ABSTRACT

SMOKING CESSATION AFTER CORONARY ARTERY DISEASE: A PILOT STUDY

By Julie A. Berger

The purpose of this study was to examine behavioral factors related to smoking that differentiated those who quit smoking following a diagnosis of coronary artery disease from those who did not quit smoking. Reasons for smoking such as behaviors, attitudes toward smoking, and physical dependence vary among individuals, as does their readiness and motivation to quit smoking. By examining an individual's behaviors related to smoking, the Advanced Practice Nurse (APN) can better understand the learning needs of the patient in order to provide a more effective and successful smoking cessation intervention program. This is an important step when initiating smoking cessation education to patients following a diagnosis of coronary artery disease (CAD). The APN is perfectly suited to implement strategies and interventions because of their expertise in health promotion and prevention, patient education, and communication skills.

A descriptive pilot study was done utilizing a convenience sample from two outpatient cardiac rehabilitation clinics. The participants had been smokers prior to their diagnosis of CAD. A demographic sheet (Appendix A) was given to the participants. The Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ, Appendix B) was also given to the participants.

The theoretical framework that supported this study was The Health Promotion Model (HPM) by Pender. This model guides the exploration of biopsychosocial processes that encourage individuals to participate in behaviors aimed at health improvement (McEwen & Wills, 2007). Previous behavior as well as inherited and acquired characteristics of individuals can influence their beliefs, affect, and performance of health promoting behaviors. Thus, an individual's characteristics and experiences may influence whether or not they quit smoking after being diagnosed with CAD. An individual's perceptions on whether or not they are able to implement a specific behavior, such as smoking cessation, may also significantly impact the likelihood of commitment to action and actual performance of the specific behavior (Pender, Murdaugh, & Parsons, 2002).

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by

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I would like to dedicate this project to my family. To my husband, John, for his constant love, support, and encouragement to me throughout my nursing career. To our children: Justin and Michael, for believing in me, and for sacrificing so much to help me reach my goals as I continued my education. You have all been my greatest supporters.

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CHAPTER I

INTRODUCTION

Although death rates of coronary artery disease (CAD) have been declining over the past several decades, CAD is still the number one cause of mortality among men and women in the United States (American Heart Association [AHA], 2009). Controlling risk factors remains challenging for many individuals. During 2006, CAD accounted for 1 out of every 2.9 deaths in the U.S. (AHA). Approximately 80,000,000 or one in three adult Americans have one or more types of cardiovascular disease. Cardiovascular disease includes the diseases of hypertension, coronary heart disease (CHD), heart failure and stroke. Of these, CHD accounts for approximately 16,800,000 of those with CAD. CHD encompasses angina pectoris and myocardial infarction (MI).

Coronary artery disease is a chronic disease affecting the cardiovascular system. It is a condition in which there is a build-up of plaque or fatty material in the coronary arteries. The coronary arteries are important for supplying oxygen to the heart muscle (National Heart Lung and Blood Institute [NHLBI], 2009). According to the AHA in 2005, approximately one out of every five deaths was caused by CHD. It is estimated in 2009 that 785,000 Americans will suffer a new coronary attack, and approximately 470,000 will have a recurrent attack. Estimations also predict an additional 195,000 silent first MIs to occur each year. In addition, approximately every 25 seconds an American

suffer from an acute coronary event, and someone will die from an event every 60 seconds (AHA).

Multiple risk factors predispose men and women to developing CAD. Modifiable risk factors include tobacco smoke, high blood cholesterol, high blood pressure, physical inactivity, obesity and overweight, and diabetes mellitus. The AHA identifies non-modifiable risk factors as increasing age, male gender, and heredity (including family history and race). Other risk factors include alcohol intake, stress, and dietary intake of high salt and fat. Cobb, Brown, and Davis (2006), cite several studies indicating that reducing risk factors is effective in lowering both recurrent coronary events and CAD mortality in patients who have already suffered a MI or underwent coronary artery revascularization. Thus, identification of risk factors and treatment options, and implementation of the treatment is imperative to managing patient care in patients with CAD. Lifestyle changes are an important part of the treatment plan. Smoking cessation is one of the lifestyle changes that can be made to help reduce CAD.

The Centers for Disease Control and Prevention ([CDC], 2009), report tobacco use as the single most preventable cause of death and illness in the U.S. Smoking has been identified for some time as an important modifiable risk factor for acute MI. The AHA (2009) reports that a smokers' risk of developing CAD is approximately 2 to 4 times that of nonsmokers. Smoking also raises blood pressure, lowers one's tolerance for physical activity, increases the propensity for blood clot formation and decreases HDL (high-density lipoprotein) or good cholesterol. As reported by Dawood et al. (2008), smoking cessation can help reduce readmission rates as well as decrease mortality by as

much as 50% in patients with recognized cardiovascular disease. Unfortunately, even though there are obvious benefits of smoking cessation following MI, only about one-third to one-half of patients who smoked at the time of their MI consequently quit.

Although best efforts are used to communicate the significance of risk factors and lifestyle changes that may decrease the frequency or control the effects of CAD, patients vary in their understanding of personal importance and their capability to enact meaningful and continuous change (Jillings, 2008). Jillings also points out that patients understand they possess risk factors of an unhealthy lifestyle, yet they still only vaguely recognize a need for change. As a result, many individuals continue to smoke in spite of the fact that they know smoking is harmful to their health and may result in an MI.

Therefore, differences between continuing smokers and those who quit smoking following the diagnosis of CAD should be identified. Differences being examined in this study include reasons for smoking such as behaviors, attitudes toward smoking, and physical dependence, as well as what motivates a person to quit smoking and whether individuals feel they can refrain from smoking.

Critical Analysis

Smoking is the most preventable cause of early death in the U. S., and is a modifiable risk factor that can and should be addressed in patients with CAD (AHA, 2009). The Framingham Heart Study, begun in 1948, is the study that is synonymous with extraordinary advances made in the prevention of and identification of key risk factors for CAD in the U.S. and all over the world (2009). Prior to the Framingham Heart

Study, the idea that scientists could recognize risk factors and modify them related to heart disease was not part of customary medical practice at the time. Many physicians did not believe that changing certain behaviors, such as smoking, could circumvent or reverse the principal causes of serious heart disease. Previously it was thought that atherosclerosis was an unavoidable part of the aging process. Smokers have been identified as having an increased risk of developing atherosclerosis, the buildup of fatty material in the arteries, which can result in CAD or MI (AHA). It was also felt that blood pressure was supposed to elevate with age to make it easier for the heart to pump blood through the narrowed arteries of the elderly. This idea regarding aging was also found to be false.

The Framingham (2009) study was initiated to identify key factors, both biological and environmental, that were causing a substantial increase in cardiovascular death and disability beginning in the 1930s. By examining major elements of the American lifestyle, Framingham was able to identify those risk factors (2009). Prior to the study, cigarette smoking was not thought to be a true hazard in developing heart disease. Framingham identified the relationship between smoking, CAD, and MI or occurrence of a sudden death. More specifically, a relationship was found with the number of cigarettes smoked per day. In addition, the risk of CAD could be halved by those who quit smoking when compared with those who continued to smoke. Empirical data indicates that 15-45% of acute MIs are related to active smoking in the absence of other risk factors (Kabir, Connolly, Clancy, Koh & Capewell, 2008).

Unfortunately, even though there are obvious benefits of smoking cessation following the diagnosis of CAD or following a MI, only about one-third to one-half of patients who smoked at the time of their MI consequently quit (Dawood et al., 2008). Research has shown that smoking cessation is associated with a decreased risk of MI. Nevertheless, despite the availability of effective smoking cessation programs, they are not always being offered (Song & Cho, 2008; Gies, Buchman, Robinson & Smolen, 2008; Dawood, et al.). In addition, one study revealed smokers older than 29 were less likely to be enlisted into a smoking cessation program, and smokers who smoked more than 10 years had even less of a possibility of being considered (Cataldo, 2007). Even though great efforts are being made to communicate the significance of smoking cessation to patients with CAD, the patients vary in understanding of personal importance and their capability to enact meaningful and continuous lifestyle changes (Jillings, 2008). Jillings indicates that many patients also understand they possess risk factors or an unhealthy lifestyle, yet they continue to only vaguely recognize a need for change. Therefore, many individuals continue to smoke in spite of the fact that they know smoking is harmful to their health and may result in the development of heart disease or result in a heart attack.

The literature reflects that there are a variety of reasons for smoking. Many individuals smoke because it is habit. They smoke because it gives them something to do with their hands or because it is part of their daily routine (Glover et al., 2005). Some say that it relieves stress and smoking cessation increases stress. In reality, studies have actually shown smoking causes stress (Cataldo, 2007). Nicotine withdrawal begins to

occur between cigarettes and this causes an increase in stress. Then, to curb the effects of withdrawal, smokers use smoking to attempt to stabilize their mood. Carmody (1989) and Sachs (1986) indicate that smoking increases quality of life, that it increases relaxation, decreases anxiety, decreases depression, increases concentration, maintains autonomy and reduces boredom. In contrast, studies by Mulder, Tijhuis, Smit, and Krumhout (2001), and Maxwell and Hirdes (1993), indicating smoking, regardless of age, has significant negative effects on an individuals' quality of life.

In 2006, 8.6% of adults age 25 and older who attempted to give up smoking in the past 12 months and previous smokers who quit less than 1 year ago, successfully quit smoking for 3 months or more (National Cancer Institute, 2007). Motivations to quit vary among individuals, and some studies indicate that it can be related to health concerns, financial reasons, or family influence (Halpen & Warner, 1993). Education, strategies, and interventions regarding smoking cessation need to be tailored to meet the needs of each individual. Previous experiences and behaviors can also affect an individual's ability to quit smoking. Unsuccessful past attempts at smoking cessation may negatively impact a person's decision to make another attempt. Conversely, determination to not fail again can positively influence a person's decision to try quitting. Unfortunately, there is a significant gap in the literature comparing the differences between those who continue smoking and those who are able to quit, especially following a serious event like a MI. Identifying the differences between those who have successfully quit smoking and those who continue to smoke may be beneficial when tailoring an effective smoking cessation

program for individuals who continue smoking with a diagnosis of coronary artery disease.

Significance for Advanced Nursing Practice

Continuing education, health promotion and prevention are principal objectives for Advanced Practice Nurses (APNs) in any primary care setting. APNs can help close the gap between recommendations found in evidence-based literature and clinical practice by applying educational programs to their practice. They can identify modifiable risk factors in patients with CAD such as smoking. Then, they can address the reasons the patient has for smoking, assess the patient's readiness to quit smoking, and if the patient is ready and feels confident in their ability to abstain from smoking, the APN can implement a smoking cessation program. The APN is perfectly suited to implement these strategies and interventions because of their expertise in health promotion and prevention, patient education, and communication skills. Knowledge of their patients and patient's families can furthermore assist in providing personalized care, while negotiating objectives and plans of action amenable to the patient. In addition to promoting healthy lifestyles, APNs can perform new research in an effort to decrease CAD. Thus, promoting a positive change in the direction of diminishing the effect of CAD, while creating a healthier community.

Problem Statement

Smoking has been identified as a modifiable risk factor for CAD and is the single most preventable cause of death and illness in the United States. Lifestyle changes are an important part of the treatment plan for reducing CAD and smoking cessation is one of those lifestyle changes. Thus, identification of factors that differentiate those continuing to smoke from those who quit smoking are important for developing a more effective smoking cessation program for those patients with CAD.

Purpose of Study

The purpose of this study was to examine behavioral factors related to smoking that differentiated those who quit smoking following the diagnosis of coronary artery disease from those who did not quit smoking. Reasons for smoking vary among individuals, as does their readiness and motivation to quit smoking. By examining an individual's reasons for smoking as well as their readiness and motivation to quit smoking, the APN can better understand the learning needs of the patient in order to provide a more effective and successful smoking cessation intervention program. This is an important step when initiating smoking cessation education to patients with coronary artery disease.

Research Question

What are the behavioral factors related to smoking that differentiate individuals who quit smoking following a diagnosis of coronary artery disease from individuals who do not quit smoking?

Definition of Terms

Conceptual Definitions

Individuals who quit smoking: Individuals both male and female, age 18 and older, have abstained from smoking even one puff of tobacco smoke for the past 2 months or more.

Individuals who do not quit smoking: Individuals both male and female, age 18 and older, have continued to smoke, and have had even one puff of tobacco in the past 2 months.

Coronary Artery Disease (CAD): The narrowing of the coronary arteries, usually as a result of atherosclerosis. The single most common cause of death in industrialized nations. (Taber's Cyclopedic Medical Dictionary, 2001)

Operational Definitions

Individuals who quit smoking: All individuals had to be smokers at the time of their diagnosis of CAD. Subjects are classified as nonsmokers if they have not had even one puff of tobacco smoke in the past 2 months or more. They include both male and females age 18 and older.

Individuals who do not quit smoking: All individuals had to be smokers at the time of their diagnosis of CAD. Subjects are classified as smokers if they have had even one puff of tobacco smoke in the past 2 months. They include male and females age 18 and older.

Coronary Artery Disease (CAD): The individual's coronary artery disease will be recognized by a medical diagnosis of coronary artery disease which includes ST elevated MI (STEMI), non-ST elevated MI (NSTEMI), Angina, coronary artery bypass surgery (CABS), percutaneous coronary intervention (PCI) from a medical facility or referring physician.

Assumptions

1. Individuals involved in this study would be honest when answering the questionnaires.
2. Individuals were able to read and write English.
3. There was a difference in motivation to quit smoking between the individuals who continued to smoke versus those who quit smoking following the diagnosis of coronary artery disease.
4. There was a difference in the confidence level to abstain from smoking in those who continued smoking versus those who quit smoking.

Summary

Coronary artery disease is a considerable health problem in the U.S. Modifiable risk factors such as smoking need to be addressed to improve cardiac health and increase years of life as well as quality of life. Identification of differences related to reasons for smoking, motivation to quit and confidence levels in the ability to abstain from smoking will aid in patient education with disease prevention, treatment regimens, and help reduce health care costs. Identifying these differences is an important initial step when trying to develop successful smoking cessation strategies and interventions. The APN is perfectly suited to implement these strategies and interventions because of their expertise in health promotion, patient education, and communication skills. Knowledge of their patients and patient's families can furthermore assist in providing personalized care, while negotiating objectives and plans of action amenable to the patient. In addition to promoting healthy lifestyles, APNs can perform new research in an effort to decrease CAD. Thus, promoting a positive change in the direction of diminishing the effect of CAD, while creating a healthier community.

CHAPTER II

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

In this study, the purpose was to examine behavioral factors related to smoking that differentiated those who quit smoking following a diagnosis of coronary artery disease from those who did not quit smoking. Reasons for smoking vary among individuals, as does their readiness and motivation to quit smoking. In this chapter, the Health Promotion Model (HPM) by Pender (2006), and its application to this study are discussed. A literature review will follow and includes: (a) smoking as a risk factor for CHD and smoking in patients with CAD, (b) reasons for smoking such as behaviors, attitudes toward smoking and physical dependence, and (c) what motivates individuals to quit smoking and their beliefs in their ability to abstain from smoking.

Theoretical Framework

Pender's Health Promotion Model ([HPM] 2006) provided a framework for this research study (Figure 1). The basis of the model supported the principle that a healthy lifestyle should be the goal of every individual. The HPM emerges from an effort to illustrate "the multidimensional nature of individuals interacting with their interpersonal and physical environments as they pursue health" (2006, p. 50). The theoretical basis for this model integrates the social cognitive theory and expectancy-value theory. The social cognitive theory, according to Pender, explains how environmental events, personal factors, and behaviors work as mutual determinants of one another. In the expectancy-

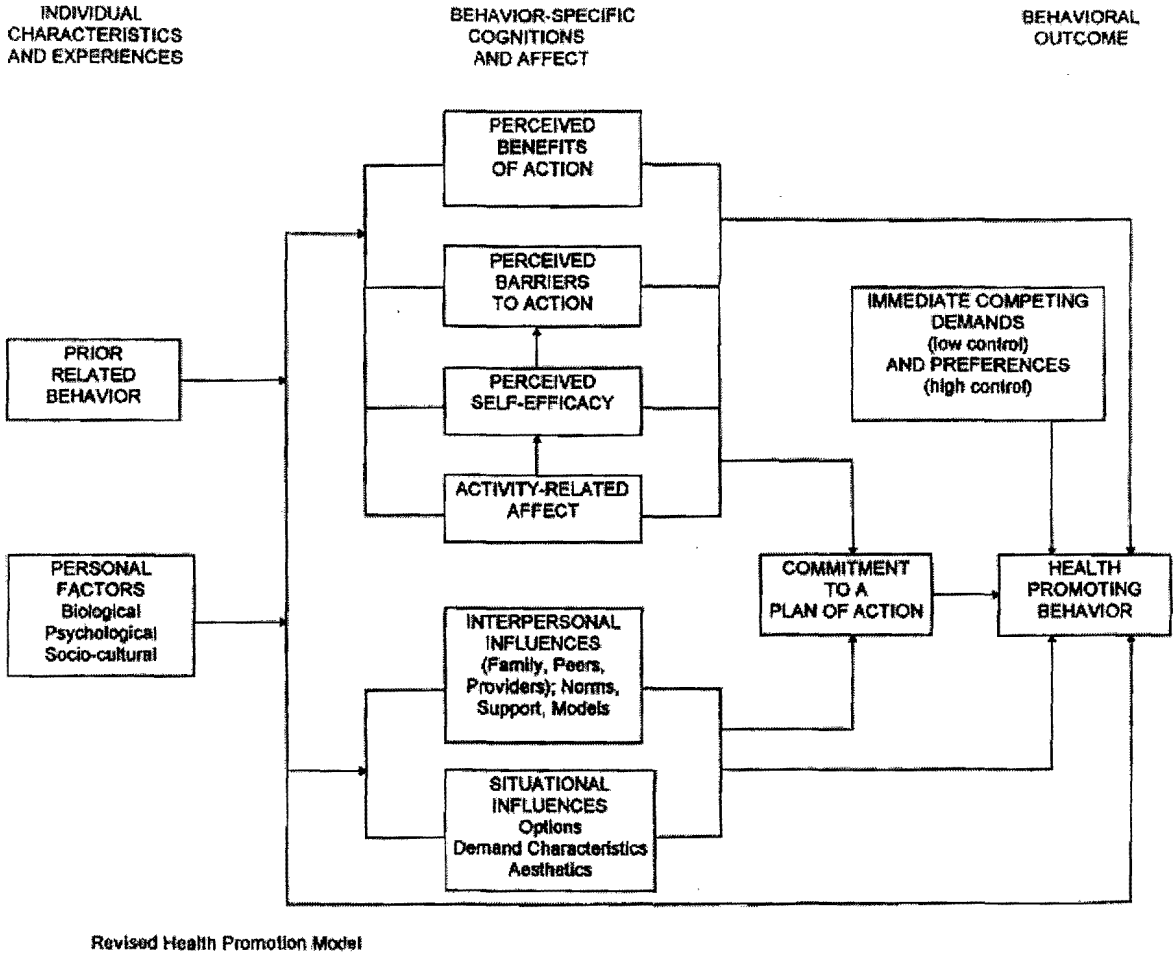

Figure 1. Health Promotion Model

value theory human's behavior is coherent and economical. In other words, an individual participates in a specific action and persists in it so that the outcome of the action is of positive personal significance, and based on existing information following the course of that action will most likely bring about the preferred outcome.

Pender's HPM (2002; 2006) proposes that individual characteristics and experiences, past or present, have an important affect on later actions such as behaviors being considered. Prior related behaviors significantly influence subsequent behaviors. Previous behavior can predict the likelihood of participating in health-promoting behaviors of the future. For instance, if an individual has tried unsuccessfully with multiple attempts to quit smoking, it may be less likely they will participate in a health-promoting behavior involving smoking cessation even following the diagnosis of CAD or suffering a MI. Biological factors, psychological factors and socio-cultural factors are included in personal factors that influence health-promotion behavior. Some personal factors that influence behaviors, however, cannot be changed such as age or gender Pender (2002).

Behavior-specific cognitions and affect of the HPM, are considered a significant basis for intervention (Pender, 2006). An individual's perceived benefits of action is an important determinant of behavior as it can provide a sense of motivation when proposing or implementing a health-promotion behavioral change such as smoking cessation. Unfortunately, barriers also affect behavior and they can be real or imagined. These barriers could be the perceived unavailability, inconvenience, expense, difficulty,

or time-consuming characteristic of a specific action. It could also include "mental blocks, hurdles, and personal costs of undertaking a given behavior" (Pender, 2006, p. 53). An example is the loss of pleasure from surrendering health-damaging behaviors such as smoking to take on a healthier lifestyle even after being diagnosed with CAD.

According to Pender (2006), one's perceptions of self-efficacy, or judgment of whether or not they possess the ability to accomplish a particular level of performance also influences whether or not an individual will complete a specific course of action. In other words, does the individual feel they possess what is necessary to succeed in accomplishing a specific task or behavior. An individual's affect related to the activity influences the outcome of the activity, their emotional awareness to the act itself, the self-acting, or the context in which the act occurs.

Interpersonal influences are cognitions about behaviors, beliefs, or attitudes of other individuals. Pender (2006) states that these may or may not concur with reality. Family, peers, and health care providers are principal sources of interpersonal influences on behaviors that promote health. Some situational influences include perceptions of accessible alternatives, demand characteristics, and aesthetic elements of the environment in which a particular behavior is projected to occur. For instance, if a smoking ban is implemented in all public localities or in the facility in which one works, this would generate a demand trait for nonsmoking behavior.

Another construct of the HPM is a commitment to a plan of action which initiates a behavioral event. This commitment drives an individual into the behavior and carries them through the behavior unless an opposing demand that cannot be avoided, or an

opposing preference that is not resisted takes place (Pender, 2006). Commitment alone will frequently fail unless strategies are used at various points along the path of behavioral change. For example, follow up visits or phone calls regarding the smoking cessation behavior are strategies that can be implemented for individuals following a MI to aid in a more successful outcome. Immediate competing demands or preferences can interfere with the accomplishment of an intended plan for health-promoting behavior. A competing demand differs from barriers in that the person needs to perform a different behavior based on an unexpected external requirement.

Health-promoting behavior is the purpose of the HPM. Accomplishing a positive health outcome is the fundamental objective for the patient. Therefore, the end result will ultimately be improved health, better functional capacity, and an enhanced quality of life.

Case Study

The HPM by Pender was used as a theoretical framework in a study of college students. It was applicable because the model tests the idea that prior related behaviors, personal factors, and self-efficacy contribute to the participation in health promotion behaviors (Martinelli, 1999). In her study, Martinelli found that college students with higher self-efficacy, who avoided environmental tobacco smoke, and who saw themselves as healthy, were more likely to execute health promotion behaviors. She also found that these students exhibited a health locus of control portrayed as both internal and external. She established that self-efficacy was the strongest predictor of the performance of health promotion behaviors. The perceptions of one's health status had direct and indirect effects on participating in health promotion behaviors. Gender, another personal

factor, demonstrated a strong influence suggesting that females are more concerned than males with issues of health. An interesting result was that external control of health directly influenced participation in health promotion behaviors. This finding was encouraging for nurses who teach young adults (Martinelli, 1999).

Generalizability of the college population to the general population, more specifically those who are diagnosed with CAD or have had an MI, is not entirely feasible. However, the findings of this study are encouraging for APNs who provide patient education and strategies to encourage health promotion behaviors such as smoking cessation in their patients with the diagnosis of CAD. Pender's HPM is, therefore, applicable to the study of this population as individual characteristics (prior related behavior and personal factors), behavior-specific cognitions and affect, and behavioral outcomes are all important factors influencing patients with CAD.

Literature Review

The review of literature for this research study is focused on (a) smoking as a risk factor for CHD and smoking in patients with CAD; (b) reasons for smoking such as behaviors, attitudes toward smoking, and physical dependence; and (c) what motivates individuals to quit smoking and their beliefs in their ability to abstain from smoking.

Smoking as a Risk Factor for Coronary Artery Disease

The Framingham Heart Study, begun in 1948, is the study that is synonymous with extraordinary advances made in the prevention of heart disease and identifying key risk factors for CAD in the U.S. and all over the world (2009). This epidemiological

study is one of the most substantial in the history of American medicine. Prior to the Framingham Heart Study, the idea that scientists could recognize risk factors and modify them related to heart disease was not part of customary medical practice at the time. Many physicians did not believe that changing certain behaviors, such as smoking, could circumvent or reverse the principal causes of serious heart disease. It was also thought preceding the study that atherosclerosis was an unavoidable part of the aging process, and that blood pressure was supposed to elevate with age making it easier for the heart to pump blood through the narrowed arteries of the elderly.

This study was also the first major cardiovascular study to include women subjects, an advancement in obtaining information regarding women's cardiovascular health. The study was initiated to identify key factors, both biological and environmental, that were causing a swift increase of almost epidemic proportions in cardiovascular death and disability beginning in the 1930s. By examining major elements of the American lifestyle, Framingham (2009) was able to identify those risk factors. Prior to the study, cigarette smoking was not thought to be a true hazard in developing heart disease. The study quickly identified the relationship between smoking, coronary artery disease, and MI or occurrence of a sudden death. A relationship was also associated with the number of cigarettes smoked per day, and the risk of coronary artery disease could be halved by those who quit smoking when compared with those who continued to smoke.

The Framingham Heart Study continues to provide important contributions regarding CAD research. The study is now beginning a new phase, studying a third generation of subjects, the grandchildren of the original study's subjects. There are

limitations of this study, however, in that the cohort was primarily white and located in a Massachusetts' city. Nevertheless, the significance of the major CAD risk factors identified have been shown to be applicable almost universally among other racial and ethnic groups around the world.

According to the AHA (2009) the added number of risk factors you have, the greater one's likelihood is of developing CAD. But smoking by itself increases the risk of CAD. A smoker has two to four times the risk for developing CAD than that of a nonsmoker. Smokers are also twice as likely to die from a sudden cardiac event as compared to nonsmokers. Smoking causes the blood pressure to elevate, decreases tolerance for physical activity, lowers the HDL or good cholesterol, and also increases the tendency for blood to clot. Smoking also increases the threat of repeated CHD after bypass surgery as well. Though the AHA website is not a research study, it provides valuable information from a well known reliable source.

Several studies described harm reduction strategies such as reducing the number of cigarettes smoked a day as reducing biochemical markers for CAD (McNeil, 2004; Hughes & Carpenter, 2005; Bolliger, et al, 2002; & Hatsukami, et al, 2005). In their studies, reduction in smoking confirmed some trends toward a decrease in MI, however, it did not show any statistical significance. A lack of significant relationship among smoking reduction and threat of MI is unexpected, given that smoking causes atherosclerosis and can lead to MI and that biochemical indicators for CAD have been shown to be decreased following smoking reduction within intervention studies. They explain that reducing the number of cigarettes smoked may not decrease the amount of

toxins taken in since the smoker may possibly inhale more deeply to sustain nicotine concentration levels in the blood. One limitation to this study is that an individual's smoking status may change over time. Some individuals may resume their previous smoking history or may even quit in the future.

Reasons for Smoking

With all the information and programs available for smoking cessation, why do people continue to smoke? It could be related to several reasons such as behaviors, attitudes, physical dependence, or a combination of two or more of these factors.

Smoking behavior is an important element to consider when developing a plan of care for smoking cessation. Behavior-specific cognitions and affect as noted by Pender in the HPM, are considered a significant focus for intervention (2006). Thus, identifying behavioral aspects of smoking are important when considering treatment modalities for patients. As cited by Glover et al. (2005) estimates show that roughly 25% of the adult population smoke, as a result, identifying behavioral reasons behind smoking is important. Behavioral patterns consist of the rituals related to smoking, the feelings or beliefs of security that smoking offers, and the relationship involving the smoker and cigarette (Glover et al.). Amazingly, no simple to administer behavioral tool existed. Therefore, Glover et al. developed an instrument in 2005, the Glover-Nilsson Smoking Behavioral Questionnaire, to consistently and easily assess the behavioral characteristics of smoking addiction. This would assist medical providers to tailor the treatment toward an individual's specific behavioral needs regarding smoking addiction. Glover et al., felt that by measuring behavioral needs, along with other aspects such as beliefs and attitudes

toward smoking, or motivation to quit, a more effective and comprehensive smoking cessation plan could be developed to assist smokers with quitting. Glover et al. felt the lack of assessing behavioral characteristics associated with smoking are one of the missing links to successful smoking cessation treatment plans. It was felt that those with higher behavioral scores would benefit more from additional counseling. A gap in literature was noted in that there was very little research done to assist providers in assessing behavioral aspects and needs of smokers. Glover et al. indicted that future research to establish how behavioral patterns are associated with persistent smoking addiction should be pursued.

Reasons and/or attitudes for smoking vary among individuals. The most common reason for smoking is nicotine dependence. Yong and Borland (2008) cite several functional beliefs as reasons for people to smoke. Many smokers believe that smoking helps control their weight, facilitates ease of socialization, provides pleasure or enjoyment, and improves concentration. These beliefs may be very important influences on a smoker's behaviors, even if these are true or false (Yong & Borland, 2008). Some smokers have been known to say that it relieves stress and smoking cessation increases stress. In reality, studies have actually shown smoking causes stress (Cataldo, 2007). Nicotine withdrawal begins to occur between cigarettes and this causes an increase in stress. Then, to curb the effects of withdrawal, smokers use smoking to attempt to stabilize their mood. Carmody (1989) and Sachs (1986) indicate that smoking increases quality of life, that it increases relaxation, decreases anxiety, decreases depression, increases concentration, maintains autonomy and reduces boredom. In contrast, Mulder et

al. (2001), and Maxwell and Hirdes (1993), indicate smoking, regardless of age, has significant negative effects on an individuals' quality of life. As indicated by these studies, myths about smoking along with physical dependence can be barriers to smoking cessation.

Multiple studies have been done regarding adolescents and their attitudes toward smoking. Upon review of literature, however, I have found limited studies reviewing the adult's reasons or attitudes toward smoking combined with behaviors and physical dependence of smoking, especially those in patients who have experienced MI.

Motivation to Quit Smoking and Beliefs About Abstaining From Smoking

What motivates an individual to quit smoking can be quite different from another. According to Dawood et al. (2008) those who give up smoking are more likely to be married, have a higher income, and have an increased level of social support. Those who give up smoking furthermore are less likely to have past alcohol or cocaine abuse, depression, a previous MI, previous percutaneous coronary interventions, or congestive heart failure. In their study, on the other hand, they found that age, gender, marital status, and education are not related to smoking cessation. Crouse and Hagaman (1991), and Frid, Ockene and Ockene, et al. (1991), demonstrated that the presence of comorbidities was a motivation to quit smoking, but in the study by Dawood et al. this was not the case. It was also found that smoking cessation counseling alone was not associated with successful smoking cessation, but when combined with a formal inpatient program for post-MI patients there was an associated success of quitting. Therefore, combining counseling and a formal smoking cessation program is paramount to increasing the

success rate of smoking cessation in CAD patients. This study was limited in the types of formal smoking cessation programs tested, and were only in the inpatient settings. The form of counseling or the level of training was not assessed in this study, nor the specifics of the formal programs involved.

Identification of risk factors for CAD is the first step in preventing an acute MI. Many studies have been done examining individual risk factors, but none more comprehensive and groundbreaking than the Framingham Heart Study. With increasing knowledge regarding the importance of decreasing or improving modifiable risk factors to improve one's heart health, smoking cessation nears the top of the list. However, as healthcare providers we have not been extremely successful in accomplishing smoking cessation in patients with CAD or those following their acute event. There are several reasons that affect this, such as behaviors, attitudes, and physical dependence. Motivation to quit and an individual's beliefs in their ability to refrain from smoking are also factors to consider.

Summary

Health-promoting behavior is the purpose of the HPM. Pender's HPM points out that individual characteristics, as well as past or present experiences can influence an individual's subsequent actions. Prior related behaviors also significantly influence subsequent behaviors which predict the likelihood of participating in future health-promoting behaviors. Barriers faced and perceptions regarding possible benefits of action can also considerably affect behaviors or decisions to make changes in one's lifestyle

such as smoking cessation. Accomplishing a positive health outcome is the fundamental objective for the patient. Therefore, the end result will ultimately be improved health, better functional capacity, and an enhanced quality of life.

Despite significant benefits in post-MI outcomes, smoking cessation rates remain low after diagnosis of CAD and MI (Dawood et al., 2008). Therefore, the high occurrence of modifiable risk factors makes it essential for healthcare providers to eradicate the treatment gap involving evidence-based recommendation and actual clinical practice. Strategies APNs can use to assist with smoking cessation include education on lifestyle modification and behavioral changes, and frequent follow-up visits to help meet with success. By helping patients make the necessary lifestyle changes, APNs can help close the gap by incorporating evidence-based recommendations into current clinical practice. Utilizing Pender's HPM as a foundation to provide education, assist with development of interventional strategies, and implementation of the interventions, will undoubtedly facilitate a more comprehensive treatment plan. Healthcare providers need to address behaviors, attitudes and physical dependence regarding smoking, as well as their motivation to quit along with beliefs in their ability to refrain from smoking. As a result, smoking cessation in patients with CAD will meet with greater success.

CHAPTER III

METHODOLOGY

The purpose of this study was to examine behavioral factors related to smoking that differentiated those who quit smoking following a diagnosis of coronary artery disease from those who did not quit smoking. Reasons for smoking vary among individuals, as does their readiness and motivation to quit smoking. This chapter includes a description of the research method of this study. The design, population, sample and setting, data collection procedures and instruments, and data analysis will also be discussed.

Design of Study

This research study utilized a descriptive design to examine factors that differentiated those who quit smoking following a diagnosis of coronary artery disease from those who did not quit smoking.

Population, Sample and Setting

The sample was selected based on inclusion criteria as follows. The population from which the sample was derived consisted of cardiac patients who were diagnosed with coronary artery disease and were patients from two outpatient cardiac rehabilitation clinics in East Central Wisconsin. A convenience sample was used to gather participants for the study. The sample consisted of both males and females, and were 18 years of age

or older. The subjects also were smokers prior to the diagnosis of coronary artery disease. Two groups were taken from the sample, those who continued to smoke and those who had quit. The first group of smokers was classified as smokers if they had even one puff of tobacco in the past 2 months. The nonsmokers did not have even one puff of tobacco in the past 2 months. The participants were handed or mailed questionnaires by staff of the rehabilitation departments.

Data Collection Instruments

A demographic questionnaire was given to each subject to provide the researcher with categorical descriptive information regarding the study sample. Information in the demographic questionnaire included the subject's age, gender, marital status, living arrangements, race/ethnicity, level of education, occupation, if retired, if they were current smokers and what type of tobacco they used (Appendix A). The Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ) was used to examine the behavioral aspects of smoking (Appendix B).

Data Collection Procedure

Permission for this study was obtained from the University of Wisconsin Oshkosh Institutional Review Board (IRB). Permission to solicit volunteers was acquired from two affiliated cardiac rehabilitation clinics in East Central Wisconsin. An information sheet was provided to the participants explaining the study. Individuals who were willing to participate in the study were given or mailed a packet of information including the

information/consent form, demographic questionnaire, and the GN-SBQ by staff at the cardiac rehabilitation clinics. A self-addressed, stamped return envelope for return of completed surveys was also included. Individuals who participated in the study were instructed to return the completed surveys in the self-addressed, stamped envelope provided by the staff of the cardiac rehabilitation clinic, and according to instructions on the information/consent form. Data was stored in a locked drawer in a file cabinet at the researcher's home where only the researcher will have access to the information.

Data Analysis Procedures

Descriptive statistics (mean, mode, median, range, standard deviation, and frequencies) was used to examine demographic information. T-tests were used to examine the differences in the smoking behavioral scores between the smoking group and the nonsmoking group. T-tests were also used to examine differences in smoking behavioral scores between males and females. One way ANOVA testing was used to examine smoking behavioral scores according to living arrangements and marital status. Correlation testing was used to examine smoking behavioral scores according to age.

Limitations

1. Use of small sample size which may have compromised instrument reliability.
2. Use of a convenience sample.
3. Possible homogeneity of sample may limit generalizability.

4. Self-reported data can also result in social desirability response bias by attempting to respond in a manner that conforms to prevailing social mores or professional expectations.

As a result of the above limitations, the results of this study need to be interpreted with caution and subsequently limits generalizability of study findings. Therefore, unintended biases may have occurred.

Summary

Study participants consisted of a convenience sample obtained from two affiliated cardiac rehabilitation clinics in East Central Wisconsin, who had a diagnosis of coronary artery disease. The participants were also smokers at the time of their diagnosis.

A descriptive design was used to examine factors that differentiated those who quit smoking following a diagnosis of coronary artery disease from those who did not quit smoking. Two questionnaires were given to each potential participant. The packet included a demographic form, and the Glover-Nilsson Smoking Behavioral Questionnaire. Descriptive statistics were used to examine the demographic data. T-tests were used to examine the differences in the reasons for smoking scores in the smoking group and the nonsmoking group. One way ANOVA testing were used to examine smoking behavioral scores according to living arrangements and marital status. Correlation was used to examine smoking behavioral scores with age.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this study was to examine behavioral factors related to smoking that differentiated those who quit smoking following a diagnosis of coronary artery disease from those who did not quit smoking. The findings are presented in this chapter. Descriptive statistics were used to describe the sample and participants behaviors related to smoking as measured with the Glover-Nilsson Smoking Behavioral Questionnaire. T-tests were used to examine differences in smoking behavioral scores between smokers and nonsmokers, and differences between males and females. One way ANOVA testing was used to examine smoking behavioral scores according to living arrangements and marital status. Correlation was used to examine smoking behavioral scores with age.

Sample Description

Thirty-four men and women participated in this descriptive pilot study conducted over a 1 month period of time. Thirty-two of them completed both forms completely and were included in this study. Twenty-one (65.6%) were male and 11 (34.4%) were female. The age range was 48 to 81 years. The mean age was 63.1 (SD 9.22). The majority were White (96.9 %) and married (71.9%); 15.6% were widowed, 9.4% were divorced, and 3.1% never married. 78.1 percent lived with spouses or family, 18.8% lived alone, and 3.1% had other living arrangements. Just over half continued to be employed (53.1%) with 46.9% retired. 31.3 percent graduated high school, 28.1% had some higher education but did not have a Baccalaureate degree, 21.9% graduated from a 4-year

program, 12.5% did not graduate high school, and 6.3% completed graduate or post-graduate work. Demographic characteristics are summarized in Table 1.

Of the 32 participants included in this study, 23 (71.9%) reported that they quit smoking, and 9 (28.1%) were smokers. Of those who quit smoking, the length of smoking cessation after diagnosis ranged from less than a week or "immediately" to 12 years. All of them had tried to quit smoking at least once at one point in time, including the time after diagnosis of their heart disease. The majority did not have other smokers in their home (71.9%). Cigarettes were the tobacco of choice (96.9%). Smoking demographic characteristics are summarized in Table 2.

Smoking Behaviors

The Glover-Nilsson Smoking Behavioral Questionnaire(GN-SBQ) was used to answer the research question: " What are the behavioral factors related to smoking that differentiate individuals who quit smoking following a diagnosis of coronary artery disease from individuals who do not quit smoking?" The questionnaire consisted of eleven items regarding values of smoking and smoking behaviors, with responses ranging from 0-4. Zero representing never or not at all to 4 representing always or extremely so. The highest possible score is 44, with a score greater than 33 indicating a very strong behavioral dependence to smoking (Glover et al., 2005). The higher the score, the greater the behavioral dependence. Total behavioral dependence scores ranged from 6 to 36,

Table 1

Frequency and Percentage of Demographic Characteristics (N=32)

	N	%
Demographic Information:		
Age:		
54 or less	6	18.8
55-64	13	40.6
65-75	10	31.3
> 75	3	9.4
Gender:		
Male	21	65.6
Female	11	34.4
Race/Ethnicity:		
White/Caucasian	31	96.9
Hispanic	1	3.1
Marital Status:		
Married	23	71.9
Divorced	3	9.4
Widowed	5	15.6
Never Married	1	3.1
Living Arrangements:		
Live alone	6	18.8
Live w/family or partner	25	78.1
Other	1	3.1
Education:		
Graduate/Post Graduate	2	6.3
Four year college	7	21.9
Some higher education (not Baccalaureate)	9	28.1
Graduated High School	10	31.3
Did not graduate from High School	4	12.5
Retired:		
Yes	15	46.9
No	17	53.1

Table 2

Frequency and Percentage of Smoking Demographic Characteristics (N=32)

	N	%
Smoking History:		
Smoker:		
Yes	9	28.1
No	23	71.9
Type of tobacco:		
Cigarettes	31	96.9
Cigars	1	3.1
Other smokers in home:		
Yes	9	28.1
No	23	71.9
How Long After Diagnosis Quit:		
N/A (still smoke)	8	25.0
Less than 1 week	8	25.0
1 - 4 weeks	6	18.8
4 weeks - 6 months	8	25.0
> 6 months	2	6.3

with a mean of 23.28. Two of the participants had smoking behavioral dependence scores greater than 33 indicating a very strong behavioral dependence. Both scores were a 36 and there was one smoker and one nonsmoker. Three participants had smoking behavioral dependence scores below 12 indicating a mild behavioral dependence. Two of these were nonsmokers (scores of 11 and 6), and one was a smoker (score of 10).

The mean smoking behavioral dependence scores for the 9 participants who continued smoking after a diagnosis of CAD was 27.00. The mean smoking behavioral dependence scores for the 23 participants who quit smoking after a diagnosis of CAD was 21.83.

T-tests were used to examine differences in smoking behavioral scores between smokers and nonsmokers, and differences between males and females. A p-value of 0.05 or less indicated a statistical significance. There was no statistical significance in smoking behavior scores between smokers and nonsmokers. Though statistically insignificant, question 4 on the GN-SBQ, "Do you reward yourself with a cigarette after accomplishing a task?" did result in a p-value of 0.080 with the smokers rating this higher (mean score of 2.89, with SD of 0.60) than those who quit smoking (mean score of 2.17, with SD of 1.11).

Interestingly, there was a statistical significance (p-value < 0.05) for two questions when comparing smoking behavioral scores by gender. Question 5, "If you find yourself without cigarettes, will you have difficulties in concentrating before attempting a task?" had a p-value of 0.032 with females rating this higher (mean of 2.45, and SD of 0.69) than males (mean 1.86, and SD of 0.73). The second question that

resulted in a statistical significance resulted in a *p*-value of 0.022 with Question 6, "If you are not allowed to smoke in certain places, do you then play with your cigarette pack or a cigarette?" Again, females rated this higher (mean 1.64, SD 1.03) than males (mean 0.76, SD 0.94). This was an unexpected finding, but could represent a behavioral difference between men and women. However, it could also be representative of the small sample size overall. GN-SBQ scores by smoking status and gender are presented in Table 3 and Table 4 respectively.

One way ANOVA testing was used to examine smoking behavioral scores according to living arrangements and marital status. No statistical significance was noted when comparing results between the various groups according to marital status. Again a *p*-value of 0.05 or less was used to identify statistical significance. However, a statistical significance was found when comparing groups according to living arrangements. This was noted on question 6 of the GN-SBQ with a *p*-value of 0.045. Those living alone had a mean score of 2.0 (SD 1.10), those living with family or partner had a mean of 0.84 (SD 0.94), and those with other living arrangements had a mean of 1.0. The GN-SBQ scores by living arrangements are presented in Table 5.

Pearson correlation was used to examine smoking behavioral scores with age. Statistical significance was noted on question 9 of the GN-SBQ, "Do you find yourself placing an unlit cigarette or other objects (pen, toothpick, chewing gum, etc.) in your mouth and sucking to get relief from stress, tension or frustration, etc.)?" with a *p*-value of 0.031. See Table 6.

Table 3

Smoker/Nonsmoker Scores: Glover-Nilsson Smoking Behavioral Questionnaire

Question	Smoke	N	Mean	SD	*p*-value
Q1: Habit is important to me	Yes	9	3.2222	.83333	0.462
	No	23	2.9130	1.12464	
Q2: Cigarette ritual	Yes	9	3.0000	1.22474	0.141
	No	23	2.2609	1.25109	
Q3: Something in your mouth	Yes	9	2.1111	1.05409	0.156
	No	23	1.4783	1.12288	
Q4: Reward	Yes	9	2.8889	.60093	0.080
	No	23	2.1739	1.11405	
Q5: Concentrating	Yes	9	2.2222	.44096	0.466
	No	23	2.0000	.85280	
Q6: If you can't smoke, do you play with your pack of cigarettes	Yes	9	1.3333	1.11803	0.368
	No	23	.9565	1.02151	
Q7: Environmental triggers	Yes	9	3.5556	.72648	0.155
	No	23	3.0870	.84816	
Q8: Light up routinely	Yes	9	2.5556	.88192	0.893
	No	23	2.6087	1.03305	
Q9: Other objects to relieve stress	Yes	9	2.2222	.97183	0.175
	No	23	1.5217	1.37740	
Q10: Enjoyment of lighting up	Yes	9	2.0000	1.00000	0.185
	No	23	1.4348	1.07982	
Q11: Safety	Yes	9	1.8889	1.05409	0.246
	No	23	1.3913	1.07615	

Table 4

Gender Scores: Glover-Nilsson Smoking Behavioral Questionnaire

	Gender	N	Mean	SD	*p*-value
Q1: Habit is important to me	Male	21	3.0952	1.13599	0.486
	Female	11	2.8182	.87386	
Q2: Cigarette ritual	Male	21	2.5238	1.40068	0.741
	Female	11	2.3636	1.02691	
Q3: Something in your mouth	Male	21	1.7619	1.17918	0.472
	Female	11	1.4545	1.03573	
Q4: Reward	Male	21	2.5714	1.02817	0.142
	Female	11	2.0000	1.00000	
Q5: Concentrating	Male	21	1.8571	.72703	0.032
	Female	11	2.4545	.68755	
Q6: If you can't smoke, do you play with your pack of cigarettes	Male	21	.7619	.94365	0.022
	Female	11	1.6364	1.02691	
Q7: Environmental triggers	Male	21	3.1905	.92839	0.795
	Female	11	3.2727	.64667	
Q8: Light up routinely	Male	21	2.6190	1.02353	0.844
	Female	11	2.5455	.93420	
Q9: Other objects to relieve stress	Male	21	1.9524	1.24403	0.164
	Female	11	1.2727	1.34840	
Q10: Enjoyment of lighting up	Male	21	1.8095	1.07792	0.118
	Female	11	1.1818	.98165	
Q11: Safety	Male	21	1.5238	1.12335	0.958
	Female	11	1.5455	1.03573	

Table 5

Living Arrangement Scores: Glover-Nilsson Smoking Behavioral Questionnaire

	Living Arrangements	N	Mean	Std. Deviation	*p*-value
Q1: Habit is important to me	Live alone	6	3.0000	.63246	
	Live with partner	25	2.9600	1.13578	
	Other	1	4.0000	.	
	Total	32	3.0000	1.04727	0.637
Q2: Cigarette ritual	Live alone	6	3.0000	.63246	
	Live with partner	25	2.2800	1.33915	
	Other	1	4.0000	.	
	Total	32	2.4688	1.26960	0.222
Q3: Something in your mouth	Live alone	6	1.8333	.98319	
	Live with partner	25	1.5200	1.08474	
	Other	1	4.0000	.	
	Total	32	1.6563	1.12478	0.084
Q4: Reward	Live alone	6	2.1667	1.16905	
	Live with partner	25	2.3600	.99499	
	Other	1	4.0000	.	
	Total	32	2.3750	1.03954	0.268
Q5: Concentrating	Live alone	6	2.3333	1.03280	
	Live with partner	25	2.0400	.67577	
	Other	1	1.0000	.	
	Total	32	2.0625	.75935	0.261
Q6: If you can't smoke, do you play with your pack of cigarettes	Live alone	6	2.0000	1.09545	
	Live with partner	25	.8400	.94340	
	Other	1	1.0000	.	
	Total	32	1.0625	1.04534	0.045
Q7: Environmental triggers	Live alone	6	3.6667	.51640	
	Live with partner	25	3.1600	.85049	
	Other	1	2.0000	.	
	Total	32	3.2188	.83219	0.134
Q8: Light up routinely	Live alone	6	3.0000	.63246	
	Live with partner	25	2.4400	1.00333	
	Other	1	4.0000	.	
	Total	32	2.5938	.97912	0.157

(Table Continues)

	Living Arrangements	N	Mean	Std. Deviation	*p*-value
Q9: Other objects to relieve stress	Live alone	6	1.5000	1.22474	
	Live with partner	25	1.7600	1.36260	
	Other	1	2.0000	.	
	Total	32	1.7188	1.30098	0.893
Q10: Enjoyment of lighting up	Live alone	6	1.5000	1.04881	
	Live with partner	25	1.5600	1.08321	
	Other	1	3.0000	.	
	Total	32	1.5938	1.07341	0.423
Q11: Safety	Live alone	6	1.5000	1.04881	
	Live with partner	25	1.4400	1.00333	
	Other	1	4.0000	.	
	Total	32	1.5313	1.07716	0.061

Table 6

Age Correlation Scores: Glover-Nilsson Smoking Behavioral Questionnaire

Age	Pearson Correlation	*p*-value	N
Q1: Habit is important to me	-.063	.730	32
Q2: Cigarette ritual	-.041	.824	32
Q3: Something in your mouth	-.142	.439	32
Q4: Reward	-.210	.248	32
Q5: Concentrating	-.093	.612	32
Q6: If can't smoke do you play with cigarettes	.213	.241	32
Q7: Environmental triggers	-.016	.930	32
Q8: Light up routinely	-.205	.261	32
Q9: Other objects to relieve stress	-.381	.031	32
Q10: Enjoyment of lighting up	-.096	.602	32
Q11: Safety	-.098	.594	32

Qualitative Results

The demographic questionnaire also provided space for participants to share any additional comments regarding their smoking experience if desired. Ten participants elected to share thoughts with the researcher regarding their smoking and smoking behaviors. Four participants shared thoughts regarding what caused them to quit, such as life changing events. One gentleman shared, "[I] quit smoking because my wife died of lung cancer, this was after my diagnosis of heart disease. I quit smoking too late for her." Another participant stated, "I tried to quit ever since 1980, only after I had emphysema and the heart operation did I quit. I couldn't breathe anymore." One participant quit after being diagnosed with a brain aneurysm "and have not returned to smoking." One gentleman felt "poor eating habits was the cause of my heart attack," and did not attribute his smoking habit to the cause of his heart disease.

Two individuals shared how they have successfully quit smoking. One female participant stated she was "hypnotized twice" in order to quit. Another gentleman shared, "I have changed my entire lifestyle. I exercise daily, don't smoke, and diet. I thank the Lord for my heart attack. I was finally able to do what I needed to do."

Unfortunately, others continue to struggle to completely quit smoking, four individuals shared their struggles. One lady shared, "Prior to [the] heart attack, I smoked 2 cartons per week - 20 packs. Now I've gotten down to between 7 and 10 cigarettes a day." Another gentleman shared, "I have almost quit, but will take a few puffs of a cigarette once or twice a day, but they taste bad. I am on Chantix right now." A different participant disclosed troubles experienced regarding his smoking habit, "I quit smoking

immediately after my cardiac 'incident' but slowly returned to smoking, sadly." One more gentleman shared an extensive narrative of his battle with smoking cessation. He shared difficulties he faced with quitting, dieting, exercising, and depression that developed along the way, resulting in "getting back to good behaviors again."

Discussion of Findings

The purpose of this study was to examine behavioral factors related to smoking that differentiated those who quit smoking following a diagnosis of coronary artery disease from those who did not quit smoking. Participants consisted of 32 men and women diagnosed with coronary artery disease who were smokers at the time of their diagnosis of CAD. The research question was: "What are the behavioral factors related to smoking that differentiate individuals who quit smoking following a diagnosis of coronary artery disease from individuals who do not quit smoking?" Overall, behavioral dependence for smoking for the 32 participants in this study was higher in those who continued to smoke vs. those who have quit. These findings indicate that those who continue to smoke have a stronger behavioral dependence of smoking than those who were able to quit. Glover et al. (2005) indicated several behavioral patterns as being important or occur more frequently in smokers, these include rituals related to smoking, feelings or beliefs of security that smoking offers, and a relationship between the smoker and cigarette. Glover et al. felt that those with higher behavioral dependence scores would benefit more from additional counseling.

The Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ) when used in this study had decreased estimates of reliability than expected, which may have affected the results. Dawood et al. (2008) found that those who gave up smoking were more likely to be married, though this was not replicated in this pilot study. No statistical significance was found when comparing the smoking group with the nonsmokers. However, other statistical significances were found in areas not expected by the researcher. For example, higher smoking scores for women regarding difficulties in concentrating before attempting a task when they are without a cigarette, and that women play with their cigarette pack or cigarette more in places that do not allow them to smoke. Yong and Borland (2008) indicated that many smokers smoke to facilitate ease of socialization, provided pleasure or enjoyment, and improve concentration. Perhaps this is an indication that women use their smoking habit to assist with concentration and facilitate ease of socialization by playing with their cigarettes or cigarette pack when they are not allowed to smoke. Yong and Borland did not indicate in their study whether there was a difference noted between men and women.

Other interesting results revealed those who lived alone also played with their pack of cigarettes or cigarette in places that do not allow them to smoke. Young and Borland (2008) reported functional beliefs as a reason for people to smoke. Those who lived alone did score higher in all but three questions (4, 9, and 10) on the GN-SBQ. I did not find any data supporting or negating living arrangements in my literature review as a reason for higher scores. However, it could be considered that less social support may be an indication for higher scores in those individuals who live alone. Pender (2006)

indicates that family, peers, and health care providers are principal sources of interpersonal influences on behaviors that promote health. If individuals are living alone, they may be lacking in these principal sources of support that influence their health promoting behaviors.

No statistical significance regarding age and smoking cessation was found by Dawood et al. (2008) in their study, nor was any found in this study. In this pilot study, however, a final statistical significance was found that revealed a decrease in the frequency of placing an unlit cigarette or other object in an individual's mouth and sucking to get relief from stress, tension or frustration, decreased with age. However, the results of this study need to be interpreted with caution due to a small sample size which may have compromised the instrument reliability, and subsequently limits generalizability of study findings.

Examination of mean knowledge scores helped to identify learning needs for smoking individuals with CAD. The trend for lower mean scores in the nonsmoking group may indicate that their success in smoking cessation may be due in part to a lower behavioral dependence for smoking than those who continue to quit. This may indicate an increased need for additional counseling or behavioral modification in individuals who score higher on a smoking behavioral questionnaire like the GN-SBQ. Because not all individuals with CAD have the same risk factors, nor have all individuals with CAD had the same educational background, APNs are challenged to develop and implement strategies and interventions specific to each individuals needs. It is important for APNs, therefore, to assess these needs prior to development and implementation of these

interventions. Use of a standardized assessment tool regarding smoking dependence behaviors would be beneficial to APNs to provide education and interventions to optimize the success of smoking cessation in patients with CAD.

Many of the participants, smokers and nonsmokers, rated their smoking habit as very important or extremely important. Environmental cues or triggers were also rated high in both groups regarding increased frequency of their behaviors for smoking. Understanding and identifying problem areas in both groups is important in developing a successful smoking cessation program. The smoking group rated all questions higher than the non smoking group except question 8, "Do you find yourself lighting up a cigarette routinely (without craving)?" The smokers mean score was 2.56 (SD 0.88) and the non smokers mean score was 2.61 (SD 1.03).

The qualitative information elicited from the space provided on the demographic questionnaire identified a few main themes regarding information shared. The first, was that certain life changing events caused them to quit smoking. For example, the gentleman's wife who died from secondary exposure, the individual being diagnosed with a brain aneurysm, or the gentleman who had heart surgery and emphysema. These reports are congruent with Pender's HPM (2002; 2006) that individual characteristics and experiences, past or present, have an important affect on later actions such as smoking cessation. Another theme identified was the quitting process. Examples of this include the use of hypnotherapy and changing one's lifestyle. Pender (2006) points out that an individual's perceived benefits of action is an important determinant of behavior and can provide a sense of motivation when proposing or implementing a health-promotion

behavioral change. A third theme identified was the struggles faced with smoking cessation. Examples include quitting, but unfortunately resuming the habit, and even with use of medications and the fact that the cigarettes taste bad, individuals continue to struggle with successful complete smoking cessation.

Although best efforts are used to communicate the significance of risk factors and lifestyle changes that may decrease the frequency or control the effects of CAD, individuals vary in their understanding of personal importance and their capability to enact meaningful and continuous change (Jillings, 2008). One gentleman shared that he felt his heart disease was related to his eating habits and did not attribute it to his smoking habit. Though this gentleman understands he possesses risk factors of an unhealthy lifestyle, he still does not apparently recognize the significance or connection between smoking and CAD. This demonstrates the need for additional education regarding the relationship between smoking and heart disease. If individuals are still unaware of the relationship between smoking and heart disease, then interest and success in smoking cessation in those individuals may be more problematic.

Conclusion

Identifications of modifiable risk factors for CAD, such as smoking, should be part of CAD education. This is an important role for APNs. By examining an individual's behaviors related to smoking, the APN can better understand the learning needs of the patient in order to provide a more effective and successful smoking cessation intervention program. This is an important step when initiating smoking cessation education to

patients following a diagnosis of CAD. The APN is perfectly suited to implement strategies and interventions because of their expertise in health promotion and prevention, patient education, and communication skills.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to examine behavioral factors related to smoking that differentiate those who quit smoking following a diagnosis of coronary artery disease from those who do not quit smoking. In this chapter, a summary of the results will be presented with conclusions, implications for nursing practice and primary care, and recommendations for future research.

Summary

For this quantitative study, 32 participants consisted of 21 men and 11 women diagnosed with coronary artery disease who were smokers at the time of their diagnosis of CAD. Institutional Review Board approval was obtained from the University of Wisconsin-Oshkosh. Approval was also obtained from both of the affiliated cardiac rehabilitation clinics. A convenience sample was obtained from two cardiac rehabilitation clinics in East Central Wisconsin. The cardiac rehabilitation staff handed out and mailed survey information packets to potential participants, those that agreed to participate in the study were instructed to complete the demographic questionnaire and the Glover-Nilsson Smoking Behavioral Questionnaire, and return them in the self-addressed, stamped envelopes provided. Those that met the inclusion criteria: 18 years of age and older, diagnosis of CAD, and were smokers at the time of the diagnosis of CAD, were included in the study.

Pender's Health Promotion Model (2006) provided a framework for this research study. The basis of the model supports the principle that a healthy lifestyle should be the goal of every individual. The theoretical basis for this model also integrates the social cognitive theory and expectancy-value theory. The social cognitive theory, according to Pender, explains how environmental events, personal factors, and behaviors work as mutual determinants of one another. In the expectancy-value theory individuals participate in a specific action or behavior so that the outcome of this action will result in a positive or preferred personal outcome.

This study evaluated the smoking behaviors of those individuals who continue smoking, and those who have quit smoking with a diagnosis of CAD. A convenience sample of 32 individuals from East Central Wisconsin cardiac rehabilitation clinics participated in this descriptive study. Participants completed a demographic sheet, and Glover-Nilsson Smoking Behavioral Questionnaire. The Glover-Nilsson Smoking Behavioral Questionnaire was used to identify behavioral dependence on smoking in individuals with CAD.

Data was analyzed using descriptive statistics, t-tests, one way ANOVA and correlation. Participants in the study overall scored higher on the GN-SBQ behavioral dependence for smoking in the smoking group versus the nonsmoking group. There was no statistical significance, however, when comparing the smokers with the nonsmokers. However, there was a statistical significance identified when comparing other groups, including gender and living arrangements. A statistical significance was also identified in

correlation with increasing age and decreasing the frequency in placing objects in the mouth to obtain relief from stress, tension or frustration.

Conclusions

This study was conducted to determine whether there was a difference in behavioral factors related to smoking between those who quit smoking following a diagnosis of coronary artery disease from those who do not quit smoking. The following conclusions are drawn from the results of this study:

1. In general, both groups (smokers and those who quit smoking) both felt their smoking habit was very or extremely important to them when they smoked.
2. Women found it more difficult to concentrate on tasks without having a cigarette prior to attempting the task.
3. Women were more likely to play with their cigarette or cigarette pack in places that did not allow them to smoke.
4. Individuals who live alone were also more likely to play with their cigarette or cigarette pack in places that did not allow them to smoke.
5. In general, as individuals got older they were less likely to place unlit cigarettes or objects in their mouths to get relief from stress, tension, or frustration.
6. Reasons for quitting smoking vary among individuals.
7. Individuals who continued smoking overall rated higher on their behavioral dependence scores than individuals who were successful in quitting.

8. Education for smoking cessation needs to focus on problematic areas identified, including importance of habit, and environmental triggers or cues.
9. Additional education regarding smoking as a risk factor for CAD is needed.

Implications for Advanced Nursing Practice

By examining an individual's behaviors related smoking, the APN can better understand the learning needs of the patient in order to provide a more effective and successful smoking cessation program. The APN is perfectly suited to implement strategies and interventions because of their expertise in health promotion and prevention, patient education, and communication skills. Continuing education, health promotion and prevention, are principal objectives for APNs in any primary care setting.

A questionnaire that assess smoking behaviors such as the Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ) may be a useful tool for the APN to use in the outpatient setting. Reviewing the results of this type of tool may assist the APN in developing and implementing an individualized plan to produce a successful smoking cessation program.

Recommendations for Research

1. Replication of this study using a larger randomized sample.
2. Include sampling strategies to enhance cultural diversity.
3. Conducting a qualitative study to complement findings of the quantitative study.

The findings of this study suggest that certain smoking behaviors are more important to certain groups. By examining an individual's behaviors related to smoking, the APN can better understand the learning needs of the patient in order to provide a more effective and successful smoking cessation intervention program. This is an important step when initiating smoking cessation education to patients following a diagnosis of CAD. The APN is perfectly suited to implement strategies and interventions because of their expertise in health promotion and prevention, patient education, and communication skills.

APPENDIX A

Demographic Information

Demographic Information

The following information will provide us with a description about the research participants. This information will be treated confidentially and used for statistical reasons only. **Please do not include your name on this paper or any of the forms completed by you.**

(Please circle or fill in the correct response)

1. Your age in years:_____

2. Are you: (Circle one) Male Female

3. Are you: (circle one)

Married Divorced Widowed Separated Never Married Partnered

4. Which of the following best describes your living arrangements? (circle one)

Live alone Live with spouse/partner/family members Live with someone else

5. What is your race/ethnicity: (circle one)

Caucasian Hispanic African American Asian American Other

6. What best describes your highest level of education completed? (circle one)

Completed graduate or post-graduate work

Graduated from college

Some college

Completed associate degree

Did not attend college, but had additional special training

Graduated from high school

Did not graduate high school

7. What is your occupation? _____

8. Are you retired? Yes_____ No_____

9. Do you currently smoke? Yes_____ No_____

a. If yes, how much do you smoke? _____

b. What type of tobacco do/did you smoke? (circle one)

Cigarettes Pipe Cigar Other

c. If you quit smoking, how long ago did you quit? _____

d. Did you smoke at the time you were diagnosed with heart disease?
Yes_____ No_____

e. Do others smoke in your home? Yes_____ No_____

f. Have you ever tried to quit? Yes_____ No_____

g. If you quit smoking after your diagnosis of heart disease, how long was it after the diagnosis did you quit smoking? _____

h. What is the total length of time you have quit smoking? _____

Any additional comments:

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX B

Glover-Nilsson Smoking Behavioral Questionnaire

****For those individuals who have already quit smoking, please base the answers to your questions on the time you were smoking when you were diagnosed with heart disease.****

Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ)*

Please indicate your choice by circling the number that best reflects your choice.
0=Not at all; 1=Somewhat; 2=Moderately so; 3=Very much so; 4=Extremely so

---

How much do you value the following (Specific to Questions 1-2 Only).

1. My cigarette habit is very important to me. 0 1 2 3 4
2. I handle and manipulate my cigarette as part of the ritual of smoking. 0 1 2 3 4

Please indicate your choice by circling the number that best reflects your choice. (Specific to Questions 3-11).
0=Never; 1=Seldom; 2=Sometimes; 3=Often; 4=Always

3. Do you place something in your mouth to distract you from smoking? 0 1 2 3 4
4. Do you reward yourself with a cigarette after accomplishing a task? 0 1 2 3 4
5. If you find yourself without cigarettes, will you have difficulties in concentrating before attempting a task? 0 1 2 3 4
6. If you are not allowed to smoke in certain places, do you then play with your cigarette pack or a cigarette? 0 1 2 3 4
7. Do certain environmental cues trigger your smoking, e.g., favorite chair, sofa, room, car, or drinking alcohol? 0 1 2 3 4
8. Do you find yourself lighting up a cigarette routinely (without craving?) 0 1 2 3 4
9. Do you find yourself placing an unlit cigarette or other objects (pen, toothpick, chewing gum, etc.) in your mouth and sucking to get relief from stress, tension or frustration, etc.)? 0 1 2 3 4
10. Does part of your enjoyment of smoking come from the steps (ritual) you take when lighting up? 0 1 2 3 4
11. When you are alone in a restaurant, bus terminal, party, etc., do you feel safe, secure, or more confident if you are holding a cigarette? 0 1 2 3 4

TOTAL_____

A high numerical response indicated a high behavioral dependence, and the lower numerical response indicated a lower behavioral dependence.

Scoring for Behavioral Dependence

<12	Mild
12-22	Moderate
23-33	Strong
>33	Very Strong

*Used with permission from Glover, E. D., Nilsson, F., Westin, A., Glover, P. N., Laflin, M. T., Persson, B. from Developmental History of the Glover-Nilsson Smoking Behavioral Questionnaire. *American Journal of Health Behavior, 2005, 29*(5). 443-455.

APPENDIX C

Author Permission for Tool

----- Original Message -----
From: Elbert D Glover <eglover1@umd.edu>
Date: Thursday, July 30, 2009 4:07 pm
Subject: Re: UW Oshkosh Grad Student Request Use of GN-SBQ in Study
To: Julie Berger <bergej18@uwosh.edu>

There is no problem with using the questionnaire...just keep me posted as to what you find...thanks.

glover

Elbert D Glover PhD
Professor & Chair
Department of Public & Community Health
University of Maryland
School of Public Health
2387 SPH Building
College Park, MD 20742
301.405.2467 Voice
301.314.9167 Fax
eglover1@umd.edu

---- Original message ----
Date: Thu, 30 Jul 2009 14:34:37 -0500
From: Julie Berger <bergej18@uwosh.edu>
Subject: UW Oshkosh Grad Student Request Use of GN-SBQ in Study
To: eglover1@umd.edu

Dr. Glover,

My name is Julie Berger and I am a Graduate Student at the University of Wisconsin, Oshkosh College of Nursing. I am currently working on a research project regarding reasons and attitudes toward smoking, motivation to quit or beliefs regarding inability to quit, as well as behaviors of smoking in myocardial infarction patients. I am requesting permission to use the Glover-Nilsson Smoking Behavioral Questionnaire (GN-SBQ) in my research study. If this is possible, please let me know. I have found a copy of your questionnaire in an article written by you and others (Glover, Nilsson, Westin, Glover, Laflin & Persson) titled "Developmental History of the Glover-Nilsson Smoking Behavioral Questionnaire" in Am J Health Behav. 2005. I found the behavioral aspect regarding smoking very interesting and feel this will provide a more comprehensive understanding so I would like to add this element to my study. Can I use the questionnaire contained within the article or do you have another place I need to access

the questionnaire from?

If you have any questions regarding my request, please contact me.

Thank you in advance for your time and consideration.

Julie Berger, BSN, UWO FNP Student

APPENDIX D

Cardiac Rehabilitation Clinics Consent

Subject RE: Research Project through Cardiac Rehab

From "Winistorfer, Wayne" <wwinisto@affinityhealth.org>

Date Friday, February 5, 2010 2:04 pm

To 'Julie Berger' <bergej18@uwosh.edu> , "Boldra, Janine" <jboldra@affinityhealth.org>

Julie

Thanks for your persistence!

Janine and I concur. Since this project has been approved by the Affinity IRB, we're comfortable that you move forward.

We're sure you will receive some great assistance from the staff in both of the Cardiac and Pulmonary Rehab Programs.

Let us know if you need any assistance beyond that.

Wayne L. Winistorfer, MPA, OTR
Director - Rehab Services
Affinity Health System - St. Elizabeth Hospital
Phone: 920 738 2750 Pager: 920 554 3813
email: wwinisto@affinityhealth.org

APPENDIX E

Information and Consent Sheet

Information and Consent Sheet

I am a graduate student in the Family Practice Nurse Practitioner program at the University of Wisconsin Oshkosh. I am conducting a study about smoking behaviors in those who smoked at the time of their diagnosis of heart disease. **If you have heart disease and smoked in the past or are a current smoker, I would appreciate your participation in this study.** With the results of this study, I hope to improve nursing education for individuals who smoke and have heart disease.

As a participant in this study, you would be asked to answer two short questionnaires about yourself and smoking. Completing the questionnaires takes approximately 10 minutes. After completing the questionnaires, place them in the self-addressed, stamped envelope provided and drop them in the mail. All data gathered will be confidential. No information will be released about you to your doctor or to anyone else in a way that could identify you. The questionnaires will be kept in a locked file, and only the researcher will have access to them. If the results of this research are reported in scientific journals or meetings, only group information will be used.

There is no risk to you for participating in this study other than a time commitment of filling out the questionnaires. Participation in this study may not benefit you directly. Your participation is strictly voluntary. If you do not wish to participate, this will in no way affect your care as a patient.

Once the study is completed, I would be glad to provide the results to you. If you wish to have a copy of the results, please notify the Cardiac Rehab Department and the results will be mailed to you. In the meantime, if you have any questions, please contact:

Julie Berger, UW Oshkosh FNP Student
106 Lincoln Ave.
Clintonville, WI 54929 Telephone: (715) 823-2995

If you have any complaints about your treatment as a participant in this study, please contact:

Chair, Institutional Review Board for Protection of Human Participants
c/o Grants Office at UW Oshkosh
Oshkosh, WI 549901 Telephone: (920) 424-1415

Although the chairperson may ask for your name, all complaints are kept in confidence.

If you have decided to participate in this research study, please complete the enclosed forms and return them in the self-addressed stamped envelope.

Thank you for your willingness to participate in this study.

_____

Julie Berger, RN, BSN, FNP Student UW Oshkosh

APPENDIX F

Institutional Review Board Approval

November 23, 2009

Ms. Julie Berger
106 Lincoln Ave.
Clintonville, WI 54929

Dear Ms. Berger:

On behalf of the UW Oshkosh Institutional Review Board for Protection of Human Participants (IRB), I am pleased to inform you that your application has been approved for the following research: Smoking Cessation After Myocardial Infarction: A Pilot Study.

Your research protocol has been classified as EXEMPT. This means you will not be required to obtain signed consent. However, unless your research involves **only** the collection or study of existing data, documents, or records, you must provide each participant with a summary of your research that contains all of the elements of an Informed Consent document, as described in the IRB application material. Permitting the participant, or parent/legal representative, to make a fully informed decision to participate in a research activity avoids potentially inequitable or coercive conditions of human participation and assures the voluntary nature of participant involvement.

Please note that it is the principal investigator's responsibility to promptly report to the IRB Committee any changes in the research project, whether these changes occur prior to undertaking, or during the research. In addition, if harm or discomfort to anyone becomes apparent during the research, the principal investigator must contact the IRB Committee Chairperson. Harm or discomfort includes, but is not limited to, adverse reactions to psychology experiments, biologics, radioisotopes, labeled drugs, or to medical or other devices used. Please contact me if you have any questions (PH# 920/424-7172 or e-mail: rauscher@uwosh.edu).

Sincerely,

Dr. Frances Rauscher

Dr. Frances Rauscher
IRB Chair

cc: Suzanne Marnocha
1683

INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF WISCONSIN OSHKOSH · 800 ALGOMA BLVD · OSHKOSH WI 54901
(920) 424-3215 · FAX: (920) 424-3221

APPENDIX G

Institutional Review Board Amendment Approval

February 8, 2010

Julie Berger
106 Lincoln Ave.
Clintonville, WI 54929

Dear Ms. Berger:

Based on the additional materials that you provided, your request for a modification has been approved for the study "Smoking Cessation After Myocardial Infarction: A Pilot Study."

Sincerely,

Dr. Frances Rauscher

Dr. Frances Rauscher
IRB Chair

INSTITUTIONAL REVIEW BOARD
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