IS AN INDIVIDUALIZED EDUCATIONAL INTERVENTION MORE EFFECTIVE
IN ENHANCING RISK FACTOR AWARENESS IN A POPULATION OF PEOPLE
WITH CORONARY ARTERY DISEASE?

by

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Margaret Frevert Schaefer

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# TABLE OF CONTENTS

1. INTRODUCTION ........................................................................................................ 1

   Problem ......................................................................................................................... 5
   Purpose .......................................................................................................................... 5
   Background and Significance ...................................................................................... 5
   Conceptual Framework ................................................................................................. 8
   Assumptions ................................................................................................................ 10
   Definitions of Terms ................................................................................................... 10

2. REVIEW OF LITERATURE ..................................................................................... 12

   Significance of Coronary Artery Disease ................................................................. 12
   Risk Factor Awareness ............................................................................................... 12
   Perceived Learning Needs of People with CAD ......................................................... 14
   Personal Risk Factor Awareness ............................................................................... 16
   Timing of Educational Intervention ........................................................................... 17
   Barriers to Learning ................................................................................................... 18
   Motivation to Change in People with Coronary Artery Disease .............................. 21
   Educational Methods Identified ................................................................................ 23
   A Comparison of Educational Approaches ............................................................... 28
   Who is Providing the Educational Intervention ....................................................... 29
   Long Term Adherence to Life Style Changes ......................................................... 31

3. METHODS ................................................................................................................. 36

   Study Design and Data Collection ............................................................................ 36
   Population and Sample Selection .............................................................................. 36
   Procedure .................................................................................................................... 37
   Human Subject Consideration .................................................................................... 39
   Statistical Management and Analysis ........................................................................ 39

4. RESULTS ................................................................................................................... 41

5. DISCUSSION ............................................................................................................. 48

   Limitations of Study ................................................................................................... 54

REFERENCES ............................................................................................................... 55
APPENDICES ........................................................................................................................................... 63

APPENDIX A: Office Nurse Script in Recruiting Potential Study Candidates.................................................................................................................. 64
APPENDIX B: Informational Flyer........................................................................................................... 66
APPENDIX C: Subject Consent Form for Participation in Human Research at Montana State University ........................................... 68
APPENDIX D: Pre-Video Questionnaire ............................................................................................... 73
APPENDIX E: Post Questionnaire ........................................................................................................ 78
APPENDIX F: Questionnaire Answers ................................................................................................. 80
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Numerical Analysis of Total Clinic Patient Population</td>
<td>44</td>
</tr>
<tr>
<td>2. Demographic Comparison of Control and Intervention Groups</td>
<td>44</td>
</tr>
<tr>
<td>3. Statistical Analysis of Data Comparing Control and Intervention Groups</td>
<td>45</td>
</tr>
<tr>
<td>4. Statistical Analysis of Pre and Post Questionnaire scores for the Control and Intervention Groups</td>
<td>46</td>
</tr>
<tr>
<td>5. Statistical Analysis of Pre-Questionnaire Scores Between Total Numbers of Males and Females Participating in Study</td>
<td>46</td>
</tr>
<tr>
<td>6. Popularity of the Topics Discussed Expressed as a Percentage of the Total Number of Topic Responses</td>
<td>46</td>
</tr>
</tbody>
</table>
### LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Graphical Representation of Pre and Post Questionnaire Scores of both Control and Intervention Participants</td>
<td>47</td>
</tr>
</tbody>
</table>
ABSTRACT

Coronary artery disease is the leading cause of death in males in the United States and the leading cause of death in females over the age of fifty. It is largely a preventable disease with several risk factors being linked to life styles that could either be modified or indeed changed completely in order to prevent its occurrence or at least slow its progression. The problem lies in determining the best way to educate the general population with regard to the risk factors for coronary artery disease or as in secondary prevention, educating those who already have the diagnosis, so that they recognize their own risk factors, maybe modify them and thus have a better chance to decrease their own morbidity and mortality from this disease.

There have been many approaches documented in the literature that have investigated a variety of educational intervention techniques. The current study is in regard to whether or not an individualized approach to education could be more successful in creating an awareness of the risk factors for coronary artery disease, in patients who already have the diagnosis. A pre and post questionnaire was used to assess the knowledge level of participants who either watched an educational video alone or watched the video followed by a period of ten minutes one on one time with a registered nurse.

The results from this study indicate that there is no significant improvement in the knowledge of risk factors for coronary artery disease in individuals who were given ten minutes one on one time with an RN over those who simply watched the educational video on CAD risk factors.

The conclusion then is that even given the limitations of the study, it is likely that in order to be successful in communicating the risks of coronary artery disease to people who already have this diagnosis the intervention needs to be more substantial. In addition it is discussed as to whether or not a knowledge deficit is in fact the primary obstacle and that the focus in halting disease progression should be on life style change motivation.
CHAPTER 1

INTRODUCTION

According to the American Heart Association (AHA) mortality data, coronary artery disease (CAD) was responsible for 1 out of every 2.9 deaths in the United States in 2006 (American Heart Association [AHA], 2009). It is estimated that 785,000 Americans will experience a new coronary attack in 2009 and of these, 470,000 will have a recurrent attack. This adds up to one American having a coronary event every 25 seconds, and one American dying every minute from such an event (AHA, 2009). CAD is the leading cause of death in men (AHA, 2010), and in women over the age of fifty in the United States (Tecce, Dasgupta, & Doherty, 2003). The disease is significant not only in the number of lives that it claims but in the fact that it places a great burden on the health care system and on the country’s economy. The estimated annual cost of CAD is as high as three hundred billion dollars (Gilski & Borkenhagen, 2005). Including health care services, medications, and lost productivity, heart disease is projected to cost more than $304.6 billion in 2009 (Centers for Disease Control and Prevention [CDC] 2009).

The AHA (2009) has widely publicized the risk factors for CAD, with the aim of reducing the prevalence of cardiac disease through primary prevention. These risk factors include, cigarette smoking, hyperlipidemia, hypertension, diabetes, obesity, stress, sedentary life style and a positive family history of CAD. The best opportunity the health care provider has in promoting disease prevention is through primary preventative care. This means addressing the risk factors in individuals who have as yet no evidence of
CAD (Gilski & Borkenhagen, 2005). Secondary prevention measures, such as percutaneous coronary intervention (PCI) or coronary bypass are designed to retard or prevent recurrent coronary events and cardiac death once the diagnosis has been made and damage from the disease has occurred.

However, intervention in these patients in the form of risk factor education is still of value, if lifestyle changes can be made. The disease progression can be slowed by taking steps to reduce those risk factors that are modifiable and outcomes can be improved by the patient’s long term adherence to lifestyle changes. Health care providers aim to intervene so as to promote healthy lifestyle patterns in patients. In order to manage the chronicity of CAD, individuals need to adhere to healthy lifestyle practices and we can help through the initial step of comprehensive educational intervention that focuses on and optimizes individual needs. The goal is to reinforce an awareness of the perceived barriers to health promotion (Schroetter & Peck, 2008) and to assist patients in indentifying their own risk factors and defining strategies to reduce risks for the disease and hence slow its progression.

Statistics available from 2003 indicated that 37% of adults reported two or more risk factors for heart disease (CDC, 2009). More recent data (Heart Disease and Stroke Statistical Update, 2009), indicated that control of risk factors still remains an issue for many Americans, with 62% of adults reporting little vigorous activity and obesity in all age groups on the rise (AHA, 2009).

CAD then is largely a preventable disease. However, in spite of educational programs directed toward risk factor reduction in persons with CAD, little long term
change has been seen in individual’s lifestyle, and progression of the disease continues
(Gaw, 1992; Gentz, 2000; Penckofer, & Llewelln, 1989). Even though individuals
express an interest in learning about risk factor reduction, the change in lifestyle is not
evident in their behaviors (Brezynskie, Pendon, Lindsay & Adams, 1998). Other research
shows that patients having undergone PCI, although knowledgeable about risk factors,
are less compelled to make lifestyle changes than their myocardial infarction
counterparts, indicating that the seriousness of the disease has not been clearly
understood (Gaw-Ens & Laing, 1994). Individuals need to be aware of their personal risk
factors for the disease in order to make the right lifestyle modifications, and understand
that they are indeed at risk for disease progression (Johnson Zerwic, et al. 1997;
Fernandez, et al. 2008). Knowledge of risk factors then for CAD is crucial if patients are
to make informed decisions regarding life style changes. Further, long term adherence to
these changes is essential in preventing the progression of the disease (Penckofer &

A factor that complicates providing meaningful education to patients with CAD
who have undergone coronary intervention is the short hospital stay that some of these
patients experience (Goulart, 1989). Health care providers have a very limited amount of
time to initiate education and make an impression on their patients as far as what the
modifiable risk factors are and in encouraging them in long term life style changes. A
number of the authors in the literature stress the assessment of patient needs as the first
step in patient education (Moynihan, 1984; Miller, 1985; Price, 1987). Further, authors
advised not to approach the educational process either directly before or after any
intervention, but rather to time the session if at all possible at an interval removed from any acute event (Cupples, 1991; Hanisch, 1993). In an Australian study by Conway, McMillan and Soloman (2006), it was demonstrated that there was a dissonance between patients’ needs and nursing actions in addressing those needs. If we are to effect behavior modification for long term change, we will need to accurately identify patient needs and specifically target those needs in effecting change strategies, and further, do so at a time when the individual is most receptive. This becomes increasingly difficult as hospital stays become shorter.

Confounding the effort even more, is the fact that every person has a different style of learning, and comes to the learning table with a different background and a different set of experiences. It is indeed a challenge to find a method of teaching that is individualized sufficiently, and one which is both time efficient and effective (Jepson Thomas, 1995; Czar & Engler, 1997; Brezynskie, etal. 1998; Kliment, Palat, Riecansky & Fejfar, 1982).

In summary, the issues can be presented as follows:

1. Coronary artery disease is largely a preventable disease.

2. Effective education needs to address long term lifestyle changes that reflect a person’s individual needs in order to slow the progression of the disease.

3. Behavior modification strategies can be effective in realizing long term change.

4. These strategies along with any educational intervention need to be time efficient.

5. The initial step in effecting life style change is to ensure that patient’s have a firm understanding of what it is they need to change, that is their risk factors for CAD.
Problem

The overall problem then is in creating an awareness of the risk factors for CAD. It is particularly important to create an awareness of the patient’s personal risk factors, to be able to do so in a time efficient manner, and to be able to guide individualized patient education that will provide motivation and encouragement in long term behavioral change. Providing patients the right information at the right time, in order to maximize effective understanding, is a challenge. Effective education is however important, in that it assists the individual in self-management at home and enhances outcome in adopting healthy lifestyle choices and preventing the ongoing decline from CAD.

Purpose

The focus of this study is to determine the extent to which a population of patients with the diagnosis of CAD is aware of their risk factor(s) for the disease. Does the provision of an educational intervention help patients identify their risk factors for CAD and further, does the availability of a health care professional for individual counseling, augment the educational effort? The hypothesis for the study is that effective and individualized patient education will enhance the patients’ ability to recall risk factors for CAD.

Background and Significance

CAD is a chronic condition that is largely both preventable and modifiable. Six out of eight risk factors for the disease can be modified through the use of medications, or
through changes in diet, exercise or personal habits. Studies among people with heart
disease have shown that controlling high blood cholesterol and blood pressure can reduce
the risk of dying of heart disease, having a nonfatal heart attack, or needing heart bypass
surgery or angioplasty (CDC, 2009). Among those without heart disease, the same
measures have been shown to reduce the risk of disease development.

Yet the control of risk factors for the disease, which is accomplished through life
style change, remains an issue for many Americans and in fact is one of the toughest
lessons to teach (Hamm, Low & Stein, 2008).

Patient education then, is a key element in the management of CAD, in
understanding the disease process, the medications used to control symptoms, and the
risk factors that predispose for the disease. In a study by Leino-Kilpi, Johansson,
Heikkinen, Kaljone, Virtanen and Salanter, (2005), patient education is defined as a
nursing intervention aimed at improving patients’ knowledge and thus, empowering
patients in the control and management of their healthcare problems. Hamm, et al.
(2008), further discuss that the greater knowledge about heart disease and how to achieve
positive outcomes reduces the fear and anxiety in persons with the disease and hence
increases their control. Optimally, our goal in educating people would be in enabling
them to take the information given and apply it in making healthy lifestyle choices for
positive outcomes in cardiac health.

Overall, patients’ length of stay in the hospital is shorter now than ever before,
therefore the educational intervention needs to be concise and effective. Further, in the
determination of behavioral modification strategies there are many variables to consider;
patient age, level of education, support systems, socioeconomic status and cultural background. In a review article by Beswick, et al. (2005), on improving uptake and adherence to recommendations made in cardiac rehabilitation, it was noted that surprisingly few trials confirmed a particular educational intervention as successful in improving adherence and compliance to cardiac rehabilitation.

Marshall, Penckofer and Llewellyn (1986) found in a non-randomized control study, that compliance with recommended activity, diet, smoking and medication regimens was superior if the education was delivered in a structured teaching group. More recent studies have confirmed this assumption, that the psychosocial support offered by a structured environment, has shown to be important for successful results (Lisspers, et al. 2005; Linden, 2000). In a randomized control study by Mahler, Kulik and Tazari, (1999), patients were shown educational videotapes delivered by a health care expert prior to hospital discharge. It was determined through follow up questionnaires that the intervention did improve compliance with diet and exercise modifications. Hillebrand, et al. (1995), found that regular contact with a health care professional increased patient attendance at a cardiac group. In an observational study by Adams, et al. (2007), a strong case was made for individual, intense and focused risk factor modification strategies. All of these studies lend credence to the fact that individual attention is an effective method of imparting both information and motivation in adherence to the advice given. In fact Butterworth, Linden and McClay (2007), claim that motivational health coaching is the only method that has shown to produce behavioral change.
Although a significant challenge, patient education is an essential element in promoting positive health outcomes in patients with CAD. In the education process, patient assessment for need and readiness is an essential first step. The educational intervention needs to be time efficient, but at the same time, for maximum effectiveness, tailored to the individual patient. The information needs to be clear and concise with provision for follow up to ensure understanding and adherence. Although impractical to provide a totally individualized patient educational intervention, it is felt that a combination of the successful strategies described in the previous studies could be successfully utilized.

**Conceptual Framework**

The conceptual framework chosen for this study was Pender’s Health Promotion Model (Pender, 1975; Pender, Barkauskas, Hayman, Rice, and Anderson, 1992; Sakraida, 2006). This model embraces a holistic nursing approach, with its foundation in social psychology and learning theory. Pender’s health promotion model emphasizes the essential element of changing behavior. She recognizes the importance of a cognitive process change in order to move forward in self-efficacy in health. As stated by Pender, Baraukas, Hayman, Rice and Anderson (1992), the most prevalent health problems in the United States are the result of health-compromising personal behaviors. It makes sense then, to focus interventions on developing self care and health promotion in individuals, families and communities (Pender, et al. 1992). The purpose of the current study is to address these issues by exploring what persons with CAD know about risk factors for the
disease and looking at this as the initial step in being able to make appropriate life style changes.

In the health promotion model patients are seen as adaptive, self regulatory beings that seek stability in their environment. The health professional is seen as a part of this interpersonal environment, exerting an influence on persons throughout their life-spans (Sakraida, in Tomey & Alligood, 2006). The model lists individual characteristics, experiences, and behavior specific cognitions and affect, as influences on behavioral outcomes. An educational intervention with the purpose of increasing knowledge must take into consideration not only the patient’s personal character traits, but the variable concepts of cognition and affect as outlined in the model. These include situational influences, interpersonal influences, perceived benefits and barriers to action and activity related affect. An activity-related affect describes subjective positive or negative feelings that occur before, during, and following behavior, based on the stimulus properties of the behavior itself” (Sakraida, in Tomey & Alligood, 2006, p. 456).

The health promotion model not only helps the health care professional understand the relationship between actions and outcomes, but can be readily applied to practice. Education as a point of focus in the current study is the initial step in health promotion and can be a strong modifying factor. Effective education used in conjunction with the concepts of cognition can play a powerful role in potentially altering patient’s perceived ideas, behaviors and hence outcomes with regard to their health activities.
Assumptions

The assumptions made for this study include:

1. The patient population does in fact have educational needs.

2. The patient population participating in the study is representative of the general patient population and is of adequate size.

3. CAD is largely a preventable disease.

4. There are certain modifiable risk factors attributable to CAD.

5. Patient education, if provided in a timely, comprehensible format will enhance patient understanding of risk factors for CAD.

6. Patient understanding is enhanced by the provision of individualized interaction time between the patient and a health care professional.

7. Although a challenge, providing patients with the right information at the right time will maximize effective understanding.

Definitions of Terms

1. Educational needs are the needs as defined by both the patient and the health care provider.

2. Patient needs are defined by their own cognitive-perceptual framework. The health care provider defines the educational needs by those required for the patients’ safety and optimal health outcome.

3. Patient education is defined as a nursing intervention aimed at improving patient’s knowledge and, thus empowering patients in the control and management of their healthcare problems (Leino-Kilpi, et al. 2005, p.307).

4. CAD: The presence of atherosclerosis or atherosclerotic plaque in the epicardial coronary arteries (Jacobson, Marzlin & Webner, 2007, p.886).

6. Cardiac Rehabilitation: “Is a medically supervised program to help heart patients recover quickly and improve their overall physical, mental and social functioning. The goal is to stabilize, slow or even reverse the progression of CAD, thereby reducing the risk of heart disease, another cardiac event or death” (AHA, 2009).
Significance of Coronary Artery Disease

Coronary heart diseases follow a common pathway, and are preventable if the major risk factors are reduced (Marshall, et al. 2004). These risk factors, highly evident in the United States, include those that are modifiable, such as hypertension, diabetes, atherogenic diet, tobacco use, obesity, physical inactivity and psychosocial factors and those that are nonmodifiable, gender, age and genetic traits.

Primary prevention would be the optimal goal for intervention. However, health care providers do not generally see persons with CAD until they are symptomatic and seek medical attention. Hence, secondary preventative measures come into play, aimed at those people with an established diagnosis of CAD. Treatment strategy is based on risk status and interventions aimed ultimately on lifestyle modification. Education can play an integral role in improving outcome for these people, if the health care provider can influence treatment compliance through an educational intervention and thus ultimately promote lifestyle changes.

Risk Factor Awareness

In order to be able to modify behaviors, in this case, behaviors associated with cardiac risk factors, a sound knowledge of what these behaviors are is essential (Fernandez, Salamonson, Griffiths, Juergens & Davidson, 2008). Unfortunately, a
number of studies have drawn attention to the fact that there is poor awareness of the risk factors associated with CAD. A study by Zerwic, et al. (1997) demonstrated that while 79% of subjects named one out of three modifiable risk factors (smoking, diet and cholesterol, or high blood pressure), only 7% could identify all three. Momtahan, et al. (2004) in a one day point prevalence study, showed that patients along with their significant others, had good general knowledge of cardiac risk factors, but only when prompted. The study further indicated that those most lacking in specific information were males between the ages of 30 and 40 years. A survey of 617 adults by Shekelle and Liu (1978) indicated an extensive lack of information within the general adult population, about the probable causes of (CAD). Their suggestion at that time was to undertake a large-scale sustained program of public education on primary prevention. Researchers, Karthik, et al. (2006) almost three decades later, asked the question, “are we doing enough” in the arena of risk factor awareness and secondary prevention of CAD. The group assessed patient awareness of risk factors for CAD by performing a voluntary survey of 235 patients already diagnosed with the disease. Of the population surveyed, 53.6% identified smoking as a risk factor, 55.3% identified hypercholesterolaemia, and 43% identified hypertension, 42.5% family history, 14.5% diabetes and 13.6% obesity as potential causes for the disease. The group concluded that there is a significant lack of awareness of risk factors for CAD (Karthik, et al. 2006). Fernandez, et al. (2008) looked at risk factor awareness in people having undergone PCI for coronary disease. Although PCI is effective in treating coronary lesions, it is a temporary measure in overall disease treatment, and does not address the risk factors for disease progression. A finding from
the study that was of considerable concern was that 50% of participants were unable to identify more than four of the modifiable risk factors and that the identification of diabetes as a risk factor was extremely low (Fernandez, et al. 2008). This later finding is significant given the strong association of diabetes with adverse health outcomes in relation to CAD.

Overall, the research indicated an overwhelming need for further education in creating awareness for risk factor modification in controlling CAD. Further, some studies found the knowledge deficit even greater among women, minorities, the less educated, and socioeconomically deprived groups (Fernandez, et al. 2008; Folsom, Sprafka, Luepker & Jacobs, Jr., 1988; Momtahan, Berkman, Sellick, Kearns & Lauzon, 2004). The need for further education in all populations is evident from the research.

Personal Risk Factor Awareness

Personal risk factor awareness was addressed in a number of these same studies. Zerwic, King and Wlasowicz, (1997) surveyed two different groups for comparison regarding risk factors. The first consisting of 65 subjects, were admitted for an acute coronary event, the second, 40 subjects, were admitted for PCI. All were newly diagnosed with CAD. The study concluded that patients with newly diagnosed CAD were unfamiliar with their own personal risks factors. In fact only 55% of the total number of those surveyed believed CAD to be of a chronic nature. In both groups, smoking was identified most frequently as a personal risk factor and as a cause for CAD. The subjects with the acute coronary event next identified high cholesterol as a risk factor in their
diagnosis for CAD, the PCI group, identified family history. Relatively few in either
group identified hypertension or diabetes as a cause for CAD. Similar results were found
by Fernandez, et al. (2008) who collected data on a group of 270 people with known
CAD who had undergone recent PCI. The investigators found that although a large
proportion of patients who were smokers, or who had high cholesterol or hypertension,
did identify these as risk factors, a third of the people with documented diabetes did not
recognize this as a risk factor for heart disease (Fernandez, et al. 2008). Momtahan et al.
(2004) interviewed 71 patients regarding risk factors for CAD. With regard to their
personal risk factors, 68% recognized family history as significant, 68% age, 54%
recognized high cholesterol, but only 30% recognized smoking and 27% of having high
blood sugar as being risk factors. Karthik, Tahir, Thakur and Nair (2006) surveyed 235
patients admitted for elective bypass surgery. It is interesting that in this study, although
similar results were found as far as recognition of risk factors, i.e. patients identified high
cholesterol, hypertension, family history and smoking as important risk factors, but not
diabetes or obesity, in general, patients were much better at identifying their own risk
factors. The comment, “patients who had been symptomatic were more aware of risk
factors” (Karthik, et. al. 2006, p.269), and the fact that these subjects were bypass
candidates who had been symptomatic, on average for 24 months, leads one to believe
that education is more effective when the target audience has experienced some physical
consequence of their disease. This is an unfortunate revelation since preventative health
care is the goal.
The challenge as far as promoting personal risk factor awareness in people with CAD or with the potential for such is in accessing them and convincing them of the significance of their risk. It would seem that this is especially true in diabetic persons. As observed by Wood, et al. (1998), the risk for CAD in a diabetic person, is significantly greater than the risk in a non-diabetic. Therefore, it is particularly important to educate diabetic persons about CAD risk factor reduction.

Perceived Learning Needs of People with CAD

Health care providers generally think they know what it is that patients need to know, in order to take care of themselves on leaving the health care facility. However, there is a considerable amount of research that suggests that there is a discrepancy between the two. Wang (1994) observed that health professionals provide teaching based on their own perception of patient needs, and that the discrepancy between the teaching provided and what it is that the patient would like to know, often leads to confusion and a lack of understanding on the part of the recipient. Meaningful and effective nursing interventions can only be attained if the health care provider as teacher understands what information the patient perceives as important (Gentz, 2000). Brezynskie (1998) reiterates this sentiment and goes further by saying that incongruity between nurses and patients’ perceptions can impair patients’ learning.

Research has shown that information people actually considered important, is that which is most important to their survival (Chan, 1990). Brezynskie (1998) in looking at balloon angioplasty patients noted that cardiac medications and risk factors were rated
among the highest categories of concern. Ashton (1997) found that following a myocardial infarction, the same topics, cardiac medications and cardiac risk factors were considered the two top priority subjects for discussion. Hanisch (1993) found that cardiac risk factors were also a priority topic that required further investigation. Karlik, Yarcheski, Braun and Wu (1990) surveyed a group of 30 people, all with the diagnosis of CAD, half pre-and half post-discharge from a cardiac catheterization procedure. Fifteen of the nursing staff was also surveyed, and using the cardiac patient learning need inventory tool, both patients and nurses were asked to respond to the 43 item tool by rating the learning needs inventory list on a five point scale as not important to learn to very important to learn. Risk factors emerged as being of the highest priority of all the learning needs to patients, whereas the nursing staff put a greater emphasis on medication regimen. The study indicated that patient needs were dependant on the stage of their hospitalization and that the nurse educator must reevaluate needs and provide pertinent education accordingly. Regardless, although the focus of teaching should clearly be on client needs, it is apparent from the literature that risk factor awareness is not only an important issue in reducing the incidence of CAD, but that it is, in fact, also a concern of patients.

Timing of Educational Intervention

Further to the consideration of client needs, the teaching learning process should, if at all possible, be conducted at a time when the patient is most receptive. Hanisch (1993) corroborates this, stating that information may not be absorbed if given too soon either
before or after an acute event. The author elaborates to state that, although providing information can serve to increase a person’s sense of control, too little or inadequate information will cause emotional distress. The educational intervention then, needs to be provided at a time when the person is far enough removed from any surgical procedure or administration of pharmacological agents, thus optimizing their comprehension ability. It is suggested from the literature that patients believed information was provided to them too soon after the cardiac event (Hanisch, 1993).

**Barriers to Learning**

The process of providing information then to people with CAD, especially to patients in the hospital undergoing a procedure related to their CAD, is not a simple undertaking, at least not if it is to be effective. There are numerous barriers to the learning process, many of which are addressed in the literature. Pender’s’ health promotion model, as previously mentioned, emphasizes the essential element of changing behavior. She recognized the importance of a cognitive process change in order to move forward in self-efficacy in health. Not only then, does the health care professional need to assist people with CAD in being able to recognize their risk factors, but they also need to be able to identify and negotiate any barriers existing in the cognitive process, and facilitate the patient in reaching self efficacy in health. It makes sense then that educational efforts be individualized for the recipient.

However, economically and in deference to time restraints, this ideal is often times impractical. Its significance is not lost in the literature.
Many researchers agree that educational programs should be individualized (Gentz, 2000; Zerwic, et al. 1997; Brezynskie, et al. 1998; Hanisch, 1993; Czar & Engler, 1997) and yet on the other hand streamlined, and have a degree of standardization with set protocols to ensure predetermined content always be included in the delivery. Maloney and Weiss (2008) suggest that standardized discharge teaching plans with predefined content would ensure comprehensive discharge preparation. Alm-Roijer, Stagmo, Uden and Erhardt (2004) reiterate this when discussing lifestyle advice for patients following a cardiac event, that patient education must be formalized and included as a part of patient care in the health care planning. Finding the optimum time to execute the educational intervention is however a challenge and a significant barrier to effective learning. Hanisch (1993) observes the fact that hospital stays are becoming shorter due to cost containment strategies and consequently it is more difficult to address the educational needs of patients. Patients with CAD are often hospitalized for PCI, a procedure used as an intervention for blocked coronary arteries. This would be an optimal time to address cardiac risk factors with this patient population, but for the fact that it is a procedure with a short turnaround time, the patient often spending only one night in the hospital. Genz (2000), Momtahan, et al. (2004), and Fernandez et al. (2008) all address the concern that finding time to educate a patient population is becoming increasingly challenging.

In two studies the researchers looked at the timing of teaching for cardiac bypass patients. A discrepancy of when the optimal time of delivery should be was revealed. Lepczyk, Hunt Raleigh and Rowley, (1989) concluded that there was little difference
whether patients receive information up to a week before surgery or the day before surgery, Cupples (1991) on the other hand found a significant difference in anxiety levels, and hence in knowledge levels between patients receiving education on the day before surgery as oppose to 5 to 14 days prior to surgery. Other situational influences that come into play when attempting to effect learning on a patient population is the patient’s status as far as disease progression, their state of health generally, where they are in their life span, and what type, if any, family or friend support system they have?

According to Pommier (1992) patients who had a supportive spouse, learned and retained educational material more effectively than their unmarried counterparts and further that family actually play an important role in helping patients cope with their disease. These interpersonal influences can have a significant role in how people learn and absorb information. An observation by Maloney and Weiss (2008) when looking at how cardiac patients perceived the actual amount of information they received on hospital discharge, found that of the small number of patients who received less information than they felt they needed, the majority lived alone and may have felt the need for more vigilance regarding their health care issues.

Other factors in the literature that arose as being barriers to education, and that reflect on the situational influences mentioned previously, were race, with nonwhite patients reporting a greater amount of discharge teaching needed than white patients, (Maloney & Weiss, 2008) and gender, with women wanting more information or at least information of a different nature than their male counterpart (Ashton, 1997). The type of intervention has also been found to influence educational needs. Fernandez et al. (2008)
found that one half of the patients following PCI had the misconception that they have been cured and no longer had heart disease. This later fact is reinforced by other researchers who have demonstrated that in comparing people with CAD, those who have experienced coronary artery bypass surgery have a better knowledge of cardiac risk factors than those who have not, or who are only recently diagnosed with the disease. It would seem that a certain degree of suffering and time to reflect reinforces the ability or desire to learn about the causes of CAD.

**Motivation to Change in People with Coronary Artery Disease**

Motivation to change has to begin with the health care professional team. Denton, Fonarow, LaBresh and Trento (2003) promoted the nationwide motivational program “Get with the Guidelines.” Its purpose is to create an awareness of CAD and assure that all patients with known disease are discharged from the hospital with the secondary prevention guidelines that include specific drug recommendations, disease management, and lifestyle changes (Denton, et al. 2003). Although motivation starts with awareness and knowledge, the recipient’s interpersonal and situational factors certainly influence their motivation to move ahead with lifestyle changes. Apart from the factors that have been discussed previously, the literature points repeatedly to one issue that seems to affect people’s adherence to lifestyle changes. This is the belief that once having undergone treatment for CAD, either PCI or pharmacological intervention, individuals think that they are “cured”, where in fact the interventions are merely a temporary measure for symptom relief. As health care providers, we need to reiterate and impress
upon our patients, that in order to maintain remission of the symptoms of CAD, medications must be considered a lifetime prescription, and that PCI is a temporary measure. The CAD process is ongoing, and only by changing the causative factors will its progression be slowed, i.e. engaging in life style change.

Gaw (1992) indicated that in a study of 14 persons undergoing PCI, under one half of those demonstrated any motivation to make lifestyle changes, and only 4 out of the 14 patients interviewed, had plans to modify life-style behaviors upon returning home. Gaw-Ens and Laing (1994) found that patients consider PCI to be curative and therefore feel minimal need to modify their lifestyles. Fernandez, et al. (2008), found similar sentiments in the PCI patients in their study. Half of the patients following PCI had the misconception that they had been cured and no longer had heart disease. Gentz (2000) observed that patients who had undergone a PCI had less of a tendency to make heart healthful lifestyle changes than patients who have had either a myocardial infarction or coronary artery bypass grafting. The literature supports the belief that when people feel good and have not had to endure a great deal of hardship in getting to that point after a coronary event, they do not feel inclined to make any changes in their lives. Hildingh and Fridlund (2003), observed that long-term maintenance and motivation was a problem and often the patient returned to their old lifestyle habits, when they began to feel better.

Personalized and continued education that involved not only the patient but their significant others, would seem to be the best educational strategy. If the family member is knowledgeable regarding the importance of lifestyle changes, then there will potentially be increased motivation on the part of the patient. (Gaw, 1992). According to the theory
of wellness motivation, individuals experience periods of reevaluation initiated by information that heightens awareness of risk (Ashton, 1997). Nurses are in the position to motivate patients to change their health behavior by increasing their awareness of risk factors.

**Educational Methods Identified**

Several programs are in place to increase patients’ knowledge of coronary risk factors to empower them to better self-manage their health condition. These programs include cardiac rehabilitation, post-discharge education classes, nurse-led clinics, and coaching in risk factor modification (Fernandez, et al. 2008). Throughout the literature it is repeatedly stressed that the initial step in effective patient education is to determine patient needs. However, a person must initially have a good understanding of their disease and their own risk factors for that disease, before they can even identify their own specific needs in the education process. The method of providing information and maximizing its assimilation by the recipient, is an ongoing task under continued scrutiny. Peoples knowledge base of their disease and where they are in the disease process, their cognitive ability, their support system, their motivation to change and the time and staff available to provide the educational intervention, all play a part in how effective an intervention may be. The final and ultimate goal in patient education is to have the patient identify strategies for promoting, maintaining, and modifying health-related behavior (Moynihan, 1984).
Lindsay, Jennrich and Biemolt (1991), with a study population of 59 patients, compared the traditional cardiac rehabilitation program within the test site facility with a method of education utilizing a programmed instruction booklet. The booklet covered the same topics as the rehabilitation classes including risk factor modification with the focus being on post myocardial infarction patients. The study concluded that the booklet was in fact an effective teaching tool because the technique promotes efficient use of nursing time, and instills patient independence. This method of providing education does enable the patient to work at their own pace. It does assume however that the patient population is competent in computer use and that the facility does indeed have adequate monitors available.

Williamson (2008), conducted a randomized clinical trial with 88 cardiac bypass patients to assess the effectiveness of an individualized telephone intervention providing education once a week for the first three weeks following hospital discharge. The study found a positive correlation between the intervention and knowledge of symptom management and performance of therapeutic self care behaviors. A similar intervention would seemingly be effective in promoting risk factor behavior change. A study by Adams, et al. (2007) compared the physiological and psychological risk factor outcomes of cardiac patients who attended three different post hospital regimens. The first was an exercise-based cardiac rehabilitation session, the second a Leap for Life workshop, and the third those who received traditional care. Although the study did demonstrate some limitations the outcome made a case for the recommendation for more individualized, intense and focused risk factor modification strategies in cardiac rehabilitation programs.
Experimental studies by two different groups, Murphy, Fishman and Shaw (1989) and Raleigh and Odtohan (1987), tested the effectiveness of structured but individualized educational interventions with PCI and myocardial infarction patients respectively. Murphy’s study utilized a three component program. First a slide-tape presentation was shown; second, a booklet provided, and third, a scheduled consultation. The consultation was with a cardiovascular clinical nurse specialist who addressed questions and provided more detailed, individualized information after the slide-tape presentation (Murphy, et al. 1989). Raleigh & Odtohan’s study utilized the health education program “Back in Circulation,” which utilizes individualized prescribed instruction sessions. (Raleigh & Odtohan, 1987). These two studies concluded that both structure and individualized instruction are important components of a successful educational intervention, success being measured by the patient’s ability to retain knowledge and utilize it to modify lifestyle. It was also suggested by Raleigh & Odtohan’s study that regular follow up is important for knowledge retention and that a person’s coping style was somewhat predictive of the degree to which the educational intervention was successful (Raleigh & Odtohan, 1987).

Except for the study by Lindsay, et al. (1991), all of the studies contain the element of individual focus for education. Considering the many barriers to individual learning, this seems to be a point well worth considering when planning an educational intervention. Although the use of audiovisuals may be cost effective, as Pommier, (1992) pointed out, patients appreciated having a nurse take the time to answer questions, rather
than having to just watch a videotape. In the long run, the time spent may be the more cost effective method of education.

Reinforcement and reiteration are other points made quite frequently in the literature. Moynihan, (1984), states that respondents wanted educational topics reinforced throughout all three phases of cardiac rehabilitation. Family involvement and group support were other key issues mentioned again by Moynihan, (1984). She suggests group therapy as an ongoing support for patients with CAD. Patients tend to support one another in many aspects of behavior modification such as diet control or smoking modification. Woske and Kratzer (1977), and Stockwell and Tada (1976), emphasize involving family in patient educational interventions. Lifestyle changes focusing on prevention are more successful if the process involves the entire family. It is, after all a family transition from hospital to home.

A giant step was taken toward cardiac teaching and the process described in an article by Woske and Kratzer (1977). A “Patient Health Education Department” was established in the general community hospital and a committed collaborative effort mounted for the purpose of providing educational programs. Cardiac teaching nurses were trained to provide individualized educational programs for the cardiac patients in the facility. The program was structured to provide complete and accurate information, but maintained enough flexibility to allow for patient self structuring. Family members were encouraged to attend all sessions. Each patient participated in 8-10 daily teaching sessions. Written information was provided at the end of each session for later referral and review. Before discharge, the patient spent 5-7 days in a “Continuing Care Facility”
where they performed their own self care. A film was also used during this time to reinforce previous material and the patient is discharged to home with an individually prepared folder containing recommendations for activity, advice for follow up and continuing care. Post discharge further follow up is provided through telephone contact and through the “Sharing and Caring Club,” a support group that meets once a month at the hospital for both graduates of the program and for cardiac inpatients. Although not specifically stated, the reader assumes the program is a success as the facilities’ book is being used as the teaching manual in as many as 315 hospitals in 35 states. With this program and with others described, (Stockwell & Tada, 1976, CAD Initiative, 2001), collaborative effort from the health care team is hailed as being a key to success. The program described by Woske and Kratzer (1977), definitely addresses most of the components of a potentially successful educational cardiac intervention.

On a positive note, it is recognized in the literature that patient education should be an integral part of the overall treatment plan. Chummun (2009) stated in his article on reducing the incidence of CAD that education should be established as a widespread campaign, training more health care professionals to provide the necessary teaching and focusing on the implementation of health promotion programs in an attempt to reduce the incidence of CAD. With the advent of health care reform, prevention will hopefully become more prominent in our health care system.
A Comparison of Educational Approaches

The literature comparing the success of educational methods utilized in imparting health information to persons either at their request, as needed preoperatively, or on instruction from the physician is variable and inconclusive. In agreement at least, is the fact that more research is required to determine the best channel of approach. Ninety million Americans have low levels of health literacy that may well be contributing to poor health outcomes (Wilson, 2009), and it would therefore behoove us as health care professionals to determine the optimal method of educating our patients.

There are a few points reiterated in the literature that would seem to have some significant bearing on how well a person assimilates information. These include the practice of a face to face interaction with a health care professional, mostly a nurse, in the provision of education material, the use of motivational language and the use of pictures. Although the use of audiovisuals by themselves, did not specifically seem to enhance learning and the retention of information (Proctor, Jenkins, Loeb, Elliot, & Ryan, 2006; Astley, Chew, Ayward, Molloy, & De Pasquale, 2008; Raynes-Greenow, Roberts, Nasser, & Trevena, 2009), the use of pictures and pictorial aids did, especially when provided in conjunction with written or spoken text (Houts, Doak, Doal, & Loscalzo, 2006; Katz, Kripalani, & Weiss, 2006). Further, the approach in presentation also seemed to make a difference.

In a study of 57 persons comparing a direct advice style of communication versus a motivational style, it was found that the motivational style of communication was significantly more favorable compared to the direct advice approach (Gemmell &
Diclemente, 2009). An individualized approach to the provision of educational materials was found to make a significant impact on home self management with a greater degree of satisfaction on the part of the recipient (McCree, Sharpe, Brandt, & Robertson, 2006; Fagermoen & Hamilton, 2006). It was felt then that in this study the use of a motivational video on CAD risk factors would combine the benefits of both the motivational approach and to some extent the pictorial advantage. This, combined with an individualized face to face session with a nurse, would provide an educational intervention that would be both a positive experience for the recipient and an effective learning tool.

Who is Providing the Educational Intervention?

Nurses have traditionally been responsible for patient education (Moynihan, 1984). However, Karlik and Yarcheski (1990) reported that patients expressed a preference for physicians over nurses to teach cardiac information. A similar sentiment was expressed in another paper by Karlik and Yarcheski (1987). Ashton (1997) reported that 61.7% out of a total of 48 women preferred the physician over the nurse or the dietitian to do the teaching. In men, nearly 44% of a total of 73 preferred the nurse, but a large number, 40.9% preferred the physician. Contrary to these findings, a study by Mundinger et al. (as cited in Albert, 2008) found that people more often preferred nurse-managed care over physician-managed care, as the nurse tended to spend more time and provided more information during educational sessions.

Gerard and Peterson (1984) in a study that looked at congruency of learning expectations between cardiac patients and the nurses providing the teaching, as an
essential element in effective learning, concluded that although successful teaching necessitated congruence in patient-teacher expectations, a point made by others, another equally important ingredient was the perception of the nurse as a “legitimate authority.” The authors looked at a sample of 31 patients and 36 nurses for this study and concluded that nurses need to identify interventions with patients as specific teaching sessions, and in this way promote recognition of the profession as educators in order to be effective. The suggestion here is that the nurse is not seen by the public as a legitimate source of knowledge. Alm-Roijer et al. (2004) supported this statement by their suggestion that education sessions be acknowledged as an official part of the health care process and formally incorporated into the nurse role within the system. This, they claim, would lend credence to the nurse’s role as educator and to the message that is being taught. However, this view is not shared by everyone. Moynihan (1984) contests that nursing staff utilize their unique position to provide education by evaluating and fulfilling the patient’s educational needs during the course of their routine shift contact. In fact Moynihan further claims that nursing has earned recognition over the years as educators in the health care system. Albert (2008) reiterates this, naming nurses as the primary patient educators. She further claims that the management and education of persons by nurses improves their self care skills and clinical outcome. The American Nurses Association (ANA) states that an essential feature of the nursing profession is the provision of a caring relationship that facilitates health and healing, the essence of which is vigilance (ANA, 2003). In being vigilant, it is the nurses role to assess, intervene and reassess in ensuring a positive healthful outcome in their patient clientele, including the outcome of
educational measures. With the increasing number of clinical nurse specialists in the health care field, and the greater profile given now to family nurse practitioners, promotion of nurses as educators should be brought to the forefront providing a greater acceptance and recognition of this role that at least according to some of the literature references, is already well established.

**Long Term Adherence to Life Style Changes**

Long term adherence to life style changes has not been demonstrated. A study by Fernandez, et al. (2006) concluded that inadequate management of modifiable risk factors among 202 post-PCI participants 12-18 months after revascularization highlighted a need for tailored secondary prevention interventions to address factors contributing to cardiovascular risk. After one year, hypertension and hypercholesterolemia continued to be a problem for the study participants as was inactivity and excess weight. A third of those completing the questionnaire believed that they did not have any heart disease. If behavior modification is the cornerstone of management for CAD, and yet persons with the disease are failing to make the necessary life style changes, are we as health care professionals failing in the initial step of life style reform to provide adequate education?

A qualitative study by Gulanick, Bliley, Perino and Keough (1998) using focus groups to obtain information from 45 people who had undergone PCI 3-18 months earlier, revealed that although some people were making at least some of the life style changes, it was with a degree of difficulty and great frustration. The major hurdles were contradictory information in the media, lack of family support and a feeling of
overwhelming uncertainty about their disease and prognosis (Gulanick, et al. 1998). Again, among other factors, there is the issue of failing to provide necessary information for the people who both need and seemingly desire information on how to maximize their health benefits after a diagnosis of CAD? The people in these focus groups made a suggestion for newsletters, hot lines, video libraries and educational seminars, indicating that there is a strong need and a desire for ongoing education. The idea of support groups as mentioned in an article by O’Connor (2002) would maybe provide people with CAD some of the desired information and contact with other CAD sufferers and with health care professionals who could provide up to date knowledge on the current thinking and practice around their disease. Karlik, et al. (1990) is another group of researchers who also suggest post discharge support groups as an answer to helping people stay focused on risk factor management and long term change. It would seem prudent to this author, to take every available opportunity to assess risk factor knowledge in those people with the diagnosis of CAD, provide teaching, reassess the effectiveness, then to make this an ongoing process as part of the cardiovascular assessment, treatment and overall health objective.

Three different authors addressed the idea of intensive lifestyle change intervention. Lisspers, et al. (2005) stated that persons can retard or even reverse the process of underlying CAD if they focus on aggressive modification of risk factors. Ornish (1998) and Ornish, et al. (1998) described similar intensive programs. In the first study, 333 patients participated in a program that looked at whether patients could avoid revascularization by making comprehensive lifestyle changes at a lower cost and without
increasing cardiac morbidity or mortality. In the later study, 35 patients participated in the Lifestyle Heart Trial that investigated whether ambulatory patients could be motivated to make and sustain comprehensive lifestyle changes and if so whether the progression of CAD could be stopped or even reversed without the use of lipid lowering drugs. The commonality between such programs seems to be the intense, comprehensive format in combination with an extended contact period and religious follow-up (Lisspers, et al. (2005). The Lifestyle Heart Trial was the first randomized clinical trial to investigate whether patients could be motivated to sustain comprehensive lifestyle changes (Ornisch, et al. 1998). In fact, long term adherence was high. Even at 5 years, adherence was greater than any other published study of ambulatory persons. Lisspers, et al. (2005) describes a program that comprised a 12 month intervention starting with a 4 week residential stay consisting of intense group and individually based training activities and health education, promoting everyday habitual behavioral changes. This 12 month period is followed by an 11 month structured maintenance period comprising regular follow up contact between the participant and a case manager. Mutual goals are agreed upon, continually reevaluated and appraised. Finally, referral to the participant’s primary physician is made for maintenance counseling and consult. It must be noted that the term “individualized” is used in describing the interventions. Lisspers’ study proposed that this aggressive focus on modification of lifestyle habits can help coronary patients achieve long-lasting behavioral changes, changes so extensive and consistent that coronary disease progression can be reversed.
In a study by Schuler, et al. (1992), post PCI patients were enrolled in a 12 month program of semi-supervised exercise and diet control. The initial 3 weeks of the program were spent on a metabolic ward where instruction was provided. As well as daily exercise and diet control at home, the participants were expected to participate in at least two group training sessions each week. The participants and their spouses had contact with the health care professionals five times during the year to discuss diet, exercise or psychosocial issues and also had the opportunity to discuss personal issues or problems after each training session. The study concluded that along with diet control, CAD progression slowed with regular and intense exercise participation.

As with any chronic disease, the person with CAD has to be constantly vigilant and aware of their own personal delinquencies, a task that on a day to day basis could be daunting. Wilson, Kendall and Brooks, (2007), discussed the expert patient in an article that looks at self care as a way of managing demands in chronic disease. It is seen as empowering the patient, and describes the Chronic Disease Self Management Program as a means to teach people with chronic diseases to feel confident and empowered to control their condition. For long term success, it is not just knowing the risk factors for CAD, but being able to incorporate them into a way of life. It means learning adaptive strategies that promote living a high quality life, emotionally, vocationally, socially and physically (Marshall, Walizer & Vernalis, 2004). Healing is a dynamic process, ultimately a transformation that encompasses the entire body system, physical, emotional, social, spiritual and environmental.
The current study is designed to investigate whether or not an educational intervention with individualized attention and patient focus, can improve the knowledge base regarding risk factors for coronary artery disease. The study targets those people who already have the diagnosis of coronary artery disease, and utilizes a nursing educational intervention to promote learning.
CHAPTER 3

METHODS

Study Design and Data Collection

A descriptive, cross-sectional study design was used to answer the question, would an individualized educational intervention with a registered nurse (RN) increase knowledge of cardiac risk factors, and create a better awareness of cardiac risk factors in persons with CAD, than standard education alone. Participants were divided randomly into a control or an intervention group, using a table of random numbers. Both groups were shown an educational video on CAD risk factors, but only the intervention group was given the opportunity to ask questions of a nurse after the viewing. The purpose of the nurse interaction was to provide an opportunity for the participant to ask questions regarding the content of the video just viewed. The nurse simply asked “Do you have any questions for me?”

A pre- and post intervention questionnaire was used to determine the participant’s knowledge of risk factors for CAD before and after viewing the video (Appendix D and E). Data were collected over a 4-month period of time from January 2011 to May 2011.

Population and Sample Selection

A convenience sample of patients with appointments to see the cardiologist within a clinic at a small community hospital located in a large rural state constituted the study sample. The target sample size for the study was calculated to be 63 persons based on a
patient population of 5000 people, and using a 0.08 level of precision, a 0.5 degree of variability, and an 80% level of confidence (Israel, 2006; Rumsey, 2003). To be eligible for participation in the study, persons needed to previously diagnosed with CAD, 21 years of age or older, alert and oriented to time, place and person, fluent and able to comprehend the English language, with adequate vision and hearing to read and complete a written questionnaire and converse with the nurse.

Procedure

The cardiology office nurse was oriented to the study purpose and protocols by the principal investigator (PI). Appointment schedules for the cardiology clinic were reviewed weekly by the office nurse in order to determine eligible study candidates. The PI contacted the cardiology clinic nurse on a weekly basis to determine the number of potential study candidates due to have appointments the following week and was available in the clinic on those days. A written script was provided to the office nurse to ensure consistency and accuracy when recruiting study candidates. The eligibility criteria were included in this script (Appendix A). Potential study candidates were approached by the office nurse on their arrival for their appointments and provided an informational sheet prepared by the PI explaining the purpose and procedures of the study (Appendix B). Interested persons were asked to make themselves known to the front desk personnel, who then communicated this interest to the PI by writing their name on a pad provided for this purpose. The PI met with interested participants either before or after their appointment with the cardiologist, obtained informed consent (Appendix C), reviewed
the medical record to confirm their eligibility to participate and identify CAD risk factors, and made random assignment to the control or intervention groups. All participants were shown one by one into a private room where they were given the opportunity to ask the PI questions about the study and complete the pre-test questionnaire (Appendix D.) This questionnaire included questions to elicit demographic information, their level and type of formal education, their prior exposure to any cardiac risk factor education and whether or not they had a support system available to them. They were then asked to answer 10 yes or no questions in order to ascertain their knowledge of risk factors for CAD. Participants then viewed a 14 minute educational video (AHA, 2007) on CAD risk factors. Following the video, participants in the control group completed a post-test questionnaire (Appendix E) .The post-test questionnaire consisted of the same 10 yes or no questions contained in the pre-test questionnaire. The participants in the intervention group were given 10 minutes to ask questions of the PI about the video content prior to completing the same 10-item post-test questionnaire. The PI asked the question, “Do you have any questions for me.” If the study participant merely answered with a “no” response, the PI probed a little further by asking one of the following open ended questions.“What part of the video do you think was particularly pertinent to you?” “Was there anything in the video that struck you as particularly important or significant to you?” or “Was there anything in the video that you would like more information on?” Participants in both groups were provided with the correct answers to the questionnaire prior to leaving the clinic.
Early in March 2011, about half way through the data collection process, a poster announcing the availability of an educational opportunity was displayed in the cardiology waiting room in an attempt to elicit more study participants. At the same time the office cardiologists assumed an advocacy role for the study and in doing so, without this being the intended procedure protocol, positively influenced patient participation.

Human Subject Consideration

The study was approved by the Institutional Review Board at Montana State University. Permission to conduct the study within the clinic was obtained from the cardiologist.

Statistical Management and Analysis

Each participant was identified using a unique study number and the consents and pre- and post-test questionnaires were marked with these numbers for identification and verification of either control or intervention group affiliation. The completed questionnaires were collected from each participant by the PI. Consents and completed questionnaires were kept in a locked file cabinet in the investigators office. These documents will be kept secured for a period of three years (Principle Investigator Guide, June 2011).

The data obtained were managed using the Statistical Package for the Social Sciences (SPSS). The t-test was used to determine statistical significance between the mean score gains of the two groups. The null hypothesis for the study is, when compared
to persons who received standard education; an individualized educational intervention
with an RN does not significantly alter knowledge of cardiovascular risk factors in
persons with CAD. If the study were to reject the null hypothesis, then the intervention
would be considered successful in creating a greater awareness of risk factors of CAD.
CHAPTER 4

RESULTS

The study was conducted between January 2011 and May 2011 with 14 days spent in the cardiology clinic collecting data. Over these 14 days a total of 208 patients were seen in the clinic. Of those, 85 or 40.9% consented to participate in the study; 67 patients (32.2%) refused to participate; and 56 patients (26.9%) were not approached due to overly busy patient schedules on several given days. Following a review of each consented participant’s medical record, 22 of the 85 consenting participants (25.9%) were found to be ineligible as they did not have the diagnosis of CAD. Sixty-three persons therefore began the study with two being unable to complete it (See Table 1).

There were 25 persons in the control group and 36 in the intervention group. The data for each demographic grouping is tabulated as a percent of the number in each group. For example, 52% of the control group, out of the total number participating in that group was male. The females comprised 48% of the control group. In the intervention group, 33% of the total was male and 67% female. In the study population then the majority of females were in the intervention group. Under race, in the control group, all participants were white, in the intervention group 6% of the total were American Indian (AI) and the remainder 94% white (See Table 2).

Prior exposure to cardiac education was grouped according to the total number of different exposures the participant acknowledged. There were nine methods of exposure listed on the pre-video questionnaire and according to how many methods the participant
circled their exposure was rated as minimum, zero to one exposure source, moderate, two to three exposure sources or maximum, greater than three exposure sources.

Data were collected only on cardiac interventions specific to CAD that could be attributed to in part, poor lifestyle choices. These were grouped as none, stents or angioplasty or coronary bypass surgery. Stents and angioplasty were grouped together as the interventional procedure is the same, i.e. percutaneous coronary intervention (PCI). Interventions such as the insertion of pace makers, ablation therapy, or cardioversion were not considered a cardiac intervention for the purpose of this study.

Overall, the control and intervention groups were similar in as far as the participant demographic profile (Table 3). The typical control group participant was between 71 and 80 years of age, a white married male with at least two sources of support in the area and a college graduate. He has had moderate exposure to prior cardiac education, has three risk factors for CAD has had no coronary intervention and did complete the questionnaires and view the video without interruption in a single session. The typical intervention group participant was between 51 and 70 years of age, a white married female with at least two sources of support in the area and with some college education. She has had minimal exposure to prior cardiac education, has three risk factors for CAD, has had no coronary intervention and did complete the questionnaires and view the video without interruption in a single session (See Tables 2 and 3). Not all of the demographic information obtained could be tabulated statistically, as the information was not conducive to numerical assignment. It has to be noted that out of the total number of
participants, in both control and study groups, 14.75% actually scored worse on the post questionnaire by 1 or 2 points.

Table 4 is a comparison of the control and the intervention groups, as far as the mean scores obtained in the pre-video questionnaire +/- the standard deviation (SD), and the mean post-video scores +/- the SD. Using the t test analysis with n for the control group as 25, and n for the study group as 36 and taking the means and standard deviations for the two groups from table 4, t was calculated to be 0.73 with a p value of 0.37. From the published t-tables (Pearson, 2005; Rumsey, 2003) we have a very high probability that the null hypothesis is correct and that there is no difference between the two groups as far as their mean score gain.

During the 10 minute discussion time provided to the intervention group, twelve out of the 36 intervention group participants (33%) wanted to discuss their concerns. The other 66% declined to ask any questions or to discuss the video. During this discussion time ten different topics arose regarding either the risk factors for CAD or in a few cases, criticism of the questionnaire being too ambiguous or the video too dogmatic. Table 6 gives a breakdown of the topics discussed and their popularity as far as the number of participants and the frequency with which they addressed each topic. A number of participants addressed more than one topic.
Table 1. Numerical Analysis of Total Clinic Patient Population

<table>
<thead>
<tr>
<th></th>
<th>Number of Patients</th>
<th>% of Total</th>
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<tbody>
<tr>
<td>Total # of Patients in Clinic</td>
<td>208</td>
<td>100%</td>
</tr>
<tr>
<td>Patients Participating in Study</td>
<td>63</td>
<td>30.3%</td>
</tr>
<tr>
<td>Patients Refused Participation</td>
<td>67</td>
<td>32.2%</td>
</tr>
<tr>
<td>Patients Ineligible for Study</td>
<td>22</td>
<td>10.6%</td>
</tr>
<tr>
<td>Patients not Approached</td>
<td>56</td>
<td>26.9%</td>
</tr>
</tbody>
</table>

Table 2. Demographic Comparison of Control and Intervention Groups

<table>
<thead>
<tr>
<th></th>
<th>Control Group N=25</th>
<th>Intervention Group N=36</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n number in subset</td>
<td>% of N</td>
</tr>
<tr>
<td>Age Grouping in Years</td>
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<td></td>
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<tr>
<td>40-50 years</td>
<td>1</td>
<td>4.0</td>
</tr>
<tr>
<td>51-60 years</td>
<td>4</td>
<td>16.0</td>
</tr>
<tr>
<td>61-70 years</td>
<td>6</td>
<td>24.0</td>
</tr>
<tr>
<td>71-80 years</td>
<td>9</td>
<td>36.0</td>
</tr>
<tr>
<td>81-90 years</td>
<td>5</td>
<td>20.0</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
<td>52.0</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>48.0</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>American Indian</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>15</td>
<td>60.0</td>
</tr>
<tr>
<td>Single</td>
<td>2</td>
<td>8.0</td>
</tr>
<tr>
<td>Divorced</td>
<td>2</td>
<td>8.0</td>
</tr>
<tr>
<td>Widowed</td>
<td>6</td>
<td>24.0</td>
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<tr>
<td>Support System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1</td>
<td>4.0</td>
</tr>
<tr>
<td>One Source</td>
<td>3</td>
<td>12.0</td>
</tr>
<tr>
<td>Two Sources</td>
<td>16</td>
<td>64.0</td>
</tr>
<tr>
<td>Three Sources</td>
<td>5</td>
<td>20.0</td>
</tr>
<tr>
<td>Level of Formal Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>5</td>
<td>20.0</td>
</tr>
<tr>
<td>Some College</td>
<td>6</td>
<td>24.0</td>
</tr>
<tr>
<td>College Graduate</td>
<td>9</td>
<td>36.0</td>
</tr>
<tr>
<td>Graduate Level and &gt;</td>
<td>5</td>
<td>20.0</td>
</tr>
</tbody>
</table>
## Table 2 Continued

<table>
<thead>
<tr>
<th>Prior Exposure to Cardiac Education #/Total of 9 exposures</th>
<th>Min (0-1 exposures)</th>
<th>8</th>
<th>32.0</th>
<th>14</th>
<th>38.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mod (2-3 exposures)</td>
<td>11</td>
<td></td>
<td>44.0</td>
<td>11</td>
<td>30.6</td>
</tr>
<tr>
<td>Max (&gt;3 exposures)</td>
<td>6</td>
<td></td>
<td>24.0</td>
<td>11</td>
<td>30.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Risk Factors for participant</th>
<th>One</th>
<th>4</th>
<th>16.0</th>
<th>3</th>
<th>8.3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Two</td>
<td>8</td>
<td>32.0</td>
<td>13</td>
<td>36.1</td>
</tr>
<tr>
<td></td>
<td>Three</td>
<td>11</td>
<td>44.0</td>
<td>16</td>
<td>44.4</td>
</tr>
<tr>
<td></td>
<td>Four or &gt;</td>
<td>2</td>
<td>8.0</td>
<td>4</td>
<td>11.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prior Cardiac Intervention</th>
<th>None</th>
<th>17</th>
<th>68.0</th>
<th>24</th>
<th>66.7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stents</td>
<td>4</td>
<td>16.0</td>
<td>9</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>Coronary Bypass</td>
<td>4</td>
<td>16.0</td>
<td>3</td>
<td>8.3</td>
</tr>
</tbody>
</table>

| Video Viewing                                            | Viewed Video +/- intervention in single session | 22| 32 |
|----------------------------------------------------------|-----------------------------------------------|---|
|                                                          | Viewed Video +/- intervention, interrupted    | 3 | 4  |

### Table 3. Statistical Analysis of Data comparing Control and Intervention Groups

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Intervention Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean for the Group +/- SD</td>
</tr>
<tr>
<td>Age in Years</td>
<td>25</td>
<td>71.2 +/- 12.0</td>
</tr>
<tr>
<td>Number of Support Systems</td>
<td>25</td>
<td>2.0 +/- 0.7</td>
</tr>
<tr>
<td>Number of Prior Exposures to Cardiac Education</td>
<td>25</td>
<td>2.4 +/- 1.6</td>
</tr>
<tr>
<td>Number of Risk Factors</td>
<td>25</td>
<td>2.4 +/- 0.9</td>
</tr>
</tbody>
</table>
Table 4. Statistical Analysis of Pre and Post Questionnaire Scores for the Control and Intervention Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Pre-Questionnaire Score Mean +/- SD</th>
<th>Post-Questionnaire Score Mean +/- SD</th>
<th>Score Gain Mean +/- SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>25</td>
<td>8.19 +/- 6.97</td>
<td>8.96 +/- 6.24</td>
<td>0.77 +/- 0.55</td>
</tr>
<tr>
<td>Intervention</td>
<td>36</td>
<td>8.60 +/- 7.64</td>
<td>9.10 +/- 5.96</td>
<td>0.50 +/- 1.68</td>
</tr>
</tbody>
</table>

Table 5. Statistical Analysis of Pre-Questionnaire Scores Between Total Number of Males and Females Participating in Study

<table>
<thead>
<tr>
<th>Total # of participants</th>
<th>Pre-Questionnaire Score Mean +/- SD</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males n=25</td>
<td>*8.2 +/- 1.23</td>
<td>82</td>
</tr>
<tr>
<td>Females n=36</td>
<td>*8.5 +/- 1.42</td>
<td>85</td>
</tr>
</tbody>
</table>

*Indicates score out of a total possible 10.

Table 6. Popularity of the Topics Discussed Expressed as a Percentage of the Total Number of Topic Responses

<table>
<thead>
<tr>
<th>Topics Discussed</th>
<th>Number of Participants addressing each Topic</th>
<th>Popularity of Topic as % of total # of topic responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol Levels</td>
<td>4</td>
<td>33%</td>
</tr>
<tr>
<td>Exercise</td>
<td>4</td>
<td>33%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>Diet/Wt Loss</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>2</td>
<td>17%</td>
</tr>
<tr>
<td>Stress</td>
<td>2</td>
<td>17%</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>2</td>
<td>17%</td>
</tr>
<tr>
<td>Criticism of Questionnaire</td>
<td>2</td>
<td>17%</td>
</tr>
<tr>
<td>Criticism of Video</td>
<td>1</td>
<td>8%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1</td>
<td>8%</td>
</tr>
</tbody>
</table>
Figure 1. Graphical Representation of Pre and Post Questionnaire Scores (Sc) of both Control (C) and Intervention (I) Group Participants.

### Tabulated Data for Figure 1

<table>
<thead>
<tr>
<th>Score</th>
<th># of Control Participants</th>
<th># of Intervention Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Questionnaire</td>
<td>Post-Questionnaire</td>
</tr>
<tr>
<td>Score of 6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Score of 7</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Score of 8</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Score of 9</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Score of 10</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>
This study was conducted in an attempt to answer the question as to whether or not an educational intervention with individualized attention and patient focus can improve a recipient’s knowledge base with regard to the risk factors for CAD in patients with that diagnosis. The current study in comparing two groups of patients, those without individualized attention and those with, as defined by a ten minute period of focused one on one time after viewing an educational video, demonstrated no significant difference in their knowledge of risk factors for CAD after the educational intervention. This determination is reinforced by the t-test analysis on the mean score gains for the two groups.

In comparing the control and intervention groups demographically, both groups are similar in that the standard deviations for the means are large, at least with regard to the parameters that could be quantified (Table 3). The data provided in tables two and three indicate that the study population is indeed homogenous. Prior cardiac intervention stands out as a point of interest in the demographics in that the majority of participants in both groups, control and intervention had no prior cardiac interventional procedures i.e. 68% and 66.7% of the total respectively. From the literature review it is indicated that patients are more susceptible to learning if they have had experience of some debilitation or limitation from their disease, or if they have experienced a significant interventional procedure. Clearly the patient population under study is still fairly healthy and maybe
not yet at the stage to be receptive learners, in spite of the fact that the majority have at least three risk factors for CAD. Another factor in this study is whether or not the population accessed was ready or even wanting an educational intervention on cardiac risk factors. Previous studies have shown that there is a discrepancy between what we as health care professionals think our patients should know and what they themselves want to know. In this instant it could be that the content of the educational offering was of no significance in the perception of the targeted audience. Further, the timing of the offering may not have been optimal. The fact that 32.2% of the clinic patient population refused participation in the study might lead one to assume that spending 30 minutes participating in a study was not something they were wanting to do either before or after their doctor’s appointment. In addition, although there were no coercive methods used in order to convince patients to participate in the study, there was an element of suggestion when the cardiologist’s assumed an advocacy role, which could have introduced a bias and therefore a reluctance in those that did participate.

All of the study participants were aware of their diagnosis of CAD and the majority of participants were fairly knowledgeable regarding the risk factors for CAD, the pre-video test scores for the control and intervention groups respectively being 82% and 86% (Table 4). Previous research has shown an overall lack of risk factor awareness, especially in males. This was not found to be the case in this study as evidenced by the pre-video test scores and the fact that both male and females scored similarly, 82% and 85% respectively (Table 5). Statistical analysis of the mean pre-video scores for all males and all female participants grouped separately, give a p value of 0.36, indicating that
indeed the two populations scored equally well on the pre-video questionnaire (Table 5). With regard to the results in the present study and accepting the fact that the intervention, either with or without an individualized component, made no significant difference to the participants' risk factor knowledge base, it has to be asked, if the participants were fairly knowledgeable about CAD risk factors initially, why did 14.75% actually score less on the post-intervention questionnaire? Going back to the literature, the answer could be attributed to any number of reasons. Lack of motivation has been cited, poor timing of the intervention, personal patient cognitive barriers or any number of general or personal educational barriers. All of these elements are open to further investigation.

A prominent factor observed during the course of this study was the degree of patient denial in the targeted population. A number of the participants in the intervention group with whom the PI had an opportunity to talk gave “poor knees” as a reason for not exercising, disregarding the fact that they were overweight, this in itself a risk factor for CAD. Time limitations, jobs, child minding, high food costs or bad weather, were all reasons given as to why a particular participant was either not exercising, had elevated cholesterol or was overweight. Previous literature has provided a number of reasons as to why persons with CAD do not adopt a healthier lifestyle. This study suggests that denial is yet another obstacle to overcome. In addition to denial, it was the impression of the PI that there was an overwhelming feeling of helplessness in at least some of the patient population, either because of the above reasons or because of in spite of their best efforts, they did not see any significant improvement in their risk factors. The literature suggests that by improving patient awareness of their risk factors and their overall level of
understanding of the progression of coronary artery disease, they will gain a better sense of control and hence satisfaction in their level of health. Because the present study did not demonstrate a significant improvement in risk factor awareness either in the control or the intervention group (Table 4), it suggests that the interventional method of education used, either the video alone or with an individual session, was ineffective in its goal. If we as health care professionals are to provide persons with CAD a sense of control over their cardiac health, an effective way to provide the basic knowledge of risk factors as the first step, must be realized and further study in order to accomplish this is necessary.

A support system is another element that has been documented in the literature as significant in a patient’s success in maintaining lifestyle changes and control over their health. Assuming knowledge of disease risk factors correlates at least in part to life style changes, we can look at a person’s support system as an element of potential difference between the control and study groups and how this may affect learning. In the present study there was no significant difference between the control and intervention groups as far as their number of support systems, each having about two (Table 3). However, what was observed during the study was that patients, who came to their appointment with either their spouse or family members, were more likely to participate in the study and therefore were exposed to the educational video and/or the ten minute session with the PI. It can be assumed that the presence of an involved family member in a patient’s life has an overall positive effect on their wanting to seek, or be encouraged to seek medical advice or education regarding their disease, in this case CAD. Maybe then it is not so much the amount of support that is important in the patient’s ability to change lifestyle, or
whether or not as previous literature has looked at, a person is married or not, but rather the quality of support and whether or not that support system is conscientiously involved. Again, this is another area of research that would be beneficial to pursue.

There is much literature available on what method of educational intervention is the most successful in providing a positive outcome for patient learning. Motivational teaching as opposed to factual or “preachy” methods is stated as being more successful. The risk factor video used in this study (AHA. 2007) was criticized by some as too demeaning or disparaging, an impression that may have contributed to its apparent stimulatory failure. Another comment was that stress was not mentioned as a risk factor, a cause that has gained more recognition lately. Sleep apnea was a common diagnosis for many of the study participants and another contributory factor in coronary artery disease. This has not been well documented in the literature and again was not one of the risk factors mentioned in the video. Again, it may be that the video was just not the optimal learning style for the population targeted, or the optimal tool. A larger population would serve to shed some light on this aspect of the study.

An interesting observation made from the graphical representation of the study data (Graph 1), is the fact that it is only in the score of 10, that a significant improvement is seen between pre and post intervention scores for both the control and the intervention groups. This may suggest that the 10 point questionnaire was too difficult for the general population targeted and that only those participants that scored high on the pre-video questionnaire benefitted from the intervention and were able to increase their score on the post-video questionnaire. A number of participants asked the question of the PI “what
does sedentary mean,” which would indicate a lack of comprehension of at least one of the questions posed in the questionnaire. It is difficult to determine in this study if there is a difference between the control and study groups as far as level of formal education and prior exposure to cardiac education. This would indeed bias the results if exposure in either one area of education or both was greater in one group over the other. Again a larger population size would clarify the result outcome.

Individualized educational methods have been praised as most successful in being able to accommodate patient needs, but the length of interventional therapy is considered to be significantly longer than the ten minutes provided in this study. What is most successful however compared to what is feasible within the scope of clinical practice does not correlate significantly. What would be the minimally effective time frame for a given individualized intervention is a subject for future research. Given a longer time period and a greater number of study participants, it would of interest to research the effectiveness of an individualized educational session if provided in various increments of time. The study did provide some elucidation on areas that would be of interest for future investigation. How does stress affect CAD and is it a significant risk factor? Is sleep apnea a growing health issue with regard to CAD? If an individualized educational intervention is the optimal method of education, what is the time frame required to it to be effective?

The results of the current study clearly reinforce the concepts outlined in Pender’s health promotion model as the conceptual framework utilized for this study. Learning in and of itself has a multitude of variants depending on whom is being addressed. As has
been discussed, patient’s stage in their disease process, their previous exposure to educational interventions or surgical disease interventions, their level and quality of support and multiple other factors, all play a role in how the educational intervention is perceived. Additionally, the ideas in Pender’s model are further illustrated, in that even with a knowledge of risk factors, persons with CAD in this study, verbalized or suggested a number of reasons as to why they had not adopted a life style conducive to halting the progression of their disease. As suggested in the health promotion model, there are seemingly a number of conceptual cognitive processes both for the individual alone and as a part of a family and societal unit, that create barriers to their using any educational material in a way that promotes better health.

Limitations of Study

Although the minimum sample size of 63 was attained for this study, the control and intervention group sizes demonstrated significant incongruence and improved comparison could have been made with a larger sample size. The individualized ten minute one on one session with participants in the intervention group proved to be a difficult parameter to control, both in length and in discussion content. Some disparity in educational outcomes could conceivably have been due to this inconsistency. Considering the variables within the study group as far as prior cardiac education, formal education level, number of risk factors etc., a larger population size would serve to improve and clarify the statistical outcome.
REFERENCES


Patient Education and Health-related Quality of Life. *Journal of Nursing Care Quality*. 20, 4. 307-316.


APPENDICES
APPENDIX A

OFFICE NURSE SCRIPT IN RECRUITING

POTENTIAL STUDY CANDIDATES
Hi (Ms., Mr., Mrs.) __________. We have a nurse in the office today conducting a study on how to make patient education more effective (hand patient informational flyer). We are wondering if you would like to participate either after your appointment today, or if time allows, before you see the doctor. May I send the nurse over to you to explain the study and answer your questions?

NOTE: The nurse will approach only those patients who are:

1. 21 years of age or older,
2. alert and oriented to time, place and person,
3. able to speak and understand the English language, and
4. have adequate vision and hearing to complete the study survey and view the videotape.

The study PI will confirm the eligibility criteria during the consenting process.
APPENDIX B

INFORMATIONAL FLYER
OPPORTUNITY TO PARTICIPATE IN A RESEARCH STUDY TODAY,
DIRECTLY AFTER OR BEFORE YOUR APPOINTMENT!

WHO: Patients of the cardiology clinic. This study is being conducted with permission of Drs. Ribic and Kingsley (cardiologists) by Margaret Schaefer RN, a master’s degree student in the family nurse practitioner program at Montana State University under the supervision of her advisor Dr. Charlene Winters.

WHAT: A study to evaluate the effectiveness of education on patients’ knowledge of risk factors for heart disease. You will take a short survey about risk factors for heart disease, watch a short video, and then take another short survey.

WHEN: Today before or after your appointment with the doctor.

WHERE: Here at the cardiology clinic.

WHY: Knowledge of risk factors for heart disease is an important part of health care. This study will help to identify an effective education method for patient education about risk factors.

HOW: Please let the front desk personnel know you are interested in participating in the study.

Margaret Schaefer will meet with you to explain the study and answer your questions before beginning.

Thank you.
APPENDIX C

SUBJECT CONSENT FORM FOR PARTICIPATION

IN HUMAN RESEARCH AT MONTANA STATE UNIVERSITY
“A comparison of two educational interventions on knowledge of cardiac risk factors in persons with coronary artery disease.”

You are being asked to participate in a research study to evaluate the effectiveness of two educational methods on patients’ knowledge of risk factors for heart disease. This study is being conducted with permission of Drs. Ribic and Kingsley (cardiologists) by Margaret Schaefer, RN, a master’s degree student in the family nurse practitioner program at Montana State University and under the supervision of her advisor, Dr. Charlene Winters.

You are being asked to participate because you are a patient of the cardiology clinic with a history of heart problems, 21 years of age or older, fluent and able to comprehend the English language, with adequate vision and hearing to review and comprehend a video tape. Your participation will help us to identify effective patient teaching methods.

If you agree to participate, you will complete two short questionnaires, each taking roughly ten minutes, and watch a fourteen minute educational video on coronary artery disease and its risk factors. Some participants will also have the opportunity to ask the nurse questions about risk factors for heart disease. In order to complete this research, the nurse will obtain your diagnosis and personal risk factors for heart disease from your clinic medical record. Only information that is needed for the study will be collected.

Participation in the study carries no risks or direct benefits for you. However, you may learn about risk factors for heart disease by watching the educational video. There is no funding for the study and there is no cost to you to participate in the study. If you
decide to participate in the study, you may choose to stop at any time. Your decision to participate in the study will in no way affect your care at the cardiology clinic or your relationship with the staff. You will receive education about risk factors for heart disease from the staff as part of your usual care.

If you decide to participate in the study, you will be identified only by a study number. The questionnaires and any health information collected from your clinic medical record will be handled in a secure manner and stored in a locked file in the student investigator’s possession. The only health information collected from your chart will be your medical diagnosis and the risk factors you have for coronary artery disease. All other information will be provided by you to me through the answers you provide in the pre- and post-video Questionnaire. Please do not hesitate to ask questions about the study.

A copy of this consent form will be given to you for your records. At your request you will be notified of the study results upon its completion.

While it is highly unlikely that you would injure yourself when completing the questionnaire and watching the video, if you do so, you will be encouraged to speak with your health care provider. There is no compensation from Montana State University for any injury and the cost of care would be your responsibility.

AUTHORIZATION TO SHARE PERSONAL HEALTH INFORMATION IN RESEARCH

I am asking you to take part in the research described in the attached consent form. To do this research, I need to collect health information that identifies you. I will collect the results of tests from your medical record and the two questionnaires. I will only collect information that is needed for the research. This information is described in
the attached consent form. For you to be in this research, I need your permission to collect and share this information.

I will share your health information with people at the clinic who help with the research. I may share your information with other researchers outside of the clinic. I may also share your information with people outside of the clinic who work with me on the research. Some of these people make sure we do the research properly. The “confidentiality” section of the consent form says who these people are. Some of these people may share your health information with someone else. If they do, the same laws that the clinic must obey may not protect your health information.

If you sign this form, I will collect your health information until the end of the research. I may collect some information from your medical records even after your direct participation in the research project ends. I will keep all the information forever, in case we need to look at it again. I will protect the information and keep it confidential.

Your information may also be useful for other studies. I can only use your information again if the Institutional Review Board gives me permission. This committee may ask me to talk to you again before doing the research. However the committee may let me do the research without talking to you again if I keep your health information private.

If you sign this form, you are giving me permission to collect, use and share your health information. You do not need to sign this form. If you decide not to sign this form, you cannot be in the research study. You need to sign this form as giving your consent if you want to be in the research study. I cannot do the research if I cannot collect, use and share your health information.

If you change your mind later and do not want me to collect or share your health information, you need to send a letter to Margaret Schaefer using the contact information listed below. The letter needs to say that you have changed your mind and do not want me to collect and share your health information. You may also need to leave the research study if I cannot collect any more health information. I may still use the information I have already collected. I need to know what happens to everyone who starts a research study, not just those people who stay in it.

Should you have questions about the research, you can contact the student investigator, Margaret Schaefer at (406) 459-2060, or via e-mail at margaret96@msn.com. You may also direct your questions to Dr. Charlene Winters, the student investigator’s advisor at (406) 243-4608 or winters@montana.edu. If you have additional questions about the rights of human subjects you can contact the Chair of the Institutional Review Board at Montana State University, Dr. Mark Quinn at (406) 994-4707 or via email at mquinn@montana.edu.
“AUTHORIZATION: I have read the above and understand the discomforts, inconvenience and risk of this study. I, _____________________________ (name of subject), agree to participate in this research. I also agree that my health information can be collected and used by the researchers and staff for the research study described in this consent form. I understand that I may later refuse to participate, and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _________________________________________________

Witness: ________________________________________________

Investigator: _____________________________________________

Date: ___________________________________________________
APPENDIX D

PRE – VIDEO QUESTIONNAIRE
Part 1: Demographic Characteristics

Please circle the correct response.

a. Gender:

   Male

   Female

b. Year of Birth_______________ (fill in year)

c. Ethnicity:

   Hispanic or Latino

   Not Hispanic or Latino

d. Race:

   American Indian/Alaskan Native

   Asian

   Native Hawaiian or Pacific Islander

   Black or African American

   White

e. Marital Status:

   Married

   Living with Significant other

   Single/never married

   Widowed

   Divorced

   Separated
Please circle the correct response.

f. Highest Level of Education Completed:
   - Never attended school
   - Grades 1 through 8 (some elementary/middle school)
   - Grades 9 through 11 (some high school)
   - Grades 12 or GED (high school graduate)
   - College 1 year to 3 years (some college or technical school)
   - College 4 years (college graduate)
   - College 4 plus additional years (graduate school)

g. Living Situation:
   - Live with Spouse/ Significant Other/ Other Family Member
   - Live Alone
   - Other

h. Support System:
   - Have Family Support in Area
   - Have Support of Friends in Area
   - Other

i. What type of education have you received so far on the risk factors for coronary artery disease?

Please check all that apply.
   - Viewed audiovisual tape/CD provided by my health care provider
   - Listened to audio tape/CD provided by my health care provider
Were given printed material by my health care provider
Received verbal information from my cardiologist
Received verbal information from a registered nurse

**Please check all that apply.**

Received verbal information from another health care professional
Looked up information on my own on risk factors for heart disease on the Internet
Gathered printed information on my own from my health care providers’ office on risk factors for heart disease
Gathered printed information on my own from a variety of places on risk factors for heart disease.

**j. Please circle all that apply and write in the date when this occurred if known.**

Have you ever had a heart attack? Year ____

chest pain? Year ____

placement of a heart stent? Year ____

any other procedure for your heart? Year ____

k. In what year did you first learn that you had heart disease? ____

**Part 2. Risk factors for heart disease.**

**Please answer the following questions by circling either Yes or No. Answer to the best of your knowledge. Please do not skip any question.**

1. For best cardiac health, a person’s total cholesterol should be less than 200 mg/dl.
   Yes  No
2. Persons with diabetes are at a lower risk than the general population for coronary artery disease.
   Yes  No

3. Hypertension is the “silent killer” for coronary artery disease.
   Yes  No

4. Nicotine and carbon monoxide are the byproducts of smoking that are harmful to the blood vessels and subsequently cause coronary artery disease.
   Yes  No

5. As women get older, their risk for coronary artery disease decreases.
   Yes  No

6. My risk factors for coronary artery disease are unrelated to whether or not my parents or any of my siblings have ever been diagnosed with the disease.
   Yes  No

7. Overweight individuals are at a higher risk for coronary artery disease than those individuals whose weight is within the recommended parameters.
   Yes  No

8. A sedentary lifestyle reduces your risk for coronary artery disease.
   Yes  No

9. African and Mexican Americans, American Indians and those of Hawaiian descent, are at a greater risk than Caucasians for coronary artery disease.
   Yes  No

10. Diet is not especially important as a factor in reducing risk for coronary artery disease.
    Yes  No

Please give your survey to the student nurse investigator.

Thank you for your participation
APPENDIX E

POST QUESTIONNAIRE
Please answer the following questions to the best of your knowledge by circling either Yes or No.

Do not skip any question.

1. For best cardiac health, a person’s total cholesterol should be less than 200 mg/dl.
   Yes          No

2. Persons with diabetes are at a lower risk than the general population for coronary artery disease.
   Yes          No

3. Hypertension is the “silent killer” for coronary artery disease.
   Yes          No

4. Nicotine and carbon monoxide are the byproducts of smoking that are harmful to the blood vessels and subsequently cause coronary artery disease.
   Yes          No

5. As women get older, their risk for coronary artery disease decreases.
   Yes          No

6. My risk factors for coronary artery disease are unrelated to whether or not my parents or any of my siblings have ever been diagnosed with the disease.
   Yes          No

7. Overweight individuals are at a higher risk for coronary artery disease than those individuals whose weight is within the recommended parameters.
   Yes          No

8. A sedentary lifestyle reduces your risk for coronary artery disease.
   Yes          No

9. African and Mexican Americans, American Indians and those of Hawaiian descent, are at a greater risk than Caucasians for coronary artery disease.
   Yes          No

10. Diet is not especially important as a factor in reducing risk for coronary artery disease.
    Yes          No

Thank you for your participation.
APPENDIX F

QUESTIONNAIRE ANSWERS
Risk factors and coronary Artery disease

1. For best cardiac health, a person’s total cholesterol should be less than 200mg/dl.
   Yes

2. Persons with diabetes are at a lower risk than the general population for coronary artery disease.
   No

3. Hypertension is the “silent killer” for coronary artery disease.
   Yes

4. Nicotine and carbon monoxide are the byproducts of smoking that are harmful to the blood vessels and subsequently cause CAD.
   Yes

5. As women get older, their risk for coronary artery disease decreases.
   No

6. My risk factors for coronary artery disease are unrelated to whether or not my parents or any of my siblings have ever been diagnosed with the disease.
   No

7. Overweight individuals are at a higher risk for coronary artery disease than those individuals whose weight is within the recommended parameters.
   Yes

8. A sedentary lifestyle reduces your risk for coronary artery disease.
   No

9. African and Mexican Americans, American Indians and those of Hawaiian descent, are at a greater risk than Caucasians for coronary artery disease.
   Yes

10. Diet is not especially important as a factor in reducing risk for coronary artery disease.
    No