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AN EVALUATION OF A CORONARY EDUCATION PROGRAM

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AN EVALUATION OF A

CORONARY EDUCATION PROGRAM

by

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my husband, Kim

my children, Clement, Christian and Jonathan

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CHAPTER 1

THE PROBLEM

Increasingly, the recipients of medical and health care are asking for, even demanding, knowledge about their diseases and the maintenance of health (3:3,9). Health care workers have responded by providing such knowledge and information using different methods in various settings. Hospitals now include patient teaching as part of their care (2:1). This situation has evolved because both patients and health care workers recognize that the informed patient is better able to maintain optimum health and prevent the unnecessary occurrence of disease complications (48:96; 39:266).

Illness brings with it fear, anxiety, and concerns that prompt the sick person to seek information about his illness, its treatment and the prevention of its recurrence. Without this information it is difficult, if not impossible, for him to take an active part in working to promote his optimum health. With this information he will know how he can better take care of himself and further his own self care (46:22).

Providing the patient with knowledge to promote self care is considered an essential part of nursing theory. "Nursing is assisting the person in his self-care practices

in regard to his state of health" (25:601). "Self-care is the practice of activities that individuals personally initiate and perform on their own behalf in maintaining life, health, and well being " (37:35). There are three kinds of self care: (1) universal, to maintain basic human needs; (2) developmental; and (3) health deviation, required in illness and injury. If persons with health deviations are to become competent in managing their self care, they must acquire and apply relevant health knowledge. This knowledge should include an awareness of the beneficial or harmful results which come by taking one course of action in preference to another (37:32).

Activities of self care are learned (37:14). "Learning is most effective when an individual is ready to learn, that is when he feels a need to know something" (46:40). The survivor of a myocardial infarction considers information about what has happened to him and what he can expect in the future very important, possibly life and death information. Teaching, and the learning which follows, is thus facilitated when the learner considers the information communicated important (69:220).

What is learning? "Learning is a process by which an activity originates or is changed through reacting to an encountered situation..." (18:2). It is also defined as "a change in behavior which results from practice or experience" (10:2). Anticipating a reward activates learning (10:37). The reward of better health or control over disease can activate learning of health related know-

ledge and motivate behavior changes.

Hospital patient teaching programs attempt to provide patients with the knowledge needed for self care. These programs need to be evaluated (63:2). Are the goals of the program being reached? A hospital teaching program involves patients from various backgrounds; is the program effective for all patients? What areas of the program are most effective, least effective? What is the program lacking? A questioning evaluation can improve the educational program and provide information for decisions about the future of the program.

Purpose of the Study

The purpose of this study was to evaluate a hospital educational program for myocardial infarction patients. This five year old program had never been evaluated. The investigator, a staff nurse on the unit during this time, helped develop the program and has been involved in its operation.

Statement of the Problem

Does an educational program for hospitalized patients following their first myocardial infarction increase their knowledge scores relative to their disease?

Definition of Terms

The definition of terms used in this study are as follows.

Educational program - the teaching program developed in a local community hospital for its myocardial infarction patients consisting of:

1) a series of audio-visual presentations followed by small group discussions on the subjects:
   How Your Heart Works.
   What is a Heart Attack?
   How Your Heart Heals.
   What To Do If You Have Chest Pain.
   What Are The Risk Factors Of Heart Disease?
2) printed booklets with illustrations on the etiology, treatment, and prevention of heart disease for self study.
3) instruction about diet and heart disease by dietitians.
4) instruction about physical activity after a myocardial infarction by physical therapists.
5) discussions with chaplin or social worker about any concerns.
6) monthly evening class for discharged patients.

First myocardial infarction - a first myocardial infarction as diagnosed by the patient's physician on the basis of an abnormal EKG and/or elevations in CPK, LDH, and/or SGOT levels.

Knowledge relative to their disease - the percentage of questions answered correctly on a written posttest about the anatomy and physiology of the heart and the etiology, treatment and prevention of heart disease.

Hypothesis

Patients who participate in a coronary educational program following their first myocardial infarction will have a significant increase in knowledge relative to their disease.

Assumptions

1. A life threatening disease such as a myocardial infarction can motivate learning about the disease and its control.

2. Learning can be measured by means of a written test.

Limitations

1. The study design includes manipulation but lacks randomization and a control group, hence, of the threats to internal validity, only selection and mortality are controlled.

2. Achievement tests may not measure the full extent of the knowledge gained by each participant; therefore, knowledge may have been gained that was not evident on testing.

3. The study's generalization is limited to alike populations, settings, and education programs of which none are known. Therefore, the study has no external validity.

Delimitations

1. The number of patients was limited to twelve.

2. Post-testing was limited to short term recall only.

3. Participants were limited to first myocardial infarction patients who were literate and were not health care providers.

4. A control group to receive only the pre-test and post-test was not used, so learning from the pre-test alone cannot be ruled out.

Methodology

All myocardial infarction patients in the Progressive Coronary Care Unit received the educational program upon permission of their physicians. Participants in this study were given a written test on their knowledge related to their disease before the educational program and upon its completion. A paired t-test was used to test for any significant increase in their knowledge.

CHAPTER 2

REVIEW OF LITERATURE

Patient teaching programs have required health care providers to expand their knowledge to include theories of learning and evaluation. To teach patients efficiently and effectively, expertise must also be gained about methods of instruction, especially those dealing with adult learners.

Educational Evaluation Theory

Education, defined as the imparting and acquisition of knowledge, is consistently supported as good by almost all people. Faith in the value of education, however, is without scientific support unless educational programs, including their objectives, content, methods, and outcomes, are studied systematically. Evaluations to ascertain actual worth are now being required for the many educational programs in various fields of knowledge. Some of the programs require vast financial resources, either public or private, consequently, some proof of value is considered necessary to justify continuing these expenditures.

Since educational evaluation is fairly new and still developing, its theorists do not agree fully on goals and methods. Some feel evaluation must follow the research model, using experimental designs and producing new knowledge showing the relationships among variables (50:15,35).

Others feel the goal of evaluation is to obtain information in order to judge the worth of a program, and the experimental research design is not always necessary or applicable (71: 19,41; 57:4023). Still others consider evaluation a form of applied research as contrasted with basic research (71:23). Basic research is directed toward increasing the base of knowledge in a discipline for the sake of knowledge itself. Applied research focuses on finding solutions to practical problems by applying knowledge (40:26; 71:22). Those who consider evaluation merely a form of applied research which focuses on one program ignore the

> ...difference between the two - the level of generality of the knowledge produced. Applied research is...aimed at producing knowledge relevant to providing a solution (generalizability) to a general problem. Evaluation is focused on collecting specific information relevant to a specific problem, program, or product

and cannot be generalized (71:23).

Characteristics Distinguishing Evaluation from Research

Worthen and Sanders suggest several characteristics which distinguish evaluation from research (71:26-38).

1. Motivation of the inquirer. Research is undertaken to satisfy curiosity; evaluation contributes to the solution of a particular practical problem.

2. Objective of the search. Research seeks conclusions, while evaluation seeks information which can help with decisions.

3. Laws versus descriptions. Research results in laws. Evaluation results in a description of a particular thing

or program.

4. Role of explanation. Research can make explanations from its laws. Evaluation can be done properly without producing an explanation of how a program produces its effects or why the program is good or bad.

5. Autonomy of the inquiry. Scientific research requires independence. Evaluation is requested by a client; the evaluator works with the client to provide the information needed for decision making.

6. Properties of the phenomena which are assessed. Educational research attempts to assess scientific truth, identified by empirical verifiability and logical consistancy. Educational evaluation assesses the worth of a thing or program, its usefulness to society.

7. Salience of the value question. The determining of value is not the main object of research. In evaluation, value questions usually determine what information is collected.

8. Investigative techniques. Research requires experimental methods. These methods are often inappropriate or impossible to achieve in evaluation.

9. Criteria for judging the activity. Research is judged on the basis of its internal validity (whether the results are attributable to the independent variable or to other extraneous factors) and external validity (whether the results have generalizability to other individuals and settings). Evaluation is judged on the basis of whether the information gathered is actually the reality-based

information desired and whether the information is believable to those who use it to make decisions (71:26-38).

Definitions of Evaluation

There are three schools of thought for defining evaluation. Some equate evaluation with measurement only and feel student scores on tests are sufficient for evaluating a program. Others feel the judgement of professionals in the field is adequate, and still others feel that comparing student performance with objectives of the program is satisfactory (57:9; 71:20).

Evaluation as measurement. Measurement as a means of evaluation was introduced by Robert Thorndike in the early 1900's. Standardized achievement tests were developed for different ages and fields of study, as were personality and interest tests. Changes shown in students by these measurements will reflect the value of the program evaluated these theorists believe (60:30).

Evaluation as professional judgement. The strategy of using the judgement of professionals in the field to evaluate is widely used in schools and universities today. Those supporting this method feel measurement alone is inadequate for evaluation. Rather, since many types of decisions can be made from the evaluation, many varieties of information would be useful. Professionals in the field, it is argued, are well equipped to decide what information would be helpful and how to collect it. Cronback supports this strategy defining evaluation as: "...the collection

and use of information to make decisions about an educational program" (71:44). He believes this information can then be used to make decisions to improve the methods and materials of the course, to identify the needs of individual students, and to judge the educational system, its teachers and administrators (71:44). Scriven adds to this strategy his belief that evaluation must include judgement, the determination "of the worth or merit of something" (71:104). Just showing that goals are achieved is not enough; a proper evaluation must judge the goals also, according to Scriven (71:73). Thus "the main emphasis of the professional judgement approach to evaluation is that of application of presumed expertise to yield judgements about quality or effectiveness" (71:127).

Evaluation as comparing performance with objectives. The third approach to evaluation involves comparing performances with the objectives of the educational program. According to Ralph Tyler, an early proponent of this approach, the major steps in program evaluation are to establish objectives and define them in behavioral terms, to find situations in which the objectives can be measured and achievement shown, and then to collect student performance data and compare them with the behaviorally stated objectives. "Evaluation...is a recurring process," with evaluation feedback being used to reformulate objectives, and the reformulated objectives modifying later plans for evaluation (71:156).

Evaluation as decision-making. During the last decade

newer definitions of evaluation reveal it as a "process of identifying and collecting information to assist decision makers in choosing among available decision alternatives" (71:20). Stufflebeam supports this definition through his decision-management oriented approach. He says: "Evaluation is the process of delineating, obtaining, and providing useful information for judging decision alternatives" (57:40). His definition reflects the dictionary definitions of the key terms: evaluation as the ascertainment of value, and decision as the act of making up one's mind. He suggests the existence of competing alternatives from which one must choose according to their relative values. The job of the evaluator is not to make nor implement program decisions, but to provide information to enable the decision maker to do this (57:93). There are four types of educational decisions to be made:

(1) planning decisions to determine objectives;
(2) structuring decisions to design procedures;
(3) implementing decisions to utilize, control, and refine procedures; and
(4) recycling decisions to judge and react to attainments (57: 80-84).

According to Stufflebeam, there are four types of evaluation: context, input, process, and product (57:218). The purpose of context evaluation is to determine objectives based on information pertaining to the educational environment, unmet needs and opportunities, and problems that prevent needs from being met or opportunities used. Input

evaluation provides information for determining how to use available resources to achieve objectives. Process evaluation provides information for predicting and overcoming problems during and after implementation of the program. Product evaluation serves to measure and interpret attainments of the program, not only at its end, but as often as necessary during the program (57:218-232).

Another advocate of the decision-management approach to evaluation is Alkin who believes:

> Evaluation is the process of ascertaining the decision areas of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision-makers in selecting among alternatives (71:150).

He agrees with the content of Stufflebean's four types of evaluation but subdivides process evaluation into program implementation and program improvement. Program implementation provides information about whether the actual program meets the description of the intended program (71:153). Program improvement provides information about how the program is functioning, whether objectives are being met, and "what unanticipated outcomes are being produced" (71:151).

Design for Educational Evaluation

The proper design for educational evaluation is still in dispute. Some feel that design must be the traditional research design with randomization, control groups, and manipulation; others feel this design is inappropriate or unrealistic and have suggested other methods.

Those who argue for the experimental design believe it is necessary to show causality between the program and its goals. Leonard Rutman states that the evaluation process must apply "scientific procedures to accumulate reliable and valid evidence on the manner and extent to which specified activities produce particular effects or outcomes" (50:16). The use of an experimental design will prevent the error of attributing to the program an effect actually produced by some uncontrollable variable (50:33). Others feel if an experimental design is not feasible, then quasi-experimental designs, such as an intact-group or time-series design, should be used (71:225,227).

Still others argue that the purpose of evaluation is "not to establish highly controlled conditions in which possible sources of confounding are filtered out, but to set up conditions of invited interference from all factors that might ever influence a learning transaction" (57:22). Educational evaluation seeks to identify information about actual learning situations, not contrived situations (57:23). Also, "in the field setting, random selection and assignment are often impossible on moral grounds or simply unfeasible" (57:141). Since experimental designs are difficult and expensive to implement, a first evaluation of a program with "soft techniques (e.g., one group before and after) can show whether a program warrants further evaluation. Only if the reconnaissance phase detects positive effects is it worthwhile going on to a controlled experiment" (63:66).

Evaluation Roles

Evaluation is classified as either formative or summative. Formative evaluation is an ongoing process of providing feedback in the course of developing a program. Its aim is to "provide information about improving the content, structure, or agents of a program" as it evolves. Summative evaluation assesses the worth of a program after it is already in operation. Its aim is to help people decide whether the program should be "discarded, replaced, modified or continued." Summative evaluation can be absolute, assessing the "effects of the program of interest in and of itself," or comparative, assessing the "relative worth of two or more programs" (40:213-214).

Learning Theory

Many disciplines, such as education, psychology, chemistry, and the health sciences, are interested in theories explaining how learning occurs since learning is necessary to mastering these as well as other fields of study. How is learning achieved? How can learning be measured? What conditions increase or decrease learning?

Even though the definition of learning is not a source of controversy among learning theorists (18:21), it has been defined in several ways. Hillner describes learning as a "process by which the measurable characteristics of a response undergo a permanent change, either immediate or delayed, as a result or function of reinforced practice" (19:68). Starpoli and Waltz's definition, supported by

most professional educators and psychologists, states that "learning is a change in behavior as a result of participation in an organized series of learning experiences conducted within a specified time" (55:2). Gagne, an educational psychologist, defines learning as "a change in human disposition or capability, which can be retained, and which is not simply ascribable to the process of growth" (14:3). Hilgard states:

> Learning refers to the change in a subject's behavior to a given situation brought about by his repeated experiences in that situation, provided that the behavior change cannot be explained on the basis of nature response tendencies, maturation, or temporary states of the subject (18:17).

The definitions of "to learn" and "to know" are closely related. "To learn means 'to gain knowledge through experience,'" while to know means to learn or gain familiarity or understanding through experience (18:2).

There are three elements in a learning event. First, there is the learner whose senses are affected by events in his environment. These events are organized in the brain into certain sequences and patterns. The second element in a learning event is the stimulus situation or the events that stimulate the learner's senses. The third element is the response of the learner or the behavior that results from the stimulus (14:4-5; 20:7).

> A learning event, then, takes place when the stimulus situation affects the learner in such a way that his performance changes from a time before being in that situation to a time after being in it. The change in performance is what leads to the conclusion that learning has occurred" (14:5).

Modern learning theory is divided into two conceptual

systems, the associationist and the rationalist. The associationists, or empiricists, believe that experience is the only source of knowledge. Special emphasis is given to sensory experience. Concepts, whether simple or complex, are derived from sense impressions (18:3). The rationalists believe reason is the prime source of knowledge. Although knowledge begins with experience, it does not all originate from experience. Real knowledge presupposes thought relationships over and above sense data only (18:7, 12). Hilgard and Bowen, in Theories of Learning, review the major theorists of these two schools of thought.

Thorndike's connectionism dominated all other learning theories in America for the first half of the 20th century. He believed the basis for learning is the "association between sense impressions and impulses to action (responses)." The association is "known as a 'bond' or 'connection'" and these connections become strengthened or weakened in the making or breaking of habits. Trial and error, or learning by selecting and connecting, is the most characteristic form of learning, though some learning does occur by "associative shifting" or insight (14:9;18:28-29, 60, 90). Thorndike's theory originated the stimulus-response, or S-R, psychology of learning (18:28).

Pavlov, a Russian physiologist, through his experiments with animals, contributed the idea that the conditioned reflex is the basic unit for all of learning (18:87). This is disputed by most theorists today who feel that conditioned responses, though widespread, are a very special kind of

learning, representing the "establishment of involuntary, anticipatory responses," such as startled eye blinking that follows a threatening gesture. "Voluntary acts can be conditioned only with difficulty, if at all" (14:12). Pavlov, in later experiments, explored numerous empirical relationships in learning such as reinforcement and extinction, generalization and differentiation or responses, and time relationships of stimuli to responses (18: 64-69). He also contributed the idea of a "second signal system," speech in man, which differentiates human learning from animal learning (18: 72,87).

Guthrie, an early behaviorist who expanded Thorndike's and Pavlov's stimulus-response association theories, contributed the idea of contiguous conditioning. He was concerned with movements of the organism since these could be overtly observed, and his "one law of learning" stated: "A combination of stimuli which was accompanied by a movement will on its recurrence tend to be followed by that movement" (18:92). He believed that "the true association is between simultaneous events" (18:93). External stimuli give rise to movements which produce kinesthetic stimuli. Associations that appear to be separated in time really are not, due to kinesthetic stimuli intervening to elicit the delayed response (18:93).

Hull, another associationist-behaviorist, theorized that habit is central to learning. He believed that reinforcement is the primary condition for habit formation, rather than contiguity or a combination of contiguity

and reinforcement. Reinforcement works by providing a "satisfying" effect, or drive reduction, following a response (18:153). Hull developed his theory into a system which considered input, intervening, and output variables on behavior, rather than the simpler stimulus-response thinking of earlier theorists (18:153, 168-170).

Skinner was also an associationist-behaviorist, but his view of reinforcement differed from other learning theorists. He distinguished two classes of responses: elicited responses, or respondents, are responses from known stimuli, as pupil constriction from bright light, while emitted responses, or operants, are responses not correlated with any known stimuli. Most human behavior is operant, for example, driving a car, eating a meal or writing a letter (18:208). Skinner related the two classes of responses to two types of conditioning. In the conditioning of respondent behavior (Type S), reinforcement is correlated with a stimulus. In the conditioning of operant behavior (Type R), reinforcement is correlated with a response; the response causes the reinforcer to appear, or reinforcement is contingent upon the response. This type of conditioning was termed instrumental, or operant conditioning, to distinguish it from Pavlov's classical conditioning (Type S) (18:208). Programmed instruction as a method of teaching and behavior modification as a method of eliminating deviant behavior evolved from Skinner's theories (18:232, 239).

Dewey, and several psychologists, developed functionalism. They believed the learning process is primarily a

matter of discovering the "adequate response to a problem situation and the fixation of the satisfying situation-response relationship" (18:286). The activities of the mind - thinking, remembering - according to Dewey, were not to be identified with a particular content, but rather with a type of function, the how and why of mental operations (18:313).

Tolman's sign learning theory straddled the fence between the associationist, stimulus-response theorists and the rationalists. Tolman was a behaviorist who tried to relate behavior theory to the rationalists' ideas about knowledge, thinking, planning, inference, purpose and intention (18:122). Traditional stimulus-response theory taught that the goal was unknown at the time of response selection. Tolman felt behavior was goal directed, or purposive, and knowledge is useful in planning efficient actions to reach goals. Knowledge is organized into a sort of cognitive map, rather than simple stimulus-response pairs. Learning involves knowing goals (rewards) and following signs to the goal. Learning is not movements (as Guthrie believed) but meanings or "sign-significant relations" (18:123-124, 130). Tolman's theories developed into the cognitive psychology or information processing approach to learning of today (18:148).

Opposed to the associationist theories were the rationalist, or cognitive, theories of learning. The Gestalt theorists, Wertheimer, Kohler, and Koffka, believed that

learning occurs from "insight," a suddenly occurring re-organization of experiences, as when one "has a new idea," or "sees the solution to a problem" (14:14). The Gestalt theorists were primarily interested in perception and cognitive (problem solving) processes. What was learned was the product of, and determined by, perceptual organization. What was performed depended on how current problem solving processes analyzed the situation, using past experiences (18:252). The later cognitive psychologists and information processing theorists also incorporated some of Gestalt theory into their theories of learning.

Piaget, though not a learning theorist, contributed the idea that intellectual development progresses through four stages: (1) sensorimotor, (2) preoperational, (3) concrete operations, and (4) formal operations (18:325).

Learning theories applied become theories of instruction. A theory of instruction seeks to move beyond the descriptive and explanatory to the prescriptive, procedures recommended for practice in real school curricula and social contexts (18:606).

Robert Gagne, in his theory of instruction, has identified "eight types, or categories, of learning, arranged in a hierarchy because each implies the earlier ones" (18:615). The lower steps of learning must be mastered before the higher steps can be. The eight types are:

1. Classical conditioning or signal learning,
2. Stimulus-response or operant conditioning,
3. Chaining,

4. Verbal association,
5. Multiple discrimination,
6. Concept learning,
7. Principle learning,
8. Problem learning (20:11).

The Adult Learner

Much of what is known about the learning process has been derived from experiments with animals and children. A theoretical framework of education was developed for children and adults alike - pedagogy, the "art and science of teaching children" (27:27). As more adults became involved in learning, the limitations of applying pedagogy to adults was obvious. Because of this the concept of "andragogy," the art and science of teaching adults has recently developed (27:49).

Andragogy is based on four assumptions about the chacteristics of adult learners that differ from child learners. These assumptions are:

1. Self Concept. With maturity, a person becomes self-directed, rather than dependent, and develops a "psychological need to be perceived by others as being self-directing." Learning strategies must allow the student self-direction.
2. Experience. The adult has a growing reservoir of experience which provides a broad base to which to relate new learning. Learning strategies must use and build on the student's experiences, rather than just using

traditional transmitting techniques.

3. Readiness to Learn. Adults are ready to learn those things they need to know because of the developmental phases they are approaching in their adult roles. Learning strategies must consider the relationship of learning to such role requirements.
4. Orientation to Learning. The adult's perspective changes from postponed application of knowledge to immediate application and his orientation toward learning changes from subject centeredness to problem centeredness. Learning strategies must organize content around actual life problems (27:55-59).

"Knowing facts is generally considered to be the starting point in adult learning experiences, but knowledge alone is not sufficient." To be complete, learning requires:

1. Knowledge and understanding - knowing what to do and how to do it.
2. Attitude - the desire or motivation to perform a particular task one has learned.
3. Skill - the ability to coordinate the mind and body to effectively perform a complex task (55:2-3).

There are four significant obstacles to successful adult learning:

1. Lack of confidence in their perceived ability to learn. This may be due to a long absence from a learning situation or to recall of past failures or inadequacies.
2. Sensitivity to failure. Many adults give up quickly if they are not successful immediately.
3. Poor self-concept. These adults think of themselves as

incapable, unwanted, unlikeable, and unworthy and expend most of their energies protecting and defending themselves, leaving little energy for learning.

4. Resistance to change. Many adults have preconceived prejudices and convictions which they are unwilling to change (55:11-12).

Orem's Theory of Nursing Practice

Adults in today's society are expected to be responsible for themselves and their dependents. Society also holds that persons who are sick, helpless, handicapped or otherwise deprived should be helped to regain responsibility for themselves within their abilities. Thus both self-care and care for others is valued by society. Nursing is based on both values (37:6).

Self-care is defined as

> the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health and well-being. Normally, adults voluntarily care for themselves. Infants, children, the aged, the ill, and the disabled require complete care or assistance with self-care activities" (37:35).

This assistance can be provided by parents, family, health care workers, or concerned others.

Self-care is therapeutic when it supports normal functioning, maintains normal growth and development, prevents, controls, or cures disease and injury, and prevents or compensates for disability. For example, eating a well balanced diet with adequate calories is therapeutic; a diet of excessive fat and calories in non-therapeutic. When

self-care is not therapeutic, illness occurs or increases, finally resulting in death.

There are three types of self-care requisites: universal, developmental, and health deviation (37:37). These must be known before they can be used for self-care. Universal and developmental self-care requisites should become known by all normal adults, but reliable knowledge is not always sought out and used. Health-deviation self-care requisites become known as deviations occur and the need for this knowledge is evident to those with deviations or their family members.

Universal self-care requisites are necessary for all persons at all times. These include the intake of food, water, air; provision for excrement, activity and rest, solitude and social interaction, safety from hazards; and the promotion of normal human living and development in social groups (37:42).

Developmental self-care requisites are also necessary for all persons as they progress through various stages of the life-cycle. These include the developmental needs of a particular age, such as adolescence, and needs arising because of a condition such as pregnancy or lack of education (37:47).

Health-deviation self-care requisites arise from disease and injury and their effect on normal functioning. Medical diagnosis and treatment can contribute to the needs by modifying body structure, such as amputation, or by requiring behavior changes, such as limiting activity

(37:50). Persons with health-deviations need relevant medical information in order to maintain self-care.

Nursing is concerned with assisting persons or their caretakers when the capacity to maintain self-care is limited because of health. Nursing is required when adults or caretakers are unable to maintain that "amount and quality of self-care which is therapeutic in sustaining life and health, in recovering from disease or injury or in coping with their effects" (37:7).

Nursing is "wholly compensatory" when the patient has no active role in self-care due to mental or physical limitations, and the nurse provides the self-care, becoming the self-care agent. When the patient can assume responsibility for some, but not all, self-care activities, nursing become "partly compensatory" by providing those the patient is unable or unwilling to provide. The division of responsibility depends on the patient's activity limitations, the knowledge and skills required for the activity, and the patient's ability and readiness to learn (37:96-101).

Some patients are able to provide self-care or can and should learn to perform certain self-care activities, but cannot do so without help or encouragement in the areas of decision making, behavioral control, or acquiring knowledge or skills. Nursing provides this help through support, guidance, or teaching (37:101).

There are five general methods to help or give assistance to another, all applicable in a variety of situations

(37:65):

1. Acting for or doing for another.
2. Guiding another.
3. Supporting another (physically or psychologically).
4. Providing an environment that promotes personal development...
5. Teaching another.

Teaching helps another by providing the knowledge or particular skills needed to achieve therapeutic self-care. Teaching can vary from informal, individualized experiences to formal, group experiences.

Knowledge to achieve effective self-care should include (1) conditions relevant to health and well-being, (2) characteristics of particular conditions, (3) the meaning of the conditions for health and well-being, and (4) the beneficial or harmful results of taking one course of action instead of another (37:79). With this knowledge the patient will be enabled to decide on a course of action to achieve therapeutic self-care.

In summary, self-care is the responsibility of adults, while the ill, disabled, and children need assistance with their care. Nursing intervenes to assist those unable to assume self-care by providing total or partial care, or by giving support, guidance, and education. Nursing's goal is to restore the patient to the highest level of therapeutic self-care possible.

Patient Education

Health education is recognized as a part of high quality health care (52:99; 61:60). The American Hospital Association in "A Patient's Bill of Rights" stated that a

patient has the "right to obtain...complete current information concerning his diagnosis, treatment, and prognosis in terms the patient can...understand" (2:1, 22:27). This includes the right to "expect adequate instruction in self-care (3:3).

Patient teaching is an accepted function of nursing. The American Nurses Association publication, "The Professional Nurse and Health Education" states:

> As a health care provider, every professional nurse is responsible and accountable to the patient and family for the quality of nursing care the patient receives. This responsibility and accountability includes teaching the patient and family relevant facts about specific health care needs and supporting appropriate modification of behavior. (3:12; 4:1).

The objectives of health education are to:

1. improve health by communicating information to prevent illness and disability and to facilitate a modification in behavior if indicated,
2. restrain the increase in health care costs through preventive health care, and
3. involve the patient constructively in his own health maintenance and effective and efficient use of the health care system (32:4).

Individuals must assume responsibility for their own health, but without correct information about how to maintain health and prevent illness and injury, they cannot assume that responsibility (34:29; 56:22). Even with this information, individuals are free to choose whether they will make any needed changes in their life styles (36:89; 54:52).

Patient education has been effective in providing patients with the information necessary to change health threatening behaviors and assume responsibility for their self-care. Physicians report that patients who participate in coronary education courses "do better" than those who do not (6:570). Rosenberg demonstrated that an educational program for patients with congestive heart failure increased their knowledge of their disease and, when compared with a group without the program, reduced hospital admissions and total hospital days required (47:1-4). Wenger's study of a rehabilitation program for 2000 myocardial infarction patients revealed that there had been no incidents of cardiac arrest or recurrent infarction among patients completing the program (65:67).

In-hospital educational programs for cardiac patients have also been effective. Woodward showed that an educational program for patients with either myocardial infarction or coronary insufficiency increased their understanding of coronary disease and also improved compliance with physicians' prescriptions (70:665). Rahne's evaluation of a program for myocardial infarction patients showed an increase in all areas of knowledge, but the increase was statistically significant only in the areas concerned with return home and to work (43:763). Pozen found that a nurse rehabilitator's teaching of patients in the coronary care unit was effective in increasing their rate of return to work and decreasing smoking. The outcomes were thought to be due to the nurse's efforts in increasing patient knowledge of heart disease

and individual counseling (42:830). Owens, McCann, and Hutelmyer's study showed that an in-hospital educational program for coronary patients produced significant increases in knowledge in all areas of the program except one (38:149). Linde and Janz evaluated a program to educate patients having valve replacement surgery or coronary artery bypass surgery. They found significant increases in knowledge scores, and compliance was significantly higher than reported by patients in a previous study (31:282). Falkiewicz's study also showed that coronary patients' knowledge increases significantly after an educational program (13:444).

Various teaching methods have been used for in-hospital patient education programs. Most studies comparing methods have shown little differences among them (1:164; 5:1364; 7:219; 8:185; 11:63; 15:1212; 53:97). Patients in these studies showed significant increases in knowledge whether taught by individuals or mechanical aids such as audio-visuals or self-instructional programs. Other studies have shown that patients learn more with audio-visual aids or programmed instruction (16:470; 17:662; 45:516). Patients generally favor learning with audio-visual or programmed instruction, rather than traditional lecture techniques (7:219; 8:183; 30:396). Audio-visual or programmed learning methods also have the advantages of assuming that all material is included in each teaching session and allowing teachers time to give individuals personalized attention with their questions. Group teaching has also been an effective

method, providing economy of instructional time and giving patients opportunity to interact and share learning (28:916; 13:444; 62:2142; 66:134).

Conceptual Framework

Patient education is an essential part of health care, and all members of the health care team should be involved in patient education, each contributing expert knowledge from his or her discipline. The goal of patient education is to provide the patient with the information needed to maintain health, prevent illness and disability, and modify behavior which contributes to illness or disability. With correct health information, individuals are enabled to practice self-care.

Teaching patients is a vital part of nursing care. The goal of nursing care is to restore the patient to the highest level of therapeutic self-care possible.

Patient education programs require the health care team to be cognizant of learning theories and the teaching methods most conducive to learning. In addition, adult learners have special needs which must be recognized and provided for in any patient education program.

Patient education programs need evaluation both in their formative stage and active stage. The action settings of hospitals or clinics make an experimental research design difficult or impossible, so evaluation often consists of collecting information about the program, its objectives, processes, resources, and products. This information is used by those responsible for the program to make decisions about the program in the future.

Chapter 3

METHODOLOGY

The purpose of this study was the evaluation of a hospital educational program for myocardial infarction patients. The hypothesis stated that patients who participated in this program would have a significant increase in their knowledge relative to their disease.

Setting

The setting for this study was a 350 bed community hosptial in a large southeastern city. This hospital is located in a more affluent area of the city and serves a mostly middle class population. The study took place over a 2½ month period from mid-December to early March.

Subjects

A nonprobability sample of convenience was used. Subjects consisted of all patients who participated in the coronary education program over the 2½ month study period who were first myocardial infarction patients, literate, and not health care workers. Patients who participated in the program during this period who had had a previous myocardial infarction were excluded from this study since previous learning could not be controlled.

No control group was available since nearly all patients attend the educational program. It would have been unfair to deny the educational program to random patients for purposes of this evaluation (63:63; 57:141). This study cannot be generalized since no alike populations are known.

Research Design

A pre-experimental, one-group, pretest-posttest design was used (9:7). This design provides manipulation only; it lacks both a control group and randomization of subjects. A true experiment is characterized by all three: manipulation, control, and randomization (40:150).

The one-group, pretest-posttest design:

$$O_1 \quad X \quad O_2$$

is widely used in education evaluation (9:7, 35:73, 43:759, 63:66). This design is used because of the difficulty in obtaining a control group in action settings and the moral dilemma presented by denying an educational program to one group for the purpose of evaluation. Also, first evaluations of programs often use this design for a preliminary study. If an evaluation using this design shows little change in the subjects, the program is probably having little effect since "most of the contaminating factors artificially elevate the level of gain. Thus a finding of little success with a design that tends to enhance the illusion of success is important information" (63:74). This information will be gained without the

expense in both time and money required by an experimental design. If a preliminary study using this pre-experimental design shows positive change in the subjects, then a study using an experimental design with better control over extraneous variables can be instigated to show causality.

All research studies must be concerned with the validity of the study results. External validity refers to the generalizability of the study results to other individuals and settings (40:269). Since hospital teaching programs are usually developed by each hospital's staff and are thus unique, an evaluation of one local program, as this study was, has no external validity, or generalizability, to other populations or settings.

Internal validity is concerned with the question of whether or not the study results are attributable to the independent variable or to other extraneous factors (40:269). A good experimental design will normally control for threats to internal validity (40:259). There are eight threats to internal validity: history, maturation, testing, instrumentation, regression, selection, mortality, and the interaction of any of these (9:8). A pre-experimental, one-group, pretest-posttest design controls only for selection and mortality. Selection refers to biases resulting from pre-treatment differences between the experimental and control groups (40:169). Mortality refers to the loss of subjects from the control group (40:170). Since there is no control group in this design, these threats are not relevant.

There is no control for the other six threats to internal validity (9:8).

Coronary Education Program

The Coronary Education Program was initiated five years ago. At that time objectives for the program were written, but have since been lost. This is one of the practical problems often encountered in applied research. This evaluation has prompted the rewriting of the objectives, but this will not be completed for some time. From the content of the present program, the objectives are assumed to be to increase the patients' knowledge about the causes, effects, and the treatments of myocardial infarction.

The program extends over five days and includes teaching by nurses, dietitians, physical therapists, and chaplains or social workers. The content and schedule of the program is indicated as follows:

Day One - An audio-visual slide-tape presentation to a group of patients followed by discussion led by individual staff nurses on:

How Your Heart Works.

What is a Heart Attack?

How the Heart Heals.

A large heart model is also used to illustrate the anatomy of the heart.

Day Two - An audio-visual, slide-tape presentation to a group of patients followed by discussion led by individual staff nurses on:

What Are Risk Factors?

What to do If You Have Chest Pain.

Day Three - A movie on dietary aspects of coronary disease followed by group discussion led by a dietitian. Individualized instruction is given if ordered by the physician.

Day Four - An audio-visual presentation using an overhead projector followed by group discussion led by a physical therapist on "How to Decrease the Work on Your Heart."

Day Four (Evening) - Group discussion for the patients' families to freely discuss feelings, fears, and thoughts led by chaplains or social workers.

Day Five - Group discussion for the patient to freely express feelings, fears, and thoughts led by chaplains or social workers.

Each patient is also provided with a packet of printed materials to reinforce and supplement what is taught in the classes. Titles are:

"Heart Attack! What Now?"

"After A Heart Attack"

Instruments

Two instruments were used in this evaluation: a knowledge test and a subjective evaluation.

The knowledge test consisted of 49 items, 15 multiple choice and 34 true-false, covering those content areas taught in the classes (See Appendix C). This instrument

had been used in two previous evaluative studies of a similar in-hospital coronary education program (43:759, 51:847-848). The reliability in these studies was moderate ($r = 0.5$ to 0.6). Content validity was established by having the staff nurses teaching in the program, plus the thesis advisors for this evaluation, review the instrument. Questions on the knowledge test covered: the nature of a heart attack, emergency treatment, the resumption of physical activity, diet, smoking, psychological factors, and return to home and work (51:848).

A subjective evaluation using a Likert scale was developed for this study in order to give the patients an opportunity to judge the program (See Appendix D).

The content validity was established by having the staff nurses teaching in the program, plus the thesis advisors, review the instrument. Questions on the subjective evaluation covered the level and quality of the teaching materials and methods, the instructors' knowledge level and ability to teach, and what content areas were covered too much, too little, or not at all. The patients' suggestions for any ways to the improve the program were also elicited.

Procedure

Patients entering the Progressive Coronary Care Unit who met the selection criteria of this study were given the knowledge test before attending any classes or receiving any printed materials. This established the patients' entry level of knowledge (41:58). No attempt

was made to prevent teaching prior to this on a "question and answer" basis between physician and patient or nurse and patient. After attending the series of classes and reading the printed materials, the patients were given the same knowledge test, plus the subjective evaluation.

The posttest gives the patients exit level of knowledge and serves as an approximation of the educational success of the program (43:760).

The time for testing was by convenience. Usually the pretest was given one or two days before the classes began, and the posttest one or two days after completion of the classes. Time between pretest and posttest was approximately six to seven days. Testing at exactly the same times prior to and after the classes could not be done due to the problems of an action study, e.g., some physicians allowing patients up earlier than others, or allowing earlier discharge. No time limit was given to complete the tests.

Analysis of Data

The subjects' scores on each content area for the pretests and the posttests were tabulated yielding range, mean, standard deviation, and percent correct. The change in scores from pretest to posttest was calculated, and a paired t-test was used to test for significance.

Chapter 4

ANALYSIS OF DATA

Introduction

The purpose of this study was to evaluate a coronary education program for postmyocardial infarction patients. Only a product of the program, the change in patient knowledge relative to their disease was studied objectively. A subjective evaluation by the subjects provided information about the value of the objectives and the efficacy of the teaching methods. The subjects were pretested before the educational program and posttested after completing the program, at which time the subjective evaluation was also administered. A paired t-test was used to test the hypothesis that the subjects would have a significant increase in knowledge relative to their disease by participating in the program.

Demographic Data

All patients experiencing their first myocardial infarction, who could read and write, and who were not health care workers were eligible for inclusion in the study. Seventeen patients met the criteria during the study period. Five of them were eliminated for the following reasons: one was discharged before she could begin classes, one began the classes before pretesting was

done, one completed only two classes before discharge, one refused the classes, and another had organic brain syndrome, and even though he was given the classes, his level of mental functioning prevented his taking the pre- and posttests. The other 12 patients agreed to participate in the study, and none withdrew during the study. The demographic characteristics of the subjects are presented in Table 1.

Table 1

Demographic Characteristics of Subjects (N=12)

Sex:	10 males, 2 females
Age:	Range of 53 to 76 years Mean of 63.9 years
Race:	11 Whites, 1 Black
Education:	Range of 4 to 17 years Mean of 12 years
Marital Status:	9 married, 2 divorced, 1 widowed
Religion:	8 Protestant, 2 Catholic, 2 Jewish

Results

Summary statistics of the Knowledge Test scores are presented in Table 2. The following discussion of the results of testing is discussed in three sections: pretest, posttest, and subjective evaluation.

Pretest

The subjects scored highest on the questions related

Table II

Summary Statistics of Knowledge Test Scores

(N=12)

	Nature of Disease	Emergency Treatment	Physical Activity	Diet	Psychological Factors	Return to Home/ Work	Smoking	Total
Total Possible	18	13	8	8	13	19	3	82
Pretest								
Range	9-14	7-11	4-8	5-8	3-11	6-16	1-3	35-71
Mean	11.8	9.6	6.1	6.0	6.8	11.4	2.4	54.1
S. D.	1.53	1.0	1.5	.95	2.41	1.94	.67	4.69
% Correct	65.6	73.8	76.3	70.0	52.3	60.0	80.0	68.3
Posttest								
Range	10-15	8-13	1-7	4-8	2-11	6-16	0-3	31-73
Mean	12.33	10.33	5.92	5.92	7.25	12.25	2.25	56.3
S. D.	2.07	1.31	1.67	1.17	3.42	3.14	.96	4.96
% Correct	68.5	79.4	74.0	74.0	55.8	64.4	74.9	70.3

to Physical Activity and Smoking, with scores of 76.3% and 80.0% respectively. Scores were lowest on questions related to Psychological Factors (52.3%) and Return to Home and Work (60%). Their knowledge about the Nature of the Disease (65.6%), Emergency Treatment (73.8%) and Diet (70.0%) was about average when compared to a previous study by Rahne (5:761). The standard deviations reflected greater variations in scores on questions related to Psychological Factors (2.41) and Return to Home and Work (1.94). The variations in scores were less for Smoking (.67) and Diet (.95). Total scores on the pretest were 54.1 correct points out of a possible 82 points (68.1%) with a standard deviation of 4.69.

The reliability of the instrument during pretesting was calculated using the Pearson r on split-halves and the Spearman-Brown prophecy formula (4:531, 430). Reliability was low (r = .36). However, one subject scored 26 points on the even split-half and zero points on the odd split-half. This 26 point difference is unusual; the next highest even-odd difference was 12, with the average being 5.73 points. If there had been more subjects, the effects of the score of this one individual would have been diluted. If this subject is removed from the reliability computation, the reliability is moderately high (r = .61). A t-test of the significance of this reliability coefficient (r = .61) showed a t value of 2.43. A t value greater than 2.228 is significant at the .05 level, and thus significant. A reliability of r = .36 was not significant at the .05 level

(t = 1.22).

Posttest

On the posttests, subjects scored highest on Emergency Treatment (79.4%) and Smoking (74.9%), a gain of 5.6% from the pretest on questions about Emergency Treatment, but a loss of 5.1% on questions related to Smoking. Scores again were lowest on Psychological Factors (55.8%), a gain of 3.5%, and Return to Home and Work (64.4%), a gain of 4.4%. Subjects gained 2.9% on questions about the Nature of the Disease (68.5%) and 4.0% on questions about Diet (74.0%). Scores were 2.3% lower on Physical Activity items (74.0%). The standard deviations again showed greater variations on questions related to Psychological Factors (3.42) and Return to Home and Work (3.14), and the least variations in Smoking (.96) and Diet (1.17).

Total scores on the posttest were 56.6 correct points out of a possible 82 points (70.1%), a gain of 2.2 points (2.0%). The standard deviation was 4.96.

The paired t-test was used to determine if the increase in scores was significant (4:550). Computation of the t-statistic indicated a t-value of 1.79 which is not significant at the .05 level. A t-value of 2.201 or greater is required for significance at the .05 level. Thus the hypothesis that the coronary education program produces a significant increase in knowledge was not supported. Again, one subject's score was greatly different from the others. Instead of a gain in score from

pretest to posttest, there was a 13 point loss (Table 3). All other subjects' scores gained from pretest to posttest except one other whose score dropped by 5 points. Recomputing the paired t-test, omitting the score with the 13 point loss, indicated a t-value of 3.86, which is greater than the 2.201 required for significance at the .05 level. This shows that the observed changes in scores would be obtained by chance alone less than five times in one hundred samples ($p < .05$).

The reliability of the instrument was recomputed using the posttest scores, again using split-halves, the Pearson r, and the Spearman-Brown prophecy formula. Reliability was high ($r = .73$). The t-test for reliability significance showed a t-value of 3.37, greater than the 2.228 required for significance at the .05 level. This reliability would be obtained by chance alone less than five times in one hundred samples ($p < .05$).

Subjective Evaluation

At the completion of the coronary education program each subject completed a subjective evaluation. Results of the evaluations were given in Table 4. A five point Likert scale was used; the mean for each item is given (See Appendix D for the complete Subjective Evaluation).

In addition to the Likert scale, subjects were asked to give written answers to the following three items, numbered 77 through 79 on the evaluation instrument.

What subjects needed to be discussed more?

Four gave no response; two responded, "Don't know

Table III

Comparison of Knowledge Test Scores by Subjects

(N = 12)

Subject	Pretest %	Pretest # Correct of 116 total	Posttest %	Posttest # Correct of 116 total	Number Difference
1	80	93	69	80	-13
2	71	83	71	83	0
3	71	83	78	90	7
4	72	84	76	88	4
5	72	84	80	93	9
6	64	74	67	78	4
7	59	69	68	79	10
8	68	79	71	82	3
9	72	84	80	93	9
10	65	75	74	86	11
11	66	77	62	72	-5
12	62	72	66	76	4
Mean	68.5	79.8	71.8	83.3	3.58

Table IV

Subjective Evaluation Summary

(N=12)

Item		Mean *
57.	level of audio-visual presentation	3.1
58.	in discussion, instructors estimate of what I know of heart disease	2.8
59.	discussions promoted exchange of information	3.1
60.	instructors' knowledge of subject	4.4
61.	impression of instructors	4.8
62.	quality of visual part of A-V	4.8
63.	quality of audio part of A-V	4.6
64.	length of A-V presentations	3.0
65.	subjects presented through A-V	3.9
66.	as a teaching device, A-V presentations	4.6
67.	printed material I received	3.2
68.	instruction about diet	3.2
69.	instruction about activity	3.3
70.	discussion with social services/ pastoral care	3.1
71.	seating arrangements during discussions	3.7
72.	noise level during discussion	4.8
73.	increased my understanding of heart disease	4.7
74.	provided opportunity to discuss problems	4.5
75.	covered subjects important to understanding heart disease	4.6
76.	overall impression of program	4.8

* Means represent all subjects responses on the items given possible response categories of 1 to 5.

of any." Of the remaining six, two wanted more discussion of physical exercise; one wanted discussion of the causes of heart attacks; one, discussion of more specific information about nutrition; and two, discussion of heart risk factors.

What subjects were not discussed at all that should have been?

Five gave no response; four responded none. One patient responded "more of what's already included." One wanted more emphasis on diet to maintain a normal weight. One wanted information on how love and attention after returning home could attribute to well being.

Please give any suggestions you have to improve the Coronary Education Program.

Four patients gave no response. Three responded that they had no suggestions. Other responses were: update program; notify patients in advance of date, time, and content area of classes; individualize information with one to one teaching after group classes; more discussion of how the heart attack affected each individual; and more opportunity for group teaching and discussion.

Discussion

The setting of this study was a suburban community

hospital serving a mostly middle class, white population. The demographic characteristics of the subjects reflect this in that the mean educational level was 12 years, and there was only one Black. The mean age of 63.9 years is important. Most adults of this age have not been in formal learning situations for many years, usually since high school, and are fearful of their ability to learn (27:11). These fears can be reduced by providing a learning environment that, though structured, is informal with several teaching methods available (27:57). This program accomplishes this by using printed materials, audio-visuals, and group discussions, plus individualized teaching if indicated or requested. The group discussions are an especially good method, allowing the older adult learners to share experiences, questions, and concerns. The success of the program in alleviating these fears of learning can be seen in the enthusiasm of the patients for the programs as shown by their subjective evaluations and by the few who refuse to participate.

The changes in the scores on the seven different sections of the Knowledge Test from pretest to posttest was unexpected. Scores were expected to increase in all areas after the educational program. Instead, scores increased in the sections on Nature of the Disease, Emergency Treatment, Psychological Factors, and Return to Home and Work. Scores decreased on the sections on Physical Activity, Diet, and Smoking, the three areas with the highest pretest scores. These score changes are difficult to explain.

Perhaps the increased scores are a reflection of the content areas the subjects felt were most relevant during hospitalization, especially Nature of the Disease and Return to Home and Work. Subjects then gave more attention to these particular areas during the classes, and thus more was learned. The decrease in scores could be due to the timing of the posttest which was near the time of hospital discharge. The anxieties of leaving the security of the hospital situation may have lessened the subjects' ability to concentrate on the Knowledge Test, thus randomly reducing certain scores.

The range of scores from the seven sections of the Knowledge Tests can be more easily explained. The educational program varies constantly because, even though the audio-visual and printed materials are constant, the instructors and patients change from week to week. Instructors must be able to establish their credibility as authentic, authoritative sources of health information (21:347); some do this better than others. The patients' educational level and motivation affect individual learning. Group learning is affected by the interaction and size of the group. For some classes, there were only one or two patients. Some subjects did not attend all class sessions or started the classes in middle or later part of the week. Thus, some content areas were missed or were not taught in the logical Monday through Friday sequence.

The increase in pretest and posttest scores for the entire Knowledge Test was 2.2 points (2%). This was not a

significant increase using a paired t-test. This is not an unusual happening; other evaluations of hospital based programs have revealed similar findings (43:760; 51:850). The anxieties and fears of the hospitalized postmyocardial infarction patient make learning and retention difficult (67:117). Instead of an intensive learning situation, the hospitalized patient needs to be presented with simple information to allay these fears and anxieties (67:119). Also, evaluation by means of a knowledge test only fails to take into account the continued learning after discharge, built on what was begun in the hospital program. Patients also gain understanding and ideas for application of new knowledge that cannot be assessed by a test alone.

Subjects were enthusiastic about the program giving high ratings to the instructors and teaching methods, and supporting the content areas as worthwhile. Eighty-two percent felt the program increased their understanding of heart disease "very much," even though the objective knowledge test showed only a small (2%) increase. Eighty-two percent felt the program included content areas important to the understanding of heart disease. The overall impression of the program was "very good" for 91% of the subjects. This enthusiasm by patients for hospital educational programs is common (43:761). To discard such programs because "no significant difference" can be shown would be wrong. Stufflebeam states, "When a technique continually produces findings that are at variance with experience and common

sense, it is time to call that technique into question" (57:8).

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study was conducted to evaluate a Coronary Educational Program at a 350 bed community suburban hospital. The five year old program has never been evaluated. The evaluation was limited to one product of the program, the change in patient knowledge relative to their disease. Subjects also completed a subjective evaluation of the program, including the content areas, teaching methods, and competence of the instructors.

Twelve subjects participated during the 2½ month study. They consisted of 10 males and 2 females; 11 Whites and 1 Black. The age range was 53 to 76 years, with a mean of 63.9 years. The educational level ranged from 4 to 17 years, with a mean of 12 years. Nine subjects were married, 2 divorced, and 1 widowed. Eight were Protestant, 2 Catholic, and 2 Jewish.

A pre-experimental, one-group, pretest-posttest design was used. Subjects were pretested before beginning the Coronary Education Program, using the Knowledge Test, and posttested after completing the program, using the same Knowledge Test. The hypothesis stated that the subjects would have a significant increase in knowledge relative to their disease after participating in the

Coronary Education Program.

Subjects had a 2.2 point (2%) increase in knowledge relative to their disease. A paired t-test was used to determine the significance of the change. The resulting t-value of 1.79 was not significant at the .05 level. The hypothesis was not supported.

The subjective evaluation completed at the conclusion of the program by the subjects reflected support and enthusiasm. The content areas were considered relevant to what needed to be known by myocardial infarction patients. The teaching methods, using audio-visuals, group discussion, and printed materials, were considered good. The competence of the instructors was thought to be very good.

Conclusions

The subjects in this study are representative only of the institution from which this sample was drawn and findings cannot be generalized.

Findings in this study suggest the following conclusions:

1. Subjects did not significantly increase their knowledge relative to their disease by participation in the Coronary Education Program.
2. Prior to the Coronary Education Program subjects had greater knowledge in the content areas of Smoking, Physical Activity, Diet and Emergency Treatment. They knew least about the Nature of their Disease, Return to Home and Work, and

Psychological Factors.

3. After completing the Coronary Education Program, subjects had increased their knowledge in the content areas of Emergency Treatment, Return to Home and Work, Psychological Factors, and the Nature of their Disease. Their knowledge decreased in the areas of Smoking, Physical Activity, and Diet.
4. The Subjective Evaluations revealed enthusiastic support for the Coronary Education Program by the subjects. Suggestions for improvement included more discussion on physical activity, diet, and risk factors.

Implications for Nursing

Patients in this study, as well as other studies (43:761; 33:1081), indicated a desire to learn about the etiology, prognosis, and treatment of their disease. Those with chronic disease need to know how to successfully adapt to the changes necessitated by their disease. Although knowledge is a prerequisite for adherence to a regimen, there is no guarantee that knowledge by itself will cause adherence. More needs to be known about how knowledge affects attitudes and how both affect behavior.

Other evaluations of hospital based educational programs have shown the difficulty of learning during the stress and anxiety of hospitalization (51:852; 64:13). Programs should perhaps be continued after discharge in

order to repeat and reinforce what was taught, and to add knowledge not recognized by patients as needed during the hospital phase of recovery.

Better teaching tools for patient education need to be developed, as well as standards for what content should be included for specific diseases.

Better methods of evaluating patient education programs need to be developed, also. Evaluation needs to include not only the short term effects, such as increased knowledge, but the long term effects on attitudes and behavior.

After patient education programs are developed and implemented, there should be periodic evaluations of the objectives, inputs, and products. Without evaluation, the worth of the objectives and the products of the program, if any, remain unknown.

Recommendations

As a result of this study, the following recommendations are made:

1. Replicate the study using a larger sample to validate the findings.
2. Replicate the study using an experimental research design to control for extraneous variables increasing the subjects' knowledge relative to their disease.
3. Replicate the study to include knowledge retention scores at one month, six months, and

and one year, as well as behavior changes adopted to reduce risk factors.

4. Information about his diagnosis, treatment and prognosis, along with adequate instruction in self-care is a basic right of every hospital patient. Every myocardial infarction patient should attend the classes when his physical condition permits, unless the patient refuses.

5. As a preventive measure, include patients hospitalized with angina or coronary insufficiency in the program. The knowledge gained about the etiology of heart disease may help them modify behaviors, thereby decreasing their risk of a future myocardial infarction.

6. Emphasize the monthly follow-up coronary education program offered after discharge. Strengthening this part of the program would provide the opportunity to reinforce what was learned in the inhospital program, as well as add information needed during the immediate post-hospital convalescence period.

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APPENDICES

APPENDIX A

CONSENT FORM OF RESPONDENTS

Consent Form of Respondents

Mrs. Sydnor has explained to me her study to evaluate the Coronary Classes, and I have agreed to participate. I understand that I will take two short, written tests requiring approximately 15 minutes each, one upon entering the Progressive Coronary Care Unit and one just before discharge from the Unit. I have been assured that these tests will not interfere with my treatment nor present any risk to me.

I understand my participation will not benefit me at this time but should serve to improve these classes for future patients.

Mrs. Sydnor has agreed to answer any future questions I might have. I also understand that my name will not be used and that I can withdraw from this study at any time.

_____ _____

(Date) (Signature)

APPENDIX B

DEMOGRAPHIC DATA FORM

CORONARY EDUCATION EVALUATION PROGRAM

A. Demographic Data

1. Name _____

2. Age _____

Circle the right responses.

3. Sex: Male Female

4. Race: Black White

5. Marital Status:

Single Married Separated Divorced Widowed

6. Education (last year of school completed):

Elementary and High School:

1 2 3 4 5 6 7 8 9 10 11 12

College: 1 2 3 4

Post-College: 1 2 3 4

7. Religious Preference: Catholic Jewish None

Protestant Other _____

(Write in if desired)

APPENDIX C

KNOWLEDGE TEST

B. Knowledge Test*

Circle all statements you feel to be true:

8. The damage in a heart attack is due to:

   a. Too much fat in the blood

   (b) Too little blood to the heart muscle

   c. Too little blood into the heart chambers

   d. No heart damage; only damage is a clot in a blood vessel

9. The pain involved in a heart attack is from:

   a. Heart irritability

   (b) Too little oxygen to the heart muscle

   c. Too little blood into the heart chambers

   d. Damaged heart muscle

10. The damage to the heart muscle from a heart attack is:

   a. Similar to a deep cut

   b. Similar to a muscle sprain

   (c) Similar to a bruise

11. The healing of the heart following a heart attack is:

   a. Never complete, leaving a "soft spot"

   b. Totally complete, leaving no trace of damage

   (c) Leaves a scar

---

* Correct answers are circled.

12. The chances of a new heart attack:

    (a) Decrease every day you are in the hospital

    (b) Can be influenced by things you learn to do here in the hospital

    c. Are always increased if you continue to feel chest pain

    (d) Are reduced by a calm, quiet atmosphere

13. The heart monitor attached to you in the CCU is used to:

    a. Keep outside electrical currents away

    (b) To detect any change in heart action

    c. To help your heart recover

14. The reason for nasal oxygen in the CCU is:

    (a) To reduce chest pain

    b. To keep you from smoking

    c. To reduce the work of your lungs

    (d) To give your heart more oxygen

15. Repeated blood tests are to:

    (a) Measure the fat in your blood

    (b) Measure enzymes in your blood - reflecting heart muscle damage

    (c) To assess the effects of medication

16. You are transferred from the CCU:

    (a) Because your condition improves

    b. When someone else needs your bed

    c. According to a set schedule

Mark "T" for True; "F" for False:

17. T (F) After a heart attack one should stay at bedrest for two to three weeks.

18. T (F) After a heart attack a patient will very likely not return to his previous level of physical activity.

19. T (F) After a heart attack one's sex life has to be greatly reduced (in future years).

20. (T) F If one gradually increases his physical activity over the six months or so following a heart attack he can obtain and even surpass his previous degree of physical fitness.

21. T (F) Probably too much physical activity causes heart attacks.

22. T (F) After the amount of rest one gets in the hospital following a heart attack, one really feels "rarin' to go" his first few days at home.

23. (T) F It's important for the healing process of the heart to gradually increase physical activity.

24. (T) F One can begin a physical fitness program right here in the hospital.

25. T (F) It was my last meal that led to my heart attack.

26. T (F) Even an occasional cocktail is bad for your heart.

27. (T) F Too much animal fat in your diet contributes to high blood cholesterol.

28. (T) F High blood cholesterol signals a proness to heart attack.

29. T (F) As a rule, salt is bad for your heart.

30. (T) F Patients who develop heart attacks tend to be overweight.

31. T (F) Losing weight is relatively easy.

32. T (F) I won't be able to each rich foods again.

In general, persons who develop a heart attack:

33. (T) F Work several hours "overtime" and/or take their work home with them.

34. T (F) Frequently look back upon their accomplishments with a high degree of personal satisfaction.

35. T (F) Tend to have jobs at the "top of the ladder."

36. (T) F Don't take time to relax.

37. (T) F Are hard-driving, competitive persons.

38. (T) F Take on high degrees of responsibility.

39. T (F) Have well-defined goals in life.

40. (T) F Take their work, and life in general very intensely.

41. (T) F Not infrequently hold more than one job.

42. T (F) Are flexible people who easily delegate work and learn new routines.

43. (T) F Tend to rush themselves and fight deadlines.

44. (T) F Are persons who have made their "own way" in life.

45. (T) F May have family problems.

Circle all statements you feel to be true:

46. The first 2 to 3 days after hospital discharge are:

a. Difficult for all family members

(b) Especially joyous and trouble free.

47. Children at home (if any) will:

(a) Be on their best behavior over the first few days.

(b) See you in a different way when you are home and not going to work.

(c) Along with your spouse, tend to be overprotective of you.

48. Your spouse:

a. Should always be in the house with you during your first 2 to 3 months at home.

(b) Should understand your illness and what you're supposed to do to avoid a future heart attack.

(c) Had to cope with many stresses during your hospitalization.

49. About medications:

a. You should not become dependent on them as a "crutch."

(b) It may help you to carry nitroglycerine tablets in your pocket.

c. Once you leave the hospital, the medications you are given are not apt to be changed in the future by your doctor.

50. About your physical activity:

a. You must rest for the first month or more before starting walks outdoors, etc.

(b) You can begin in a graduated physical activity program within the first few days after you arrive home.

c. The walking you normally do at work can suffice for future physical exercise requirements.

51. If chest pain should re-occur after hospital discharge, you should:

a. Call your doctor immediately.

b. Immediately return to the hospital.

(c) Try a nitroglycerine tablet (under your tongue).

<u>True or False</u>:

52. T (F) If one doesn't change his work, it is difficult to alter his work stresses.

53. T (F) Most employers don't understand about heart attacks and won't allow persons to gradually readjust to their jobs

after their hospitalization.

54. T (F) If you have been a long-time smoker, quitting now won't be of much help.

55. (T) F Smoking has definite psychological and physical side effects.

56. (T) F Smoking tends to keep your weight down.

APPENDIX D

SUBJECTIVE EVALUATION

C. Patient Evaluation

Directions: Please indicate your honest reactions to the following statements. Circle the number which represents your opinion. Your responses will aid in planning future patient education programs.

57. The level of the audio visual presentation was:

1	2	3	4	5
Too difficult to understand		About right		Too simple

58. In the discussion after the audio-visual presentation, the instructor's estimate of what I knew about heart disease:

1	2	3	4	5
Assumed I knew more than I did		Taught me about the right level		Assumed I knew less than I did

59. These discussions promoted an exchange of information between patients and instructors, and among the patients:

1	2	3	4	5
Did not permit adequate discussion		Promoted discussion about heart disease		Promoted too much discussion, not enough information exchange

60. The instructor's knowledge of the subject matter was:

1	2	3	4	5
Poor		Average		Superior

61. My impression of the instructors was:

1	2	3	4	5
Not good		Average		Very Good

62. The technical quality of the visual part of the audio-visual presentation was:

1	2	3	4	5
Poor		Average		Excellent

63. The technical quality of the audio part of the audio-visual presentation was:

1	2	3	4	5
Poor		Average		Excellent

64. The audio-visual presentations were:

1	2	3	4	5
Too short		About right		Too Long

65. The subjects presented through audio-visuals were:

1	2	3	4	5
Not what I wanted to learn		Some of what I wanted to learn		Included all of what I wanted to learn

66. As a teaching device, the audio-visual presentations were:

1	2	3	4	5
Poor		Fair		Excellent

67. The printed materials I received were:

1	2	3	4	5
Too difficult to understand		About right		Too Simple

68. The instruction I received about diet was:

1	2	3	4	5
Too difficult to understand		About right		Too Simple

69. The instruction I received about activity was:

1	2	3	4	5
Too difficult to understand		About right		Too Simple

70. The discussion groups with social services/pastoral care were:

1	2	3	4	5
Not Helpful		Helpful		Very Helpful

71. The seating arrangement during the discussions:

1	2	3	4	5
Discouraged discussion		Did not Effect discussion		Promoted discussion

72. The hall noise level during the discussion was:

1	2	3	4	5
Loud		Moderate		Quiet

The Coronary Education Program:

73. Increased my understanding of heart disease.

1	2	3	4	5
Very little		Average		Very much

74. Provided opportunity to discuss problems.

1	2	3	4	5
Very little		Average		Very much

75. Covered subjects important to my understanding of heart disease.

1	2	3	4	5
Very poorly		Average		Very well

76. My overall impression of the program.

1	2	3	4	5
Very poor		Average		Very good

77. What subjects needed to be discussed more?

78. What subjects were not discussed at all that should have been?

79. Please give any suggestions you have to improve the Coronary Education Program.

Thank you for your help!

APPENDIX E

CONSENT FROM HOSPITAL

CONSENT FORM FROM HOSPITAL

Mrs. Sydnor has discussed with me her thesis proposal to do an evaluative study of the Coronary Classes offered here at St. Mary's Hospital. She has my permission to perform this study on our Progressvie Coronary Care Unit, pending approval of the Cardiac education committee and the medical staff.

September 4, 1980

(Date)

[redacted]

(Signature)

APPENDIX F

LETTERS

[redacted]

October 1, 1980

Ms. Cynthia Scalzi
Health Services Management
UCLA School of Public Health
Los Angeles, California 90024

Dear Ms. Scalzi:

I am a graduate student in Community Health Nursing at the Medical College of Virginia, Virginia Commonwealth University, in Richmond, Virginia. For my thesis I am doing an evaluative study of a Coronary Education Program at a local community hospital.

In my review of literature your articles in Heart and Lung in September-October, 1975, and in September-October, 1980, describing the coronary education program and evaluations at the UCLA Medical Center, reflect many similarities between your program and ours and between your evaluations and our plans for evaluation.

I would appreciate permission to use your revised Coronary Heart Disease Evaluation Form in my evaluative study. Apparently you have improved this questionnaire since it was printed in your 1975 article. If there are any fees involved, please inform me of such before sending any materials.

Thank you very much for your help and consideration.

Cordially,

[redacted]

Anne B. Sydnor

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SCHOOL OF NURSING
THE CENTER FOR THE HEALTH SCIENCES
LOS ANGELES, CALIFORNIA 90024

October 15, 1980

Cynthia Scalzi
School Of Nursing
1019 Gayely Ave. Suite 208
Los Angeles, Ca 90024

Anne B. Sydnor

[redacted]

Dear Anne

In reference to your letter of October 2, 1980, you have my permission to use my Coronary Evaluation form. Also I would like to refer you to my article in the Sept. -October 1980 issue of Heart & Lung. It has the results of the entire 3 years of study.

I am sending you the article and evaluation form you requested.

Good Luck

[redacted]

Cynthia Scalzi

Dear Dr.

Your patient meets criteria for inclusion in the evaluation of our Coronary Education Program. The evaluation is limited to those patients with first myocardial infarctions who are literate and not health care professionals.

The evaluation includes a knowledge test, requiring approximately 15 minutes, to be given pre-class and post-class, plus a subjective evaluation at the completion of the classes.

This evaluation will serve to strengthen our educational program for our patients.

Sincerely,

Anne B. Sydnor

VITA