 1971), 319-332.
- Maddox, G. and Eisdorfer, C. "Some Correlates of Activity and Morale Among the Elderly." Social Forces 40 (1962), 254-260.
- Meyers, M.E. "The Effects of Types of Communication on a Patient's Reaction to Stress." Nursing Research 13 (Spring, 1964), 126-131.
- Mohammed, M.F.B. "Patient's Understanding of Written Health Information." Nursing Research 13 (Spring, 1964), 100-108.
- Neuman, M.A. "Identifying and Meeting Patient Needs in the Short-Span Nurse-Patient Relationship." Nursing Forum 2 (1963), 25.
- Nield, M.A. "The Effect of Health Teaching on Anxiety Level of Patients With Chronic Obstructive Lung Disease." Nursing Research 20 (November-December, 1971), 537-541.
- Nolan, S.P., Crampton, R.S., McGuire, L.B., McGann, Holz, H.C., and Muller, W.H. "Factors Influencing Survival of Patients with Permanent Pacemakers." Annals of Surgery 185 (January, 1977), 122-127.

- "Pacemaker People" - Editorial. Canadian Medical Association Journal 111 (December 21, 1974), 1297-1298.
- Packard, R.B. and Van Ess, H. "A Comparison of Informal and Role-Delineated Patient Teaching Situations." Nursing Research 18 (1969), 443-446.
- Palm, M.L. "Recognizing Opportunities for Informal Patient Teaching." Nursing Clinics of North America 21 (1972), 669-678.
- Pender, N.J. "Patient Identification of Health Information Received During Hospitalization." Nursing Research 23 (May-June, 1974), 262-267.
- Pohl, M.L. "Teaching Activities of the Nurse Practitioner." Nursing Research 14 (Winter, 1965), 4-11.
- Putt, A.M. "One Experiment in Nursing Adults with Peptic Ulcers." Nursing Research 19: 484-494.
- Redman, B.K. "Guidelines for Quality of Care in Patient Education." Canadian Nurse (February, 1975), 19-21.
- Report of the Inter-Society Commission for Heart Disease Resources. Implantable Cardiac Pacemakers. Circulation 50 (October, 1974), A21-A35.
- RNABC News 8 (July, 1976), 7.
- Royle, J. "Coronary Patients and Their Families Receive Incomplete Care." Canadian Nurse 69 (February, 1973), 21-25.
- Schmitt, F.E. and Wooldridge, P.J. "Psychological Preparation of Surgical Patients." Nursing Research 22 (March-April, 1973), 108-116.
- Shock, N.W. "The Physiology of Aging." Scientific American (January, 1962), 100-110.

- Stone, V. "Give the Older Person Time." American Journal of Nursing 69 (October, 1969), 2124-2129.
- Sweetwood, H. "Patients With Pacemakers." Nursing 77 (March, 1977), 44-52.
- Tagliacozzo, D.M., Luskin, D.B., Lashof, J.C. and Ima, K. "Nurse Intervention and Patient Behaviour." American Journal of Public Health 64 (June, 1974), 596-603.
- Tyzenhouse, P.S. "Myocardial Infarction: Its Effect on the Family." American Journal of Nursing 73 (June, 1973), 1012-1013.
- Zuckerman, M. "Development of an Affective Adjective Check List for the Measurement of Anxiety." Journal of Consultant Psychology 24 (October, 1960), 457-462.

Unpublished Manuscripts

- Baines, C. "An Experimental Study to Compare the Effectiveness of Individual and Group Preoperative Instruction." Unpublished Master's Thesis, University of British Columbia, 1974.
- Goodman, G.W. "An Experimental Study to Evaluate the Effect of Planned Teaching on the Self-Medication Practices of Older Ambulatory Cardiac Patients." Unpublished Master's Thesis, University of British Columbia, 1972.
- Kos, B. and Culbert, B. "Teaching Geriatric Patients with Implanted Cardiac Pacemakers." Unpublished Master's Thesis, Adelphi University, 1969.
- O'Leary, N. "An Assessment of Patient's Activity, Knowledge and Anxiety after Prosthetic Aortic Valve Replacement." Unpublished Master's Thesis, University of Toronto, 1974.

Power, D.M. "The Effectiveness of Planned Teaching of Mothers with Children Treated in Emergency Departments." Unpublished Masters Thesis, University of British Columbia, 1972.

Skelton, J.M. "An Experimental Study to Evaluate the Effectiveness of a Diabetic Teaching Tool." Unpublished Masters Thesis, University of British Columbia, 1973.

Government Publications

Final Report of the Special Committee of the Senate on Aging. Ottawa
Queen's Printer and Controller of Stationary, 1966.

Vital Statistics - Canada. 1967. Dominion Bureau of Statistics, Ottawa:
The Queen's Printer, 1969.

A P P E N D I X A

CONSENT FORM - GROUP 1

(Experimental Group)

I, the undersigned, agree to participate in this project and understand that:

1. The aim is to provide patients and their families with information about pacemakers and to explore their concerns.
2. There will be 3 in-hospital interviews, a slide-tape programme and 2 home visits, two and four weeks after discharge.
3. I will be asked to fill out 2 questionnaires (maximum 20 minutes each) during the first interview and at each home visit.
4. There are no risks involved.
5. All information gathered will be confidential.
6. I am free to withdraw from the project at any time.

Signature of the Participant

Signature of the Nurse

Date: _____

CONSENT FORM - GROUP 2

(Control Group)

I, the undersigned, agree to participate in this project and understand that:

1. The aim is to determine the need for a teaching programme for patients with permanent pacemakers and their families.
2. I will be asked to fill out 2 questionnaires while in the hospital, each questionnaire lasting about 20 minutes.
3. There will be two home visits (two and four weeks after discharge) at which time I will be asked to fill out 2 questionnaires (taking not more than 20 minutes each to do).
4. There are no risks involved.
5. All information gathered will be confidential.
6. I am free to withdraw from the project at any time.

Signature of the Participant

Signature of the Nurse

Date: _____

A P P E N D I X B

SCRIPT AND STORYBOARD FOR THE SLIDE-TAPE PROGRAMME

Written by: Valerie J. Shannon, B.Sc.N.

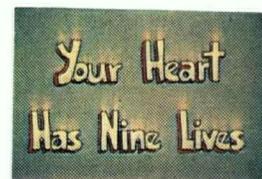
Produced by: Stuart Cryer and Jean Pedlar

PART 1

YOUR HEART HAS NINE LIVES

Music: "Rainbows All Over Your Blues"

Written and Performed by John B. Sebastian

Lyrics: "I've been waiting my time,
Just to talk to you.You've been lookin all down
at the mouth

And down at your shoes

Well baby, I've come to give
you the news,
I'll paint rainbows all over
your blues.""Come on, Charlie. You
can do it."*(Shouted by a crowd)*

(Female voice) "Charlie just isn't himself these days. Look, he is even having trouble lifting a bowling ball."



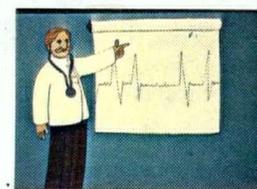
(Charlie to the Doctor)
"It all started a couple of weeks ago. I just felt tired, weak and for the first time in my life I fainted. And the funniest thing was, I think I even felt my heart skipping beats!"



(The Doctor) "Well, I think that I can help you Charlie. From the symptoms that you describe and your cardiogram, I can see that you have a condition known as heart block. A cardiac pacemaker is the answer for your problem."



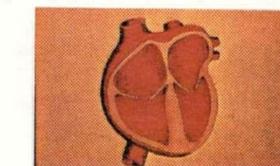
So you are about to become the owner of a heart pacemaker.



Your doctor and nurse want you to know why you need this pacemaker and what your future responsibilities will be.



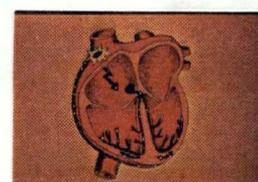
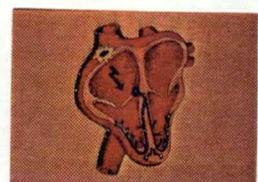
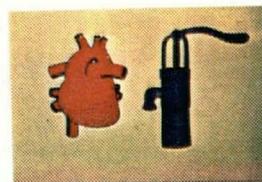
First, let's look at the heart, what it does, and how it does it.



The heart is a pump made of very strong muscle. It pumps blood throughout your body bringing oxygen and food to all parts of your body.

To do its' work, your heart muscle uses electrical impulses produced by a special center called the natural pacemaker.

From this natural pacemaker, impulses travel down a certain path along the muscle walls causing the heart to contract and to pump blood.



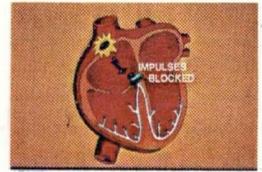
Everybody has a natural pacemaker



However, some hearts don't beat in a healthy way.



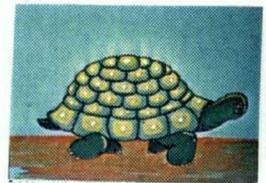
For various reasons, something happens to prevent the electrical impulses from travelling through the heart along the usual pathways. The natural pacemaker doesn't work as well as it once did.



Because of this, your heart may pump too quickly. . . .



Too slowly. . . .



Irregularly. . . .



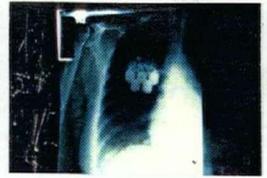
This causes the other parts of your body to be deprived of the food and oxygen that they need in order to do their job.



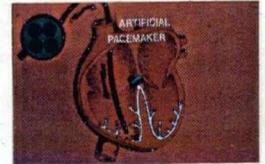
Medical science has found the answer to this problem.



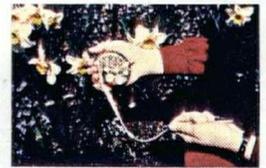
The answer is to place an artificial pacemaker inside your body.



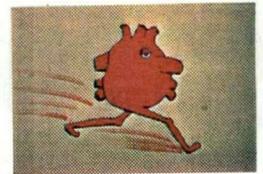
The artificial pacemaker works in much the same way as your natural pacemaker once did.



The artificial pacemaker is a SMALL device that uses electrical charges to stimulate your heart.



These charges, WHICH YOU CANNOT FEEL, help your heart beat at a healthy and steady rate.

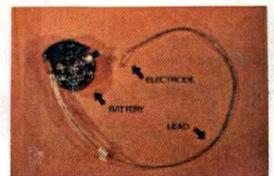


Your new pacemaker has three important parts:

The battery; which supplies the electrical impulses

The lead; which is a tiny wire connecting the battery to your heart

The electrode; which delivers the electrical charges to the heart



All three of these items make up your artificial pacemaker and help your heart pump almost as well as it once did.



You must remember though, this new pacemaker doesn't change your underlying heart trouble.



In the next part of this series, we will talk about the procedure for having an artificial pacemaker inserted.



If you have any questions about WHY you need an artificial pacemaker, ASK your nurse or doctor.



Meanwhile back at the bowling alley. . . . Charlie is home from the hospital and back to his usual leisure time activities.



His team is really counting on him to bowl a good game. Charlie, true to form doesn't disappoint them.

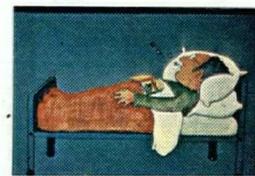


You would be surprised who has a pacemaker today.



Music: "Rainbows All Over Your Blues"

Lyrics: "Ah, give up is all you've really got to say,



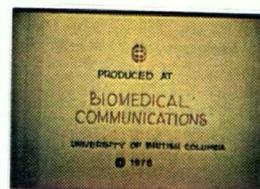
It's time to find a new lifestyle,
Cuz this really ain't the way.



Let's go for a ride on my trampoline,
I can show you the prettiest mountain
that you've ever seen



You better rush to your closet,
And fish out your blue suede shoes,
I'll paint rainbows all over your blues!"

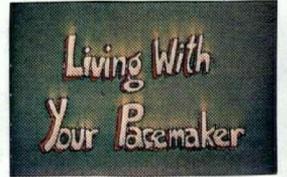


PART 2

LIVING WITH YOUR PACEMAKER

Instrumental Music: "Celebration For A Grey Day"

Written and Performed by: Richard Fariña



First Voice:

"When I first got my pacemaker, or before that I should say, I was a strong, hard working man. And after I got the pacemaker naturally I wasn't able to work and that set me back and I felt bad about it. But now I can see the light and with the pacemaker, or I should say, without the pacemaker, I wouldn't be alive today."



Second Voice:

"Well, actually, I don't think of it anymore . . . I know it is there and it's a good thing to have there too."



Third Voice:

"I ordered pacemakers for other people and hoped that I'd never have to have one myself."

Interviewer:

"And now that you have one do you still feel that way about a pacemaker."



Third Voice:

"No, I don't feel that way now. I think that its done a lot of good. . . . I'm aware that I have my pacemaker, of course. I don't weigh very much, so it's heavy and the straps bother it or any heavy clothing will."

Fourth Voice:

"Well, I never knew that I had it. As a matter of fact, I never think of the pacemaker and I don't know that I have it without something call my attention to it. . . . Having a pacemaker as far as I'm concerned, is no worse than having a tooth pulled."



When you go home from the hospital, you will probably be able to lead a normal life like any other person of your age. With the help of the artificial pacemaker, your heart should pump as regularly as it once did.

A pacemaker, like any other mechanical device, needs to be cared for and the following information plus your common sense will help you look after yourself and your health.

Naturally you should ask your doctor about what activities you can now do but generally most people with pacemakers can:

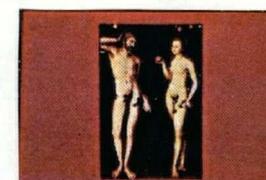
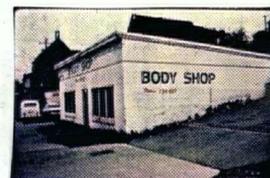
- Bath and shower. Your pacemaker is completely protected against contact with water.

- Take part in moderate recreation and exercise such as walking, dancing, swimming, gardening, lawn mowing, fishing, watching TV, doing household chores or any other hobby that you have.

- Resume sexual activity.

- Go back to work.

- Travel by plane, train, boat, and even drive your own car.



The right amount of activity should make you feel better not worse.



As far as clothing is concerned, choose garments that fit well and do not put much pressure on the skin over your pacemaker battery.



The women will find that a well fitting bra, with padding under the strap on the side of the pacemaker battery, will provide comfort and support.



Most electrical devices are safe and will not interrupt the working of your pacemaker.



A few words of caution though:



Only use electrical devices that are in good repair and properly grounded. Never use an electrical item in damp or wet areas.



Specifically . . . if you use an electric razor, do not use it right over the area where your battery is placed.



If you have a microwave oven, stand at least three feet from it.



Your pacemaker will trigger airport screening devices because of the metal in it, so before going through the screener, tell the airport personnel that you have a pacemaker.



If you are working on the engine of your car, turn off the ignition. If you don't, the engine may interfere with your pacemaker.



Remember, most electrical devices won't interfere with the working of your pacemaker. Your pacemaker is safe and reliable.



If a device does interfere, how will you know?
You will feel weak, dizzy or light-headed. The solution is simple. Move away from the device. Get the device fixed.



It is important for you to tell other doctors, your dentist and physiotherapist that you have a pacemaker. They might be using equipment that could interfere with your pacemaker.



You can and should carry with you at all times an identification card or a medic alert bracelet saying that you are the owner of a pacemaker. A card will be given to you before you leave the hospital.



As mentioned in Part 1, the new pacemaker doesn't change your underlying heart problem so it is necessary that you continue to take the medications and the diet that your doctor may have prescribed for you.

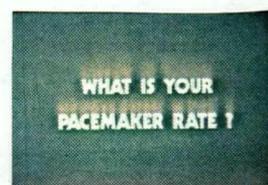


There are ways that you can determine if your pacemaker is working well.



Daily pulse taking is one of them.

Your pacemaker is set at a certain rate. ASK your doctor what your rate is. It will probably be written on your identification card also.



Your own pulse should never be more than 5 beats below the rate your pacemaker is set at.

To take your pulse, lightly feel the outer part of your wrist, just down from your thumb using the first two fingers of your opposite hand.



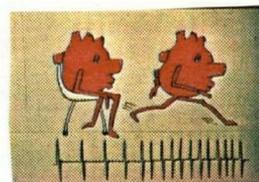
Count the number of beats you feel in sixty seconds. That is your pulse rate.



Write on a calendar or diary your pulse rate each day. Take your pulse at the same time each day, preferably after you have been resting. Your doctor will find it helpful to know what your pulse is.



It is normal for your pulse to vary slightly from day to day and of course your pulse will go up when you exercise.



Pulse taking is a way you can tell if your pacemaker is working properly. If your pulse rate slows down more than 5 beats per minute, check your pulse a second time. If it remains at this lower rate, **CALL YOUR DOCTOR IMMEDIATELY.**



Another way you will know if your pacemaker is not working well is to watch for any of these symptoms:

DIZZINESS
 CHORTNESS OF BREATH
 CHEST PAIN
 PROLONGED HICCOUGHS
 MUSCLE TWITCHING

DIZZINESS
 SHORTNESS OF BREATH
 CHEST PAIN
 PROLONGED HICCOUGHS
 MUSCLE TWITCHING

Again, check your pulse and Call Your Doctor.

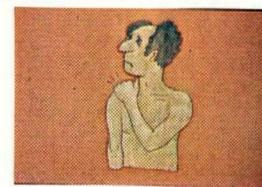


Although this happens rarely, if you have a fever, along with redness, swelling or drainage along the scar where your pacemaker battery is. . . .

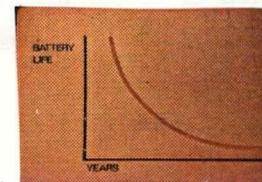
Call Your Doctor because you probably have an infection.



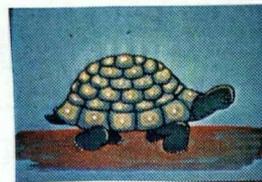
Lastly, a small machine called a **SCREENER** can be purchased from your doctor. This device sends an electrical picture of your heart via your telephone at home to the Coronary Unit at your local hospital. Not all patients need one but you might like to discuss this with your doctor.



Your battery has been designed to work for a certain number of years and then it will have to be changed. Your doctor will tell you how long your battery will be expected to last.



Your battery wears down slowly and rarely does it fail suddenly.



For this reason, your doctor will want to see you regularly. The doctor and you will be continuously checking your pacemaker and deciding when the battery needs to be changed. Your doctor will also be looking at the diet and drugs you may be taking to see how well they are working.



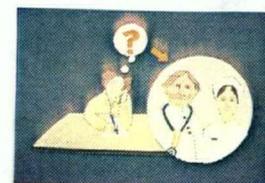
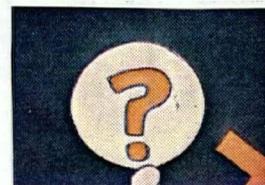
The pacemaker battery replacement procedure, which is done BEFORE the battery wears out, is a SIMPLE one. You will again come into the hospital and be put to sleep while a new pacemaker system is put into your heart.



Booklets are available with much of this information in them. Ask your nurse for one.



I'm sure that you have many questions. Jot them down and have a talk with your doctor or nurse.



Instrumental Music
(same as opening)

Fifth Voice:
"I've had mine in two years,
July 6th."

Interviewer:
"Have you had any problems with your
pacemaker?"



Fifth Voice:
"No problems whatsoever."

First Voice:
"I take a great interest in bowling and
we bowl twice a week and . . . I have a
neighbour which has a pool room and we go
playing pool . . . and we go playing whist
with the Senior Citizens Oh, we're
kept pretty busy."

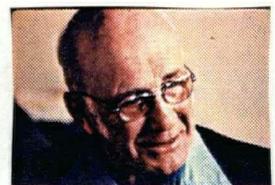


Third Voice:
"At first having a pacemaker made me ner-
vous but I have been on a plane and I have
been on a Mexican cruise and did very
well."



Interviewer:
"Have you been able to travel?"

Fifth Voice:
"Oh yes . . . drive my car . . . no
restrictions whatsoever. In fact, I am
going away on April 23rd on a trip . . .
Well, I might as well do it while my
batteries are good."



"I can dig holes for fence posts and carry on my normal thing you know, but I do get short of breath just once in a while . . . when I over do it. Otherwise, you've got to pace yourself to it you know."



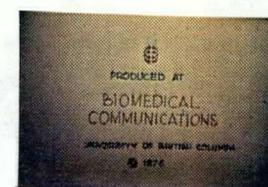
Second Voice:

"The only advice I could give to someone else from my own experience is not to be afraid of a pacemaker because it is a wonderful thing and it helps you and . . . well, what more can I say."



Fifth Voice:

"Honestly, it's wonderful you know, to have it there. It seems to give you a lot more security. I think that I might not be here today if I didn't have it on."



A P P E N D I X C

ACTIVITY INTERVIEW SCHEDULE

Activity Check List

(Check the Appropriate Response)

Activity	Frequency			Reasons for (-) Response			
	Reg.	Occ.	Never	No Need	No Interest	Unable	Afraid
dress oneself							
feed oneself							
use the toilet alone							
bath							
shower							
climb stairs							
walk 1 block							
walk 5 blocks							
walk 1 mile							
resume sex							
vacuum							
dust							
wash dishes							
wash clothing by hand							
washing clothing by machine							
wash floors/walls							
cook							
garden							
mow the lawn							
do minor house repairs							
use all electrical appliances							
grocery shop							
drive a car							
take a bus							
take a plane							

Activity Check List (continued)

Activity	Frequency			Reasons for (-) Response			
	Reg.	Occ.	Never	No Need	Interest	Unable	Afraid
take a boat							
take a train							
visit with friends							
going to church							
playing bingo							
play cards							
watch TV							
listen to radio							
bowl							
recreational swimming							
attend Senior Citizens							
return to previous job							
return to lighter work							
take own pulse							
hobbies (list them)							
other							

Were/are you satisfied with your level of activity? Yes _____ No _____

Activity Interview Schedule (continued)

Have you had any shortness of breath? _____

Chest pain? _____

Wound drainage? _____

What did you do? _____ S.O.B. _____ Chest Pain _____ Wound Drainage _____

called the doctor

rested

nothing

other

Are you taking any medications? Yes _____ No _____

Which ones and why? _____

Are you following any type of diet? _____

What is your weight? _____ don't know _____ no scales _____ lower than at discharge _____ higher than discharge _____

Did you receive a booklet about your pacemaker? Yes _____ No _____

Have you read it? Yes _____ No _____

If no, why? No time _____
No interest _____
Don't know _____
Other _____

Was it helpful? Yes _____ No _____

In what way _____

Did your significant other read it? Yes _____ No _____

If no, why? No time _____ No interest _____ Don't know _____ Other _____

How does it feel to have a pacemaker? _____

Have you many friends, relatives, etc. that you are close to? Yes _____ No _____

How often do you see them? Occ. _____ Never _____ QD _____

Activity Interview Schedule (continued)

Do you enjoy outings with others? Yes _____ No _____

Do you have someone with whom you can discuss your problems?
Yes _____ No _____

Are you happy with your way of life at the moment?
Yes _____ No _____

How would you describe your morale (spirits) at the moment? (e.g., low, fair, good, high, etc) _____

A P P E N D I X D

PATIENT DATA SHEET

Name: _____ Unit No: _____

Address: _____

Phone: _____ Age: _____ Place of Birth: _____

Marital Status: _____

If widowed, separated, divorced, when _____

Lives with (1) spouse (2) relatives (3) alone (4) other

Years of schooling: _____

Occupation: _____ Employed now? _____

When did he/she become unemployed _____ retire _____

If retired, was it a forced or voluntary decision? _____

Date of Admission: _____

Discharge: _____

PACEMAKER implanation: _____

Doctor: (in-hospital) _____ (family) _____

Surgeon: _____

Diagnosis: _____

Previous medical history: _____

Number of hospitalizations: _____

Type of Pacemaker inserted: _____

Rate: _____

A P P E N D I X E

Initials: _____

INSTRUCTIONS: Circle the letter that best answers the question or statement.

1. The main purpose of the heart is:
 - (a) to pump blood throughout your body
 - (b) to make your pulse regular
 - (c) to make you feel good

2. The heart has a natural pacemaker which makes it beat regularly.
 - (a) True
 - (b) False

3. If part of your heart becomes damaged, your heart may not beat regularly.
 - (a) True
 - (b) False

4. An artificial pacemaker cures all heart damage.
 - (a) True
 - (b) False

5. The artificial pacemaker is a small device that uses electrical charges to make your heart beat regularly.
 - (a) True
 - (b) False

6. When your pacemaker is working properly,
 - (a) you will hiccough
 - (b) you will feel dizzy
 - (c) you won't feel anything

7. Bathing, showering and swimming will affect your pacemaker.
 - (a) True
 - (b) False

8. Should your incision become red, sore or drain any liquid:
- (a) ignore it, it will disappear gradually
 - (b) call your doctor immediately, it may be infected
 - (c) take your pulse
9. When you have an artificial pacemaker, you won't need to visit your doctor regularly.
- (a) True
 - (b) False
10. Which activity might interfere with your pacemaker?
- (a) shopping in an appliance store
 - (b) playing an electric organ
 - (c) leaning under the hood of your car when the engine is running
11. Most electrical devices are safe for you to use.
- (a) True
 - (b) False
12. Exercising regularly will make you feel worse.
- (a) True
 - (b) False
13. Prolonged hiccoughs are a sign that your pacemaker is not working properly.
- (a) True
 - (b) False
- 14.. Why do you take your pulse each day?
- (a) to stay in practice
 - (b) to make the pacemaker work
 - (c) to know that your heart is beating at or above the rate set on your pacemaker

15. What would you do if you suspected that your pacemaker was not working properly?
- (a) call the doctor immediately
 - (b) call the doctor tomorrow after you have had a good night's sleep
 - (c) go to your friend's house anyway
16. The artificial pacemaker runs on batteries.
- (a) True
 - (b) False
17. These batteries are designed to last forever.
- (a) True
 - (b) False
18. You should carry a pacemaker identification card or medic alert bracelet.
- (a) only when you go to the doctor
 - (b) at all times
 - (c) never, it doesn't really matter
19. You have just run up a flight of stairs to answer your phone. You feel your heart racing and decide to take your pulse. (Pretend that your pacemaker rate is 70). Your pulse rate, after running up the stairs, is 90. What does this mean?
- (a) your pacemaker isn't working properly
 - (b) your own heart is beating fast because you have run upstairs--this is normal
 - (c) you should call your doctor
20. Travel in cars and airplanes is not recommended when you have a pacemaker.
- (a) True
 - (b) False

21. When you visit any doctor, dentist, or physiotherapist, it is important to tell them that you have a pacemaker.

- (a) True
- (b) False

22. Most people with pacemakers lead full, normal and safe lives.

- (a) True
- (b) False

A P P E N D I X F

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

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STAI FORM X-1

NAME _____ DATE _____

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

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	①	②	③	④
2. I feel secure	①	②	③	④
3. I am tense	①	②	③	④
4. I am regretful	①	②	③	④
5. I feel at ease	①	②	③	④
6. I feel upset	①	②	③	④
7. I am presently worrying over possible misfortunes	①	②	③	④
8. I feel rested	①	②	③	④
9. I feel anxious	①	②	③	④
10. I feel comfortable	①	②	③	④
11. I feel self-confident	①	②	③	④
12. I feel nervous	①	②	③	④
13. I am jittery	①	②	③	④
14. I feel "high strung"	①	②	③	④
15. I am relaxed	①	②	③	④
16. I feel content	①	②	③	④
17. I am worried	①	②	③	④
18. I feel over-excited and "rattled"	①	②	③	④
19. I feel joyful	①	②	③	④
20. I feel pleasant	①	②	③	④



CONSULTING PSYCHOLOGISTS PRESS
577 College Avenue, Palo Alto, California 94306

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SELF-EVALUATION QUESTIONNAIRE

STAI FORM X-2

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I tire quickly	①	②	③	④
23. I feel like crying	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I am losing out on things because I can't make up my mind soon enough	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I am inclined to take things hard	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I try to avoid facing a crisis or difficulty	①	②	③	④
35. I feel blue	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④