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A comparative study of the differences in perceived levels of social support between smokers (non-smokers) and smokers in a post myocardial infarction population

Victoria Hacker
San Jose State University

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**A comparative study of the differences in perceived levels of
social support between former smokers (non-smokers) and
smokers in a post myocardial infarction population**

Hacker, Victoria, M.S.

San Jose State University, 1991

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300 N. Zeeb Rd.
Ann Arbor, MI 48106

A COMPARATIVE STUDY OF THE DIFFERENCES IN
PERCEIVED LEVELS OF SOCIAL SUPPORT
BETWEEN FORMER SMOKERS (NON-SMOKERS) AND SMOKERS IN A
POST MYOCARDIAL INFARCTION POPULATION

A Thesis
Presented to
The Faculty of the Department of Nursing

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

By
Victoria Hacker
May 1991

APPROVED FOR THE DEPARTMENT OF NURSING

Clara W. Boyle
Clara W. Boyle, R.N., Ed.D.

Coleen Saylor
Coleen Saylor, R.N. Ph.D.

Sharon Wahl
Sharon Wahl, R.N., M.S.

APPROVED FOR THE UNIVERSITY

Serena H. Stanford

ABSTRACT

A COMPARATIVE STUDY OF THE DIFFERENCES IN PERCEIVED LEVELS OF SOCIAL SUPPORT BETWEEN FORMER SMOKERS (NON-SMOKERS) AND SMOKERS IN A POST MYOCARDIAL INFARCTION POPULATION

by Victoria Hacker

This investigation explored the relationship between perceived levels of social support and smoking cessation in a post myocardial infarction population. The research design was retrospective and correlational. A theoretical integration of social support model by Dimond and Jones (1983) served as the conceptual framework. A social support questionnaire based on the Locke-Wallace Marital Adjustment Scale (Locke & Wallace, 1959) determined perceived levels of social support. Patients ($N=173$) admitted to the hospital for a myocardial infarction (MI) were asked to complete social support questionnaires in-hospital and 52 weeks later. The in-hospital responses were compared to those obtained 52 weeks later, 134 provided data at one year follow-up. This study indicated that perceived levels of social support in-hospital did not influence smoking behavior in the first year post MI; however, at 52 weeks post MI perceived levels of social support were higher among former smokers than those still smoking.

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Chapter 1

INTRODUCTION

Cigarette smoking has been identified as the single most powerful, modifiable contributor of the major cardiovascular risk factors, and "it deserves the highest priority among prevention measures to control cardiovascular diseases" (Kannel, 1981). Smoking is responsible for more than one of every six deaths in the United States (Surgeon General Report, 1989).

Coronary heart disease (CHD) was identified as the causative factor in over 513,700 deaths in 1987 and is the leading cause of death in America today (Heart Facts, 1990). Cigarette smoking is a direct contributor to 325,000 premature deaths per year. Over 20% of cardiovascular disease can be attributed to cigarette smoking. The magnitude of the problem is evidenced by the fact that 24,778,000 men and 22,004,000 women are smokers in the United States, or 26.5% of the population (Heart Facts, 1990).

The number of cigarettes smoked per day is positively associated with the risk of fatal CHD, nonfatal myocardial infarction (MI) and angina. Even smoking one to four cigarettes per day is associated with a twofold increase in the risk of CHD or MI (Willet et al., 1987). Cigarette

smoking at the time of heart attack is significantly associated with death and rehospitalization.

The well known Framingham Heart Study (Kannel, McGee, & Castelli, 1984) reported that cigarette smoking doubled the risk of premature strokes in men and doubled the risk of cardiac failure in women. Risk of sudden death increased more than tenfold in men and fivefold in women who smoke. The risk of myocardial infarction also increased fourfold in men who smoked.

The health hazards associated with cigarette smoking are certainly impressive and pose one of the major health problems in our society. Many prospective, epidemiological studies have shown substantial reductions in CHD, sudden cardiac death and total mortality for persons who quit smoking (Hermanson, Omenn, Kronmal & Gersh, 1988; Rosenberg, Palmer & Shapiro, 1990; Willett et al., 1987). Kannel (1981) compared the benefits of smoking cessation to those of cardiac surgery and cardiovascular drugs. He found that those who quit smoking reverted to one half the risk of people who continue to smoke within the first year after giving up cigarettes.

Data from the Coronary Drug Project Research Group (CDPRG, 1979) pointed to higher morbidity and mortality rates for cigarette smokers who continue to smoke after a

heart attack compared to those who did not smoke. The differences in mortality between smokers and former smokers justifies a major effort to promote smoking cessation behaviors in this cardiac population. CDPRG further reported that the absolute risk of death is much higher for men who continue to smoke after an MI than for men who smoke who have no prior history of coronary heart disease.

Formal smoking cessation methods include many diverse methods such as rapid smoking, nicotine fading, aversive smoking and pharmacologic interventions (USHDHHS, 1985). However, formal smoking cessation programs have met with little success. Lichenstein (1982) reports that the average participant in a smoking cessation program has a 15-20% chance of remaining abstinent at one year, and that even the more successful programs have reported abstinence rates of only 30-40%. In fact, it has been reported that 95% of smokers who quit smoking have done so unaided by formal programs (Gianetti, Reynolds & Rihm, 1985).

The role of social support has been well documented as a positive influence on health behavior change. Social support plays an important role in an individual's ability to make stressful decisions and to adhere to a therapeutic program (Janis, 1983). Social support has also been identified as an important factor in the treatment success

of addictive disorders (Best, 1980; Colletti & Brownell, 1982; Moos & Finney, 1983).

Recent evidence points to fewer psychological and physical symptoms among persons who report relatively high levels of social support (Cassell, 1976). Cohen and Syme (1985) identify social support as a strong influence in the performance of health-relevant behaviors, such as decreased cigarette and alcohol consumption or improved diet and exercise patterns. Social factors are important determinants in the susceptibility to heart disease as well as cancer and psychiatric disturbances.

The failure of many formal smoking cessation programs to attain high abstinence rates among their participants after one year has generated research interest in the role of social support as it relates to smoking behavior therapies. There is a need for further study of social support and smoking behaviors.

The Problem and Research Question

Smoking is recognized as a serious hazard to health. Cardiovascular disease is one of the major deleterious health effects seen as a result of smoking. Recently, social support has been identified as a major determinant in health relevant behaviors and health maintenance.

There has been increased interest in the role that social support may play in influencing smoking cessation behaviors. The importance of smoking cessation in the maintenance of health makes this a significant area for further study. The question investigated in this study is: Is there a difference in the levels of perceived social support between former smokers and relapsed smokers in a post myocardial infarction population?

Hypothesis

The hypothesis for this study was as follows; in a group of post MI patients, former smokers will report higher levels of perceived social support than relapsed smokers.

Purpose and Need

The purpose of this study was to determine if levels of perceived social support are effective predictors of smoking cessation in a population immediately post myocardial infarction (MI). This particular population with known coronary heart disease (CHD) is at increased risk for future cardiac events if they continue smoking (Kannel, 1984). The increased morbidity and mortality associated with cigarette smoking in the post MI population has generated intense research efforts aimed at identifying and implementing successful smoking cessation programs, which have met with limited success thus far.

Social support has been identified as an important factor in health maintenance and behavior change. One of the most difficult and most essential health related behavior changes one can make is smoking cessation. This is particularly important in the population with known CHD (such as those post MI).

The identification of variables that can predict successful smoking cessation behaviors, or conversely smoking recidivism, can lead to improved methods in smoking cessation programs. The enhanced ability to identify those at risk for smoking recidivism can alert the health care provider to the higher risk population that will require more help in their efforts to abstain from cigarettes.

Definition of Terms

For the purpose of this study, the following definitions apply:

1. Recidivism is a relapse into previous behavior, and in this study refers to a return to cigarette smoking.

2. Myocardial infarction or heart attack is the result of myocardial ischemia sufficient to cause death of cardiac tissue. The diagnosis is made based on an individual's clinical symptoms, serum cardiac enzymes and electrocardiograms (Cornett & Watson, 1984).

3. Serum thiocyanate is the biochemical in the blood measured to determine the presence of cyanide, which is found in cigarettes and will be present in the blood of a smoker. The biologic half-life of thiocyanate is about two weeks (Vogt et al., 1979).

4. Carbon monoxide is a toxic gas contained in cigarette smoke and found in the expired air of smokers.

5. Nicotine is the addictive chemical found in cigarettes and is one of over 4000 chemicals contained in a cigarette (U.S. Surgeon General Report, 1989).

6. Smoker is an individual who has smoked cigarettes which emit carbon monoxide and nicotine in the six months prior to hospital admission for a heart attack.

7. Smoking cessation is the abstinence of cigarette smoking in the first year after having a heart attack and enrolling in a smoking cessation program.

8. Former smoker is an individual who has not smoked in the first year after having a heart attack and enrolling in a smoking cessation program.

9. Social support is the integration of the following three ideas: (a) belief that an individual is cared for and loved, (b) belief that the individual is esteemed and valued, and (c) feeling of belonging in a network of communication and mutual obligation (Cobb, 1976).

Research Design

The research design of this investigation is a non-experimental, retrospective comparative survey. The data were obtained from information already in existence. The researcher sought to determine the differences in perceived levels of social support between former smokers and relapsed smokers in a population of patients post myocardial infarction.

Four Northern California medical centers were involved in promoting smoking cessation to a group of men and women who were aged 70 years or less, hospitalized for a myocardial infarction, and were willing to participate in a randomly assigned smoking cessation program. Fifty percent of persons willing to participate were randomly selected to receive specialized counselling regarding smoking cessation and cognitive behavior change by a specially trained nurse. Over a 6 month treatment period, this group also received follow-up phone calls and visits totaling up to 6 hours in duration to maintain smoking cessation behaviors. The other 50% received the usual care offered by the medical centers. The usual care consisted of advice by the physician to quit smoking while in the hospital but did not include cognitive behavior training or specific follow-up regarding smoking cessation.

Both groups of patients were asked to complete questionnaires while in the hospital to establish their perceived levels of social support. Smoking status was verified at 52 weeks post MI. The verification was accomplished through self reports of smoking behavior, data from biochemical measurements of serum thiocyanate, and expired carbon monoxide on each patient.

This investigation analyzed the relationship between perceived levels of social support and successful smoking cessation in a post MI population. The level of perceived social support measured while in hospital was compared to smoking status during the first year after MI. The hypothesis tested was that there was a difference between levels of perceived social support between relapsed smokers and former smokers (non-smokers) following a myocardial infarction.

Scope and Limitations

The population studied in this investigation is limited to patients who were hospitalized for a heart attack and were enrolled in a smoking cessation program. The stress of a heart attack can be a great motivator for change. It is reasonable to anticipate a higher smoking cessation rate in this particular group than in the general population. This impetus for change makes the post MI group a very

significant target population for health behavior modification. The results of this study will be applicable only to the post MI population, thus limiting the generalizability of the results.

The retrospective nature of this study does not allow the investigator to control the selection of variables. The study is also non-experimental, precluding the manipulation or control of extraneous variables. The sample is limited to all patients who were eligible for a smoking cessation program and who gave their consent to participate.

Social support measurements were obtained at the initial evaluation and at 52 weeks post MI. Therefore, change in the support network over time will be reflected. The assumption is held that individuals will accept smoking cessation as a positive behavior change. Furthermore, social support is considered by the researcher to be primarily a positive influence. This does not take into account the particular beliefs of the social network (i.e., the support network may consist primarily of smokers who may not accept smoking as a health hazard).

Chapter 2

CONCEPTUAL FRAMEWORK AND REVIEW OF THE RELATED LITERATURE

Conceptual Framework

The model proposed by Dimond and Jones (1983), "Social Support: a Review and Theoretical Integration," was used as the conceptual framework in this investigation. Their model identifies social support as a major factor in adaptation to stressful life events. Elements of social support theory proposed by Cobb (1976) and Weiss (1976) are integrated into this model. The nature of social support is defined and organized into four major categories; support as relational provisions, support as information, support as structure, and support as interaction.

Relational provisions are conceptually defined by Weiss (1976) as a combination of six categories: (a) attachment which is provided by dyadic relations of an intimate nature, often represented in marital relations; (b) social integration which is provided by group relationships; (c) opportunity for nurturance which is provided by parental roles; (d) reassurance of worth which is a sense of self esteem; (e) sense of reliable alliance which is provided by an expectation of reciprocity; and (f) the obtaining of guidance which is defined as access to a trustworthy authoritarian figure.

Cobb (1976) conceptualizes social support as an information system and outlines three classes of information: (a) information that one is cared for and loved, (b) information that one is esteemed and valued, and (c) information that one belongs to a network of communication and mutual obligation.

A third definition of social support (Mitchell, 1969) emphasizes the structure of the social network. The four structural characteristics are size, density, homogeneity of membership, and dispersion of membership. The fourth definition of social support is interaction within social networks (Mitchell, 1969). This is represented by the content and meaning of relationships, the mutual sharing, and the intensity of the bond between two people.

These four definitional categories overlap and converge at several points. In summary, the concept of social support involves the communication of positive affect to individuals within the social network. Supportive relationships offer a sense of warmth, caring and concern and offer individuals self-esteem and mutual respect.

Social support may be defined in many ways. The function of social support that is generally agreed upon is that of a buffer to protect individuals from the effects of life stressors. There are three distinct forms of

situational distress (Weiss, 1976). Crisis is a situation of limited duration in which one must quickly summon the resources available for coping. Transitions are major life changes with long lasting effects. Deficit situation is a state in which a relationship important to well being is unobtainable.

Based on the definition and function of social support, Dimond and Jones extrapolate six classes of variables that are the basis of the comprehensive model of social support: (a) the nature of the stressor, (b) characteristics of the support network, (c) nature of the support offered, (d) perceived adequacy of the support, (e) adaptive responses to the stressful situation, and (f) environmental resources.

The nature of the stressor is the situation which is potentially harmful, unpleasant or overwhelming. The stressor may be an acute health crisis. Characteristics of the social network that provide social support are size of the network, strength of bonds between the members, amount of interaction that occurs between members, homogeneity and geographic dispersion of the members. The nature of the support during stressful situations is determined by the source of support, the type of support provided and the timing of support. Perceived adequacy of the support is the extent to which a person perceives the support of his or her

environment and social network. The outcomes of stressful situations are the result of the adaptive response to stress. Adaptation to stress is considered on both a short and long term basis. The complex interactions of physiological, psychological and sociobehavioral factors determine whether or not an individual can achieve balance and harmony in response to stress. Environmental resources is the final set of factors that comprise the social support model. Environmental resources include the physical characteristics of the individual, the physical environment and the sociocultural context within which stress occurs.

The interaction of the six classes of variables is illustrated in Figure 1. There are both main (additive) effects indicated by solid arrows and buffering (interactive) effects indicated by broken arrows. On the basis of the proposed model, Dimond and Jones (1983) state seven general propositions:

1. The characteristics of the support network determine the nature of the support offered.
2. The more appropriate the type of support that is offered, the greater the perceived adequacy of social support.

Note: Solid arrows indicate main (additive) effects and broken arrows indicate buffering (interactive) effects.

FIGURE 1. A Proposed Model for Social Support and Adaptation to Stress

Dimond, M., & Jones, S.L. (1983). Social support: A review and theoretical integration. In P.L. Chin, (Ed.). Advances in Nursing Theory (pp. 235-247). Rockville, MD.: Aspen.

3. The greater the perceived adequacy of social support, the more adaptive the long and short-term responses to stressful situations.

4. The nature of the stressor will determine the type of response.

5. The characteristics of the support network, the nature of the support offered, and the perceived adequacy of social support function to buffer the effects of the stressful situation on long and short-term responses.

6. Environmental resources determine the nature and meaning of the stressor and the long and short-term responses to the stressor.

7. Environmental resources function to influence the effects of the support network, the nature of support offered, and the perceived adequacy of support.

Dimond and Jones (1983) further summarize their concept and stress its relevance.

Social support can be a powerful force in the management and resolution of the stresses associated with disease and other life events. Nurses are particularly able to assess the availability of social support and clients' perception of a capacity for utilizing this resource (pp. 245-247).

This conceptual model of social support formed the basis for study of the variables in this investigation. The purpose of this study was to determine if levels of perceived social support are effective predictors of smoking cessation in a population immediately post myocardial infarction (post MI). The nature of the stressor was the acute physiological and psychological event of a myocardial infarction. The nature and perceived adequacy of the support was measured using the social support questionnaire (see Appendix A). The adaptive response to stress was the termination of smoking to reduce future risk of mortality and morbidity.

Finally, the environmental resources and influences in the United States support the cessation of smoking to improve health. This is evidenced by the recent banning of smoking on domestic flights, at worksites, designated areas in restaurants, and the abundance of smoking cessation programs. The focus of this study is the adaptive response to cease smoking as influenced by perceived levels of social support.

Review of the Related Literature

Many of the health cost and hazards related to smoking are significantly decreased when smoking is stopped. Smokers who give up cigarettes can improve their health,

while those who continue to smoke are at higher risk for developing disease and decreasing life expectancy. The risks of continuing to smoke and the benefits of smoking cessation among the population with coronary heart disease (CHD) is of particular significance, since CHD is the leading cause of death in the United States (Heart Facts, 1990).

In two separate studies, it was estimated that cigarette smokers have three times the risk of myocardial infarction (MI) when compared to non-smokers (Cook, Pocock, Shaper, & Kussic, 1986; Rosenberg, Kaufman, Helmrach, & Shapiro, 1985). Willett et al. (1987) reported that the number of cigarettes smoked per day is positively associated with an increased risk of fatal heart disease, non-fatal MI, and angina.

Additional studies report on the risk of MI in former cigarette smokers, but with conflicting results. Rosenberg et al. (1985) reported that the risk of MI in former cigarette smokers decreased within a few years of quitting to a level similar to that in men who never smoked. In contrast, Cook et al. (1986) reported that the risk of MI to former smokers is less than that of current smokers but that it does not decrease to the level of men who never smoked.

Higgins and Schweiger (1983) identified smoking cessation as one of the highest priorities for the secondary prevention of CHD, and consequently, premature morbidity and mortality. Smoking cessation is a positive health behavior change, but it is difficult to achieve due to the intense physiological and/or psychological addiction to cigarette smoking experienced by the majority of smokers. Government reports indicate that most smokers express the desire to quit smoking. However, most smokers have been unsuccessful in their attempts to do so (United States Public Health Services, 1976). Grunberg and Bowen (1985) report that less than 25% of cigarette smokers who give up smoking continue to abstain 1 year after quitting. The relatively small proportion of individuals who successfully abstain for 1 year or longer are those who feel that their personal health is at risk with continued smoking. The investigators reviewed several studies and reported that smokers with CHD demonstrated abstinence rates of 50 to 62% four years after smoking cessation.

The severity of the health consequences of smoking and the addiction associated with it have generated much research into effective means of preventing cigarette smoking and also effective means to aid current smokers in their efforts to quit. There is compelling evidence that

environmental and social factors play an important role in addictive disorders. Social support has been used effectively in such treatment groups as Alcoholics Anonymous, Weight Watchers and Synanon.

The role of social support in relationship to smoking behavior has only recently been investigated. Research into social support has taken two directions; (a) identifying social support as a predictor variable for behavior modification, and (b) investigating attempts to modify social factors to improve treatment outcomes in addictive disorders.

Copotelli and Orleans (1985) reported that naturally occurring partner support emerged as the primary predictor variable of smoking cessation or relapse in a prospective study of 125 newly abstinent married female smokers. Abstainers had a significantly higher frequency of non-smoking partners than did relapsed smokers. The supportive person is helpful in both establishing a stable environment and assisting with specific behavior changes.

Morgan, Lichenstein, and McIntyre (1983) reported the results of 80 participants in a 16-week smoking cessation program. At one year follow-up, smoking abstainers reported more support from significant others than did persons who

did not quit. They suggested that successful former smokers receive more support because of their success.

Similarly, Mermelstein, Cohen, Lichenstein, Baer, and Karmark (1986) presented the results of two longitudinal, prospective studies evaluating the role of social support in smoking cessation. Three areas of social support were evaluated: (a) support for quitting smoking, (b) self-perceived availability of support, and (c) the presence of smokers in subjects' social networks. Participants in these studies considered quitting to be a difficult and stressful process and reported that social support enhanced coping resources. It is interesting to note that high levels of reported social support were associated with abstinence in short-term follow-up (3 months). The presence of smokers was a hindrance and presented a significant differentiation between abstainers and smokers at 12 months post treatment.

In contrast, Hilbert (1985) used self-reported compliance in a retrospective, correlational study to determine the effect of spousal support on patient compliance. Data were obtained from 60 couples at least 3 months after the husband's heart attack. Compliance was measured by the husband's self reports for each of 10 aspects of his medical regimen. The spouse support was measured by asking the wives to estimate the degree to which

they participated in behavior theorized to be supportive. Hilbert's findings did not support her hypothesis that there is a positive relationship between spouse support and compliance. However, she did not use the patients' perception of social support, but the spouses' estimation of their supportive behavior.

Ockene, Nuttall, Benfari, Hursitz, and Ockene (1981) suggested that psychosocial assets which include social resources can facilitate coping with stress, such as that incurred during smoking cessation. Later, Ockene et al. (1982) tested the psychosocial model and found that successful abstainers received significantly more social support during treatment than did those smokers who were unable to quit. Social support was operationally defined by Ockene et al. as the total number of group sessions that a subject's significant other attended (out of a possible 10).

Based on relatively consistent correlations between the degree of social support perceived and health behavior maintenance, investigators have attempted to enhance social support to improve the treatment success of smoking cessation programs. Kingsolver, Lichenstein, and Mermelstein (1986) attempted to facilitate social support in a smoking cessation program. A group of smokers with spouses who were willing to participate were randomly

assigned to one of two treatment groups: a multi-component cognitive behavioral intervention including self monitoring, nicotine fading and relapse prevention; or the same program with spouses attending all sessions and receiving training designed to increase spousal support. Although they reported differences in the predicted direction, they did not find a significant difference due to increased spouse training and involvement.

These findings were corroborated later by Lichenstein, Glasgow, and Abrams (1986). In their review of five different studies representing three smoking cessation programs, it was concluded that the addition of a social support component to a standard behavior based cessation program did not result in significant improvement in treatment outcome. They acknowledged that the largely negative outcome data in these studies could be due to the irrelevance of the support conceptualized or inadequacy of support training. They further suggested that the failure to increase social support may be related to an inherent difficulty in attempting to alter the stable nature of social skills or dyadic support exchanges. Although the programs were unable to increase social support through their intervention, they did find correlational results that support the belief that higher levels of perceived social

support were associated with successful smoking cessation. The researchers concluded that although the social environment is a critical factor in smoking cessation and maintenance, the issues are complex and deserving of further investigation.

Health implications of social support in correlation to cardiovascular disease parameters were reported by Davidson (1987). In a review of several large scale studies involving the correlations between social support and the incidence of coronary artery disease, Davidson recommended the development of a behavioral risk profile analogous to the physiological risk profile. This is postulated as a helpful tool in the identification of those individuals who may be at socio-behavioral risk for the development of cardiac disease or the recurrence of cardiac events. Davidson identified the crisis and recovery phase of cardiac disease as a critical time in which patients draw on their own resources and resources from their social network and health care providers.

Roberts (1988) also reported that the social network is important in influencing health behaviors. Roberts believed that social support determines help seeking and health resource utilization. Kane (1988) had developed the role of family social support into a conceptual model. The support

network is actually a process of interaction through which "the family develops versatility and resourcefulness in identifying and using resources available in its environment" (Kane, 1988, p. 18). Three assumptions supporting this model are: (a) that the family is a system, (b) social support is a process, and (c) social support is a positive influence.

Cohen and Wills (1983) identified social support as most important in times of stress. Perceived social support may have a more positive impact for those individuals experiencing relatively high levels of stress. In the case of stress response, social support acts as a buffer to help an individual cope with the stressor.

In summary, this literature review supports the contention that social support is a positive influence in health behavior change and an important factor in adaptation to stress. The attempts to enhance social support in smoking cessation interventions have, however, been reported with largely negative outcomes. The nurse working closely with both the patient and the family is in a valuable position to influence family beliefs regarding health behaviors and to encourage smoking cessation. This is particularly important to the post MI population. The conceptual framework presented by Dimond and Jones (1983) is

an excellent model of the interaction between environmental resources, social support and adaptive behavior change related to stress. This investigation studied the relationship between social support and smoking cessation in a population exposed to the acute physiological stressor of a myocardial infarction.

Chapter 3

METHODOLOGY

This chapter describes the methodology used to evaluate the relationship between smoking cessation behavior and perceived levels of social support. Discussion includes the (a) research design, (b) instrumentation, (c) sampling method, (d) data collection procedures, and (e) data analysis.

Research Design

The research design is retrospective and correlational. Data already in existence were utilized to evaluate the relationship between smoking cessation and self reported levels of perceived social support in a post myocardial infarction population. The pre-existing data were collected as part of a smoking cessation program specifically geared to patients still hospitalized while recovering from an acute myocardial infarction.

Instrumentation

A social support questionnaire (see Appendix A) was used to determine the level of social support perceived by participants in the smoking cessation program. The questionnaire is a shortened version of the Locke-Wallace Marital Adjustment Scale (Locke & Wallace, 1959). The questionnaire was administered to post MI patients prior to

hospital discharge. It was intended to estimate current levels of happiness in five areas, (a) support and affection from spouse/partner; (b) sex life; (c) social activities, friends, relatives; (d) happiness in general; and (e) relationship with partner, everything considered. Responses were rated on a 1-10 scale. The range was from completely unhappy at the low end of the scale to completely happy at ten (the highest score).

The data collected in this investigation included information regarding demographics, participation in a smoking cessation group or a control group, smoking status 12 months after MI, and social support measurements. Demographic information included age, occupation, education level, marital status and marital duration. Participants were assigned to one of two groups: (a) a smoking cessation program directed by a specially trained nurse or (b) the usual care provided by the individual's personal physician. The smoking cessation program consisted of a 1 hour counselling session with the nurse coordinator, a training manual for home use, telephone calls to help support smoking behavior change, and in case of a relapse, four to six 1 hour sessions of further relapse prevention training and cognitive behavior skills training.

Measurement of smoking status was performed 52 weeks post MI. The verification of smoking status was accomplished through self-report and biochemical measurements of expired carbon monoxide and serum thiocyanate levels. A smoker was defined as an individual who relapsed into smoking at any time and either reported this or tested positively on the biochemical measurements.

Sampling Method

The selected sequential sample studied were all the patients who consented to participate in a voluntary, free, smoking cessation research program. In order to participate the subjects had to meet certain criteria: live in the Northern California Bay area, age less than 70 years, able to speak and read English, had smoked in the six months prior to having a heart attack, and hospitalized for a heart attack. There were a total of 173 participants. There was no research bias as all patients who were enrolled in the smoking cessation program became part of this retrospective analysis. The sample is only representative of a small group of smokers who had a heart attack and share similar demographic characteristics.

Data Collection

Approval was obtained to retrieve and use data on smoking behavior from the Nurse Coordinator of the Stanford

Cardiac Rehabilitation Program (see permission letter Appendix B). Although human subjects did not actively participate in this investigation, approval was also obtained from the San Jose State University's Human Subjects Review Board (see Appendix C). Individual identity was not revealed in this analysis to protect confidentiality.

Data Analysis

In order to evaluate the difference in perceived social support between former smokers and relapsed smokers in the first year after a myocardial infarction, the data collected were analyzed using a t-test. A t-test was used to determine if there was a significant difference in the mean reported scores of the sample population on the social support questionnaire. The mean scores of both former smokers and relapsed smokers were compared during hospitalization and again 52 weeks after the myocardial infarction. Smoking status was verified through both self reports and biochemical measurements. The social support mean scores of former smokers and relapsed smokers by self-report were compared, and the social support mean scores of former smokers and relapsed smokers by biochemical verification were compared.

CHAPTER 4

ANALYSIS AND INTERPRETATION OF DATA

The purpose of this study was to determine if there is a difference in perceived social support between former smokers (non-smokers) and relapsed smokers after the stressful event of a myocardial infarction. A descriptive analysis of the research data in the form of frequency distributions and percentages is presented in this chapter. In order to test for a significant difference between former smokers and relapsed smokers, the mean values of responses obtained on the social support questionnaire were compared using a t -test ($p < .05$).

The presentation of the results is divided into the following three categories: (a) the demographic description of the sample population according to age, education, occupation, and ethnicity; (b) smoking status during the first year post MI, verified by both biochemical measurements and self-reports; and (c) comparisons of five areas of measured social support between former smokers (non-smokers) and relapsed smokers as categorized by self-report and biochemical verification at baseline and 52 weeks post MI.

A sequential sample of 173 patients was enrolled in a randomized, smoking cessation study to determine the

effectiveness of a nurse-directed smoking cessation program. Patients were randomly assigned to either the new program (intervention group) or the usual care provided in the hospital (usual care group). Of the 173 participants, 134 were available for data collection at one year follow-up. The results of the effects of the smoking cessation program are not discussed in this paper.

Description of the Sample Population

Demographic characteristics (see Table 1) of the sample revealed a homogeneous sample group. The majority (79.9%) of the sample population were married. The predominant ethnic group (64.9%) was Caucasian. Most of the sample (74.6%) were employed, 43.3% were in a professional or managerial position. The majority of the sample had an education level that was at least that of a high school graduate, and 23% had completed either college or post-graduate levels of study. All participants were under age 70.

Smoking Status

All patients in this study were smokers prior to their myocardial infarction. A patient was classified as a relapsed smoker, if at any time during the 12 month follow-up he or she reported themselves to be smokers, or at 52 weeks post MI biochemically tested positive for smoking. A

Table 1

Demographic Characteristics (N=134)

Characteristics	Number of Responses	Percentage
Ethnicity		
Caucasian	87	64.9%
Afro-American	8	6.0%
Chicano-Hispanic	8	6.0%
Oriental	5	3.7%
Other	20	14.9%
Missing data	<u>6</u>	<u>4.5%</u>
Total	134	100%
Marital status		
Married	107	79.9%
Divorced	12	8.9%
Widowed	6	4.5%
Single	5	3.7%
Missing data	<u>4</u>	<u>3.0%</u>
Total	134	100%
Occupation		
Professional-Managerial	58	43.3%
Clerical	17	12.7%
Manual	25	18.6%
Unemployed-Retired	32	23.9%
Table continues		

Table 1 (continued)

Demographic characteristics N=134

Characteristics	Number of Responses	Percentage
Occupation (cont.)		
Missing data	<u>2</u>	<u>1.5%</u>
Total	134	100%
Education		
Post-graduate	13	9.7%
College-graduate	15	11.2%
1 - 3 years college	42	31.4
High School	35	26.1%
Less than High School	16	11.9%
Missing Data	<u>13</u>	<u>9.7%</u>
Total	134	100%

positive biochemical verification of a relapsed smoker was determined by a serum thiocyanate level greater than 100mmol/L and expired carbon monoxide levels greater than 10 parts per million. Of the 134 participants, 75 (55%) reported themselves to be non-smokers, and 59 (45%) reported they were relapsed smokers in the first year after the MI. Biochemical validation of the smoking status at 52 weeks post MI demonstrated that 56 (41%) were non-smokers and 78 (58%) were relapsed smokers (see Table 2). Due to the discrepancy between self reports and biochemical validation, the data were analyzed in two groups: (a) biochemical verification of relapsed smokers and non-smokers, and (b) self reports of relapsed smokers and non-smokers.

Measurements of Social Support

A social support questionnaire (see Appendix A) was administered to participants while in the hospital thus obtaining baseline data. The questionnaire was administered again at 3, 26, and 52 weeks post MI. Responses on the social support questionnaire obtained at the 3 week and 26 week time points are not reported here as the measurements did not vary from those obtained at baseline. The 52 week measurement of perceived social support did present interesting results, and in this study was compared to the responses obtained at baseline for both relapsed smokers and

Table 2

Smoking Status 52 Weeks Post MI (N=134)

Method of Validation	Self-reports of smoking <u>N=134</u>	Biochemical validation <u>N=134</u>
Smokers	59	78
Non-smokers	<u>75</u>	<u>56</u>
Total	134	134

Note. The sample population (N=134) is depicted above, using two methods of smoking status validation, self-reports and biochemical validation. Fewer smokers admit to smoking than the number who tested positively for smoking.

former smokers (non-smokers). Results of the social support questionnaire were compared using self-reports and biochemical validation of smoking status.

The social support questionnaire covered five areas; (a) spousal support, (b) sex life, (c) social activities, (d) general happiness, and (e) relationship with partner. The mean scores reported on the social support questionnaire are presented on Tables 3, 4, 5, and 6. Those participants who did not have a spouse or partner were unable to respond to all the questions posed. The questions were considered personal in nature and participants were permitted to omit responses.

Responses to the social support questionnaire at baseline and at 52 weeks post MI are presented here comparing relapsed smokers to former smokers (non-smokers), as validated by both self reports and biochemical measurements. The social support questionnaire measured perceived levels of happiness in five different areas. The scores ranged from 0-10 (0 is completely unhappy and 10 is completely happy). The cumulative total was obtained by totaling all the responses. If an individual did not answer all the questions the scores were not totaled. The highest possible cumulative score was 50. The first results discussed are the baseline measurements obtained in the

hospital. This is followed by the responses made at 52 weeks post MI.

Baseline Comparisons

There were a total of 63 baseline questionnaires obtained from patients while in the hospital (71 of 134 were missing). The smoking status of these 63 participants was determined later, at 52 weeks post MI. There were 39 (62%) patients who later reported non-smoking status at the end of the first year post MI, and 24 (38%) who admitted they had smoked in the first year post MI. Biochemical measurements verified that 21 (33%) were non-smokers and 41 (67%) were relapsed smokers. Biochemical measurements identified 18 more smokers than did self-reports. In order to compare the differences in levels of perceived social support between the relapsed smokers and former smokers their in-hospital responses to the social support questionnaire were analyzed using a two tailed t -test. Due to the discrepancy between biochemical measurements and self-reports, the smoking status of individuals is presented by each method of validation.

Self-reported non-smokers

The group who at 52 weeks post MI reported themselves as non-smokers ($n=39$) had mean scores on the social support questionnaire administered in-hospital that ranged from 6.63

to 8.16 (see Table 3). The item that received the lowest score was sex life and the highest was spousal support. The mean cumulative total score for these non-smokers was 37.88.

Self-reported smokers

The self-reported smokers ($n=24$) had responded to the social support questionnaire with mean scores that ranged from 5.75 to 7.54 (see Table 3). The lowest ranked item was sex life and the highest ranked was spousal support. The mean cumulative total score for self-reported smokers was 34.08.

The trend appears to reflect slightly higher scores for those who remained non-smokers. The mean scores of both groups were compared using a two-tailed t -test. The only item that was significantly different between the self-reported smokers and non-smokers was the area of general happiness. Non-smokers reported a mean score of 8.00 and smokers reported a score of 7.00 ($t(59)=2.03$, $p=.046$).

The smokers and former smokers reported very similar levels of support during their hospitalization. Both smokers and former smokers reported the lowest score for sex life and the highest for spousal support. There was nothing on the social support questionnaire that predicted which individuals would later relapse to smoking.

Table 3

Differences in Social Support Scores of Smokers and Non-Smokers (Self-reports of Smoking Status) at Baseline (N=63).

Question	Non-smokers			Smokers			t-value
	<u>n</u>	Mean	SD	<u>n</u>	Mean	SD	
		(<u>n</u> =39)			(<u>n</u> =24)		
Spousal support	37	8.16	2.32	24	7.54	2.37	1.08
Sex life	36	6.63	2.79	24	5.75	3.30	1.12
Social activities	39	7.38	2.09	24	6.37	1.95	1.90
General happiness	37	8.00	1.73	24	7.00	1.91	2.03*
Relationship with partner	37	8.00	2.09	24	7.41	2.30	1.02
Cumulative score	36	37.88	9.86	24	34.08	9.32	1.49

*= $p < .05$

Note. N= the number of participants who responded to the social support questionnaire. Responses to the individual items do not equal total n because some items were not completed by the participants.

Biochemically verified non-smokers

The group that biochemically tested negative for evidence of smoking ($n=21$) responded to the social support questionnaire with mean scores ranging from 6.90 to 8.40 (see Table 4). Again, sex life was rated the lowest, relationship with partner was rated the highest. The mean cumulative total was 39.20. This is similar to the data obtained from self-reported non-smokers.

Biochemically verified smokers

This group ($n=42$) demonstrated evidence of smoking through elevated carbon monoxide levels and elevated serum thiocyanate levels. They responded on the social support questionnaire in the hospital with mean scores ranging from 5.97 to 7.90 (see Table 4). Sex life was again ranked the lowest; spousal support was ranked the highest. This is also similar to the data obtained from self-reported smokers. The mean cumulative total for biochemically verified smokers was 34.95.

Similar to the self-reported non-smokers, biochemically verified non-smokers reported higher levels of social support than smokers. A two-tailed t -test determined that the social activity category was significantly higher among non-smokers. The non-smokers reported a mean score of 7.76 and the smokers reported a mean score of 6.61 ($t(61)=2.10$,

Table 4

Differences in Social Support Scores of Smokers and Non-Smokers (Biochemical Verification) at Baseline (N=63).

Question	Non-smokers				Smokers			
	<u>n</u>	Mean	SD	<u>n</u>	Mean	SD	DF	<u>t</u> -value
Spousal support	20	7.95	2.21	41	7.90	2.43	59	0.07
Sex life	20	6.90	2.77	40	5.97	3.11	58	1.12
Social activities	21	7.76	1.99	42	6.61	2.04	61	2.10*
General happiness	21	8.14	1.82	42	7.30	1.81	61	1.71
Relationship with partner	20	8.40	1.81	41	7.46	2.29	59	1.59
Cumulative score	20	39.20	9.81	40	34.95	9.53	58	1.61

*p<.05

Note. N= the number of participants who responded to the social support questionnaire. Responses to the individual items do not equal total n because some items were not completed by the participants.

$p=.04$). With the exception of the social activities category, baseline measurements do not differ between smokers and non-smokers. Based on the social support questionnaire there was no evidence to predict individuals who would later become smokers.

Comparisons at 52 Weeks Post MI

At 52 weeks post MI, 120 patients responded to social support questionnaires, 25 patients did not respond to the questionnaire. Self-reports of smoking status identified that 69 (58%) reported they had not smoked at any time in the first year post MI and 51 (42%) participants admitted they had relapsed back to smoking. Biochemical verification data collected only at 52 weeks post MI identified persons who were smoking. Biochemical verification through elevated serum thiocyanate and elevated expired carbon monoxide levels demonstrated that 50 (42%) patients were non-smokers and 70 (58%) patients were relapsed smokers.

Discrepancy between self-reports and biochemical determination has been reported previously. Taylor, Houston-Miller, Haskell, and DeBusk (1988) followed a random sample of 42 patients' serum thiocyanate levels and found that 19% of patients smoking post MI failed to report doing so. This study reports similar results as 45% of the population admitted they were smokers, yet 58% showed

biochemical evidence for smoking (see Table 2) measured by serum thiocyanate and expired carbon monoxide, a difference of 13%.

Self-reported non-smokers

The group that identified themselves as non-smokers ($n=69$) responded to the social support questionnaire with mean scores that ranged from 6.78 to 8.54 (see Table 5). Sex life ranked the lowest among respondents and spousal support ranked the highest. This is the same rank order that was reported at baseline. The mean cumulative score of self-reported non-smokers at 52 weeks was 40.26.

Self-reported smokers

Patients who completed the social support questionnaire at 52 weeks post MI and reported themselves to be smokers ($n=51$) had mean scores that ranged from 5.19 to 7.47 (see Table 5). The lowest ranked item was again sex life, and relationship with partner was ranked the highest. The mean cumulative score of self-reported smokers at 52 weeks was 32.86.

The trend at 52 weeks post MI shows higher social support scores among the self-reported non-smokers than smokers. T -tests identified significantly higher scores for non-smokers in all five social support areas ($p < .05$).

Table 5

Differences in Social Support Between Smokers and Non-Smokers (Self-Reports of Smoking Status) at 52 weeks Post MI (N=120).

Question	Non-Smokers				Smokers			
	<u>n</u>	Mean	SD	<u>n</u>	Mean	SD	DF	<u>t</u> -value
Spousal support	63	8.54	2.30	46	6.95	2.70	107	3.29**
Sex life	65	6.78	2.81	47	5.19	3.10	110	3.18**
Social activities	69	7.85	2.11	49	6.04	2.58	116	4.17***
General happiness	69	8.49	1.70	51	6.94	2.47	118	4.06***
Relationship with partner	64	8.53	2.10	48	7.47	2.34	110	2.49*
Cumulative	63	40.26	10.23	46	32.86	11.23	107	3.57***

* $p < .05$. ** $p < .01$. *** $p < .001$

Note. N= the number of participants who responded to the social support questionnaire. Responses to the individual items do not equal total n because some items were not completed by the participants.

Although the perceived levels of social support measured in the hospital did not discriminate between smokers and non-smokers or indicate who would relapse, the measurements at 52 weeks post MI showed significant differences between the two groups. Self-reported non-smokers consistently ranked all five areas of social support higher than self-reported smokers. It is interesting to note that these differences were not present at baseline. This implies that perceived social support did not appear to influence smoking cessation, but that smoking cessation behavior may elicit higher levels of social support. This finding is corroborated by Morgan et al. (1983), who reported that at 1 year follow-up, former smokers reported more support from significant others than those who did not quit. Morgan et al. suggested that successful former smokers enjoy more support because of their success.

Biochemically verified non-smokers

The group that did not show biochemical evidence for smoking ($n=50$) reported mean scores that ranged from 6.52 to 8.42 (see Table 6). Sex life was ranked the lowest and relationship with partner was ranked the highest. The mean cumulative of biochemically verified non-smokers was 39.52, demonstrating consistency with self-reported non-smokers mean total score of 40.26.

Table 6

Differences in Social Support Scores of Smokers and Non-Smokers (Biochemical Verification) at 52 Weeks Post MI (N=120).

Question	Non-smokers			Smokers			DF	t-value
	<u>n</u>	Mean	SD	<u>n</u>	Mean	SD		
		(<u>n</u> =50)			(<u>n</u> =70)			
Spousal support	42	8.35	2.63	66	7.56	2.54	106	1.56
Sex life	46	6.52	3.11	66	6.03	3.01	110	0.83
Social activities	50	7.52	2.24	68	6.79	2.6	116	1.57
General happiness	50	8.20	2.00	70	7.57	2.25	118	1.55
Relationship with partner	45	8.42	2.26	67	7.85	2.26	110	1.31
Cumulative	42	39.52	10.57	67	35.65	11.45	107	1.76

Note. N= the number of participants who responded to the social support questionnaire. Responses to the individual items do not equal total n because some items were not completed by the participants.

Biochemically verified smokers

The group that did show biochemical evidence for smoking ($n=70$) reported mean scores on the social support questionnaire that ranged from 6.03 to 7.85 (see Table 6). The lowest ranked score was that given to happiness with sex life and the highest score was attributed to relationship with partner. The mean cumulative score of biochemically verified smokers at 52 weeks post MI was 35.65.

The trend shows higher scores among biochemically verified non-smokers. A t -test was performed to determine if the differences were indeed significant. The t -test did not show any statistically significant differences between reported scores of the biochemically verified smokers and non-smokers. This is in direct contrast to the findings of the self-reported smokers and non-smokers.

These data present a question regarding possible explanations for the difference between the biochemically verified smoking status and self-reported smoking status. One possible hypothesis may be that individuals who misrepresent their smoking status to investigators may also misrepresent it to their social network due to increased needs for social acceptance or support and increased sensitivity to the support available. On the other hand, it is possible that persons who continue to smoke receive more

negative social pressure and thus reported lower levels of social support. The statistical analyses and research design do not allow cause and effect findings. However, the findings may suggest that perceived levels of social support may not influence smoking cessation behavior, but reports of smoking cessation behavior may positively influence the perceived levels of social support.

The sample population consistently ranked sex life the lowest on the social support questionnaire and spousal support or relationship with partner the highest. This had no predictive value in identifying smoking relapsers.

Summary

Smokers and non-smokers reported similar scores on the social support questionnaire administered in hospital (baseline). Although the trend seemed to indicate higher levels of social support reported by non-smokers this difference was not shown to be of statistical significance when t -values were calculated.

However, at 52 weeks post MI, when results from the social support questionnaire were again analyzed, self-reported non-smokers scored significantly higher than smokers in all five areas. This was in marked contrast to both smokers and non-smokers whose smoking status was biochemically verified. The group that was biochemically

verified as smokers did not score significantly different on the social support scale at baseline or at 52 weeks.

The five areas of social support were similarly ranked by smokers and non-smokers, and cross analyzed both by biochemical verification and self-reports. The response to the item sex life consistently received the lowest ranking of the five items. Physical health after a myocardial infarction may have affected the level of happiness reported in this area. Relationship with partner and spousal support were consistently ranked the highest. However, this merely reflects a trend and is not useful in anticipating smoking relapse. A very interesting unexpected finding was the number of people (13% of the sample population, $N=134$) who did not admit they were still smoking.

Smoking is a difficult addiction to overcome, and a large number of people did not admit they were unable to overcome the addiction. Even after the stressful, life threatening event of a myocardial infarction, 45-60% of this population returned to smoking. The reported perceived levels of social support did not appear to predict smoking cessation. However, those who reported they did not smoke also reported higher levels of happiness in the five measured areas of support, 52 weeks after their myocardial infarction.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

This study was undertaken to determine if there was a difference in perceived levels of social support between relapsed smokers and former smokers after the stress of a myocardial infarction. A sample of 134 smokers who suffered a myocardial infarction were followed for one year. Social support measurements were obtained during their hospitalization (baseline) and 52 weeks later. The responses to the social support questionnaire of the smokers and non-smokers were compared using the mean reported social support scores and a two-tailed t-test to determine statistical significance.

The investigation revealed that individuals who stated they had not smoked in the first year after a myocardial infarction reported significantly higher levels of happiness in regard to five areas of measured perceived social support. The five areas measured were (a) spousal support, (b) sex life, (c) social activities, (d) general happiness, and (e) relationship with partner.

The data do not support the hypothesis that higher levels of perceived social support are reported by former smokers (non-smokers) than relapsed smokers. When smoking status was biochemically verified, through expired carbon

monoxide and serum thiocyanate, there were no significant differences in perceived levels of social support between smokers and non-smokers either during hospitalization or at 52 weeks post MI. Similarly, when smoking status was verified by self-reports alone, there were no significant differences in the mean social support scores obtained during hospitalization. However, there were significant differences at 52 weeks post MI. The self-reported non-smokers reported significantly higher levels of social support at 52 weeks post MI in all five areas. It is possible that the reports of smoking cessation among this non-smoking group earned them more support from their spouse or close friends because it was believed that the heart attack victim had stopped the self-destructive smoking behavior.

Conclusions

Evidence to support the hypothesis that former smokers will report higher levels of perceived social support than relapsed smokers was found only at 52 weeks post MI, among those whose smoking status was verified by self-reports. The self-reported non-smokers reported significantly higher levels of perceived social support in all five areas. There was no difference in perceived levels of social support among the group whose smoking status was biochemically

verified at baseline or at 52 weeks post MI. Baseline measurement of perceived social support did not identify or predict those who later relapse. Therefore, it is concluded that this investigation did not prove the hypothesis.

The findings of this investigation of patients who attempted to quit smoking after a myocardial infarction suggest the following conclusions:

1. Reported smoking cessation appears to be positively associated with an individual's perception of the support received from his/her support network. Perceived levels of social support were significantly higher in self-reported former smokers than smokers.

2. Although all the individuals in this study had expressed a desire to quit smoking and consented to participate in a smoking cessation program, only half of the population were successful. Within the first year post MI, 45-60% of this population relapsed to smoking behavior. This rate of smoking cessation is better than among the many individuals who attempt to quit smoking. The average rate of success in a smoking cessation program for individuals without coronary heart disease is 15-20% abstinence in the first year after the program (Lichenstein, 1982).

4. Self reports of smoking status were not consistent with biochemical verifications. This discrepancy leads to

the conclusion that some individuals do not report their failure with smoking cessation efforts.

Limitations

This study is limited in its generalizability due to the size of the sample population and also the homogeneity of the group. The background and characteristics of the sample were very similar. The sample population was primarily Caucasian, well-educated, employed, and under age 70. The population included only patients who had suffered a heart attack. Therefore, these results may only be applied to a post myocardial infarction population. The social support questionnaire was a useful tool for measuring perceived social support among married individuals, but certain items could not be answered by single or divorced individuals.

Recommendations

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

1. Revise the social support questionnaire to allow unmarried or unattached individuals to respond to all items.
2. Replicate the present study using a larger sample group with more diverse demographic characteristics.

3. Follow-up to this study to evaluate the effect of social support in a population without coronary heart disease that is attempting to quit smoking.

4. Follow-up this same sample population 5 years post MI and again measure social support levels and compare smokers to non-smokers.

5. Study the effects of combined smoking cessation programs with health awareness and education to determine what effect the involvement of a spouse or significant other has on health behavior change and smoking cessation.

6. Determine the effect that the informal social support network has on the success of smoking cessation efforts.

6. Include biochemical verification with self reports to accurately measure smoking cessation rates in any smoking study that requires smoking cessation success rates.

Cigarette smoking poses a major health risk in our society. The individual stricken by the consequences of tobacco smoking, such as a heart attack, may have a motivation to modify cardiac risk factors. Improved medical care will permit many more individuals to survive a heart attack and require cardiac rehabilitation and modification of cardiac risk factors. Smoking cessation will continue to be an important area of research.

The social network is important in determining health related behaviors and may help to encourage and support risk factor modification. The literature review did not present any really successful program that incorporates social support with smoking cessation. Social support and its effects on health behavior and behavior change remain an important area for further investigation.

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APPENDIX A
Social Support Questionnaire

KAISER/STANFORD CARDIAC REHABILITATION PROGRAM
Form 6: Page 9 of 9 CURRENT SMOKERS

PATIENT NAME:

SOCIAL SUPPORT QUESTIONNAIRE

This form is intended to estimate your current happiness in each of the 5 areas of your life listed below. Please indicate your present degree of happiness by circling one of the dots next to each area. Dots toward the left end of the scale indicate some degree of unhappiness and dots toward the right end reflect varying amounts of happiness. Considering each area one at a time, ask yourself this question: "How happy am I today with this aspect of my life?" Try to think of each area separately, being careful not to let your rating for one area of your life influence how you rate the other areas.

	Completely unhappy	1	2	3	4	5	6	7	8	9	Completely happy	
☐ Support and affection from spouse/partner	.	.	.	.	.	.	.	.	.	.		
☐ Sex life	.	.	.	.	.	.	.	.	.	.		
☐ Social activities, friends, relatives	.	.	.	.	.	.	.	.	.	.		
☐ My happiness in general	.	.	.	.	.	.	.	.	.	.		
☐ My relationship with partner, everything considered	.	.	.	.	.	.	.	.	.	.		

Office use	Office use	Office use
		<div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div> Variable SOCTOTL (SUM TOTAL 5-50)
		CRITERIA 1 ☐ YES 2 ☐ NO
Office use	Office use	Office use

Variable SOCCRIT

DATABASE SMO. FORM 6: Page 9 of 9. Revised 3/10/87 by CBT.

APPENDIX B
Consent Letter from Investigator

KAISER/STANFORD HEART ATTACK PROGRAM

780 WELCH ROAD, SUITE 106 ■ PALO ALTO, CALIFORNIA, 94304 ■ (415) 723-6463 ■ FAX (415) 723-6798

September 25, 1990

Graduate Studies Office
Administration Bldg., Room 150
San Jose State University
San Jose, Calif

To whom it may concern,

Victoria Hacker is granted permission to obtain information and use data on smoking behavior that has been collected by Stanford University, in the preparation of her Master's thesis at San Jose State University. The identity of the individual participants will remain confidential.

A handwritten signature in cursive script, reading "Nancy Houston Miller R.Y.", is written in dark ink.

APPENDIX C
Human Subjects Approval

To: Victoria Hacker, Nursing
13030 Foothill Avenue
San Martin, CA 95046

From: Charles R. Bolz
Office of Graduate Studies and Research

Date: October 24, 1990

Charles R. Bolz

As required by University policy, the Human Subjects Institutional Review Board has reviewed your proposed project entitled:

"The Effect of Perceived Social Support on
Successful Smoking Cessation in a Post-
Myocardial Infarction Population"

Because your project is to be limited to the collection of existing data that cannot be identified or linked with human subjects, your project is exempt from further review. Therefore, you may proceed without further review by the Human Subjects Institutional Review Board.

I, however, do caution you that whenever people participate in your research as human subjects, they should be appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity with regard to any and all data that may be collected from the subjects. If at any time a subject becomes injured or complains of injury, you must notify Dr. Serena Stanford immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised when people participate in your research as human subjects, each subject needs to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact Dr. Stanford or me at (408) 924-2480.

✓ cc: Clara W. Boyle, RN Ed.D. 70