

The role of perceived control in the dietary changes of cardiac patients and their spouses

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Abstract

Background: The objectives of this study were to determine whether there are differences of dietary behavior changes in coronary heart disease patients as well as their spouses based on the level of perceived control in the spouses.

Methods: This is a cross-sectional secondary analysis of data examining 167 couples recruited from hospitals in western Washington. Measures included demographics, dietary behavior changes and perceived control which were collected by baseline questionnaires.

Results: Logistic regression analyses showed that spousal perceived control levels were significantly associated with differences in spousal dietary behavior change since hospitalization, but not spousal intent to change diet, patient dietary behavior change since hospitalization and patient intent to change diet. Findings also showed that the association between spousal dietary change and patient dietary change was statistically significant.

Conclusion: The findings suggest that spouses of cardiac patients with high levels of perceived control are more likely to report changes in dietary behavior following the patient's hospitalization than those with low levels of perceived control.

Introduction

Coronary heart disease and spousal support

Coronary heart disease (CHD) is the leading cause of death in the United States.¹ Some of the risk factors that contribute to CHD are modifiable health or lifestyle behaviors, of which dietary behavior has been identified as a major contributor.² It has been shown that modifying dietary habits help reduce the risk of CHD in cardiac patients as well as contributing to its treatment. Diet modification behaviors such as reducing the amount of saturated fat and cholesterol in foods can help reduce one's risk of a cardiac event occurrence.^{3 4 5} It has been shown that dietary changes can even contribute to the reversal of coronary heart disease complications and risks.^{6 7}

Social support has been shown to be essential in the health management and recovery of cardiac patients.^{8 9} Modifiable health behaviors such as reducing fat intake are often easier for patients to engage in and maintain when they have a presence of social support. This is because many behaviors that contribute to the risk of CHD occur in and can be influenced by an individual's social context. Social support has been found to predict positive changes in behaviors related to nutrition, exercise and smoking-cessation for those with or at risk of heart disease.^{10 11 12} A lack of social support has been associated with adverse health and cardiac outcomes.^{13 14}

Spouses in particular have been an important source of social support for cardiac patients, and for many, spouses are the primary source of social support.¹⁵ Patients who have positive spousal support are more likely to have higher reports of quality of life, better psychosocial adjustment, and faster post-operative recovery than patients who lack positive spousal support.^{16 17 18}

Behavior change and perceived control in the spouse

Having spousal support can aid in lifestyle changes of heart disease patients. It has been shown that positive health behavior patterns correlate between spouses, and that positive changes in one's behavior can be indirectly influenced by his or her spouse.^{19 20 21 22 23} Patients who have spousal support are more likely to maintain improved dietary behavior changes than those who do not have positive support.²⁴ Spousal support has been shown to be positively correlated with achievement and maintenance of low-fat diet changes in men with high blood cholesterol.²⁵ As one spouse changes his or her health behavior, it is likely that the other spouse will also change his or her behavior.

Thus, it is important to consider the role of the spouse's dietary behaviors in the ability of a cardiac patient to engage in positive dietary behavior changes. It may be hard for a cardiac patient to consume a diet with reduced fat intake when a spouse consumes a high-fat diet especially if the spouse is the patient's primary preparer of meals. For patients whose spouses have not adopted healthy behaviors such as reducing the amount of fat consumed, modifications in the spouse's behaviors could help facilitate behavior changes in the patients themselves. Interventions that place focus on spouse behavior changes could increase the likelihood of behavior changes in the cardiac patient.

A factor that contributes to behavior change is one's level of perceived control, which is the belief that he or she has the internal and external resources to influence adverse health events and bring about desired outcomes.²⁶ It has been shown that perceived control level is positively associated with changes in modifiable behaviors especially diet.²⁷ Behavior change interventions that recognize one's level of perceived control can increase the likelihood of positive behavior change.

Spousal perceived control may play a role in successful behavior changes of the cardiac patient. Patient behavior change is likely to be influenced by the behavior changes of the spouse, which may be influenced by spousal perceived control. To date, the literature discussing perceived control and behavior change in the spouses of CHD patients is very limited, especially

pertaining to dietary behavior changes. It is also is not well-known whether dietary changes of the cardiac patient are associated with the level of perceived control in the patient's spouse. It is important to seek this information as it may have an impact on the adoption and modification of lifestyle behaviors of the spouse and cardiac patient, particularly diet changes, which ultimately influences the outcomes of a couple's overall well-being. The primary goal of this analysis is to see if there are differences in dietary behavior changes in the spouses of CHD patients based on spousal levels of perceived control, and whether this relationship is affected by spouse characteristics such as age, gender, education and race. A secondary goal is to see if dietary changes in cardiac patients are associated with dietary changes in their spouses and the level of perceived control in their spouses. I hypothesize that dietary changes between spouse and patient are not independent of each other and that higher levels of perceived control in the spouse are associated with greater likelihood of dietary behavior change in cardiac patients.

Method

Study Design

This is a cross-sectional secondary analysis of data. The data used for this analysis was previously gathered from a randomized controlled trial for automated external defibrillator (AED) training in cardiac patients and their family members—the At Home study.²⁸ Family members in the At Home study included spouses, parents, children and partners of cardiac patients. This trial included 305 subject pairs with each pair consisting of 1 subject who was recently hospitalized for an acute cardiac event and 1 subject who was the patient's family member. All participant pairs completed baseline assessments within 4 weeks post discharge and were randomized into 1 of 4 AED training arms. In addition to baseline information, 3- and 9- month assessments were collected from the participant pairs. For the purposes of this secondary data analysis, only baseline data was analyzed.

Study Sample and Setting

Subjects from the At Home study were recruited from 10 area hospitals located in western Washington State. To be eligible for the trial, patients needed to be area residents who were hospitalized in the prior 3 months for an acute cardiac syndrome which include myocardial infarction, unstable angina, or congestive heart failure. The participants had to be 18 years of age or older, live within the county area and provide written, informed consent. Exclusion criteria included complicated terminal conditions (i.e. cancer) or conditions that considerably affected cognition (e.g. dementia), therapy with an implantable cardioverter defibrillator, non-English speaking, no telephone, or nursing home residence. For the purposes of this analysis, I observed the same eligibility criteria as the At Home study, but additionally excluded subjects

who were not in a spousal relationship (e.g. parent, roommate) and those who reported dietary behavior changes that were initiated more than 6 months prior to baseline data collection.

Instruments

All cardiac patient and spouse subjects received baseline surveys. The surveys used for this analysis include the following:

Demographics

Age (years), gender, education (years completed) and race (White and non-White) for patients and spouses were determined for this study.

Dietary behavior changes

CHD patient and spouse subjects each completed a survey measuring lifestyle changes since the hospitalization of the cardiac patient. This is a questionnaire containing questions about changes in modifiable behavior, including diet, with some questions addressing behavior changes since the hospitalization of the cardiac patient subject. Diet change questions focused on limiting or decreasing the amount of fat consumed in one's diet. Two measures of dietary behavior change were assessed for this analysis: reported reduction in fat intake since patient hospitalization and intent to reduce fat in diet within the next month. Analyses were performed on two questions regarding dietary changes on the lifestyle change questionnaire. One question measured spousal diet behavior change since the patient's hospitalization: "Since your spouse's hospitalization for his/her heart condition, have you changed what you eat in order to decrease the amount of fat in your diet?" Another question measured the spouse's intent to reduce fat intake: "In the next month, do you plan to make any changes to reduce the amount of fat in your diet?" Response options to both dietary change questions were "Yes", "No" and "Don't Know". Responses to both dietary behavior change questions are the dependent variables in this analysis.

Perceived Control

The spouses of the cardiac patient subjects completed a 4-item Family Control Attitude Scale, which has established reliability and validity.^{29 30} Reliability testing of the Control Attitudes Survey revealed a Cronbach alpha score of 0.73. This survey was formatted using a 7-point Likert-type scale to assess the spouse's perception of control related to their partner's cardiac disease, with 1 indicating total control and 7 indicating no control at all. The total score range for this survey is 4 to 28, with lower scores reflecting increased levels of perceived control. Perceived control is the independent variable in this analysis.

Data analysis

Descriptive, bivariate and multivariate analyses were used to assess the degree of variability of characteristics of the study sample and test the main hypotheses. Analysis was performed only on the baseline data in order to use data collected before randomization. To test the primary and secondary hypotheses, I ran logistic regression comparing the independent and dependent variables. Race and survey responses regarding dietary fat reduction and intention to reduce dietary fat were recoded as binary variables. Descriptive tests revealed that "No" and "Don't Know" response distributions were similar to each other in questions of the lifestyle changes survey regarding dietary change since hospitalization and intent to change diet behavior in the next month, so they were combined to form a binary variable ("Yes" and "No"). Multivariate logistic regression was performed for analyses that included additional variables to control for confounding effects. STATA 11 statistical software package was used to perform statistical analyses. Statistical significance for all hypotheses was tested at the 0.05 level.

Results

Of the 305 pairs originally enrolled in the At Home trial, 167 pairs were included in this secondary data analysis. Table 1 shows a summary of baseline characteristics of the subjects included in the analysis. Only baseline data were used in this analysis. Spouse subjects were mostly White, middle-aged and female with high school education.

The mean Family Control Attitude Scale (FCAS) score measured in spouses was 12.9 ± 4.4 , with scores ranging from 4 to 25. Lower scores reflect higher levels of perceived control. Comparison of responses regarding dietary change since hospitalization based on mean perceived control scores in the spouses revealed statistically significant differences between those who lowered dietary fat since the patient's hospitalization and those who did not reduce dietary fat intake, $P = 0.02$, OR = 0.67 (95% CI: 0.49, 0.95) (See Figure 1). This association remained significant after controlling for the spouse's age, gender, race and education level, $P=0.02$, OR = 0.63 (95% CI: 0.43, 0.94). A comparison of responses regarding intent to change dietary behavior based on level of perceived control in the spouses did not reveal statistically significant results, $P=0.76$, OR = 0.95 (95% CI: 0.71, 1.29) (See Figure 2). This association was not statistically significant after controlling for age, gender, race and education, $P=0.52$, OR = 0.89 (95% CI: 0.63, 1.26).

An analysis comparing dietary fat intake change responses of the cardiac patient and the level of perceived control of the spouses yielded no associations for both dietary change following hospitalization, $P=0.58$, OR = 0.87 (95% CI: 0.52, 1.45) and intention to reduce dietary fat in the next month, $P=0.30$, OR = 0.84 (95% CI: 0.62, 1.16). After adjusting for race, age, education and gender, there was no statistically significant association between spouse perceived control and patient diet behavior change. A comparison of spouse behavior change with patient behavior change revealed significant findings for reported reduced fat intake since

hospitalization, $P=0.02$, $OR = 4.00$ (95% CI: 1.20, 13.28) and intention to reduce dietary fat intake in the next month, $P=0.005$, $OR = 2.84$ (95% CI: 1.37, 5.88).

Discussion

The main objective of this secondary data analysis is to determine if levels of perceived control contributed to the dietary behavior changes in the spouses of cardiac patients. The results indicated that spouses with higher reported levels of perceived control were likely to report lowering fat in their diet following their spouse's hospitalization. There was no association found between level of perceived control and reported intention to lower fat in one's diet. I also sought to determine if the spouses' levels of perceived control were associated with dietary behavior changes in the cardiac patients and found no significant relationship between the two variables before and after adjusting for age, gender, education and race. I also found cardiac patients were likely to report lowering dietary fat and intention to improve diets if their spouses reported doing so as well.

The association found between the spouses' levels of perceived control and reported reduction of dietary fat intake since their spouse's hospitalization is consistent with current literature on perceived control and modifiable behavior change.³¹ Individuals with higher levels of perceived control are likely to follow through with positive behavior changes to improve health, such as reducing dietary fat intake. The absence of a strong relationship between perceived control and intent to change dietary behavior in spouses could be explained by a potential critical period of behavior change following the hospitalization of a cardiac event. Nies et al found that health behaviors occurring just days after cardiac hospitalization predicted future health behavior.³² As cardiac events greatly impact both the patient and spouse, it is possible that if no behavior changes are made by either the patient or spouse shortly after the cardiac event, it is unlikely that there will be intentions to change behavior beyond the immediate period following the event regardless of perceived control level. Finally, the association found between the CHD patient and spouse's dietary change behaviors are

consistent with current literature indicating that modifiable behaviors between partners within a marital relationship are correlated.

There are limitations to consider in this analysis. This is a cross-sectional study, so it is not possible to determine causality between perceived control and dietary behavior change. Also, the sample was fairly homogeneous, comprising mostly of White female spouses, which makes it difficult to generalize to other populations especially as CHD has been found to be highly prevalent in other racial groups such as African Americans.³³ Lastly, I was unable to determine the magnitude of behavior change regarding fat reduction in diets.

There were also advantages in some components of this analysis. One, the dataset used was chosen as it was targeting patients recently hospitalized for cardiac problems and was part of an intervention targeting spouses and family members. Also, the questionnaire used to collect data on perceived control, the Family Control Attitude Scale, provides results relevant specifically toward cardiac health.

Future research on perceived control and diet change should include measures about the magnitude of reduced fat intake and general dietary changes. Also, African Americans were less likely to enroll in the At Home trial even though the researchers attempted to enroll a representative sample. Thus, future recruitment of more representative samples of non-White racial groups who have been found to have high risk and high prevalence of coronary heart disease, especially African Americans, should be emphasized.³⁴

The findings of this study will be beneficial for cardiac interventions targeting married couples in which one member is at risk or has a history of coronary heart disease. This study emphasizes the importance of perceived control in modifiable behavior change and the influential role that spouses have in the behavior changes of cardiac patients. The findings also provide reason for health educators and interventionists involved in cardiac rehabilitation programs to include a focus on the spouse of cardiac patients. This is especially important for interventions or programs targeting combined efforts of couples desiring to change dietary

health behaviors as well as those targeting psychosocial factors of dietary change. Finally, as the perceived control score examined in this analysis pertained to control of spousal control over the patient's heart condition, it is critical to evaluate the patient's disease state when bringing about change in the spouse. This would be especially relevant during nursing counseling interventions that include both the spouse and patient in cardiac care. It is vital to highlight the efforts and context of spouses by considering their contributions to the well-being of patients with coronary heart disease.

Table 1. Sample Characteristics of spouses (N = 167)

Table 1. Sample Characteristics of Spouses (N = 167)		
	Mean (SD)	Range
Age (Years)	59 (9.9)	35-84
Education (Years)	14 (2.2)	8-20
	N	%
Gender		
Male	30	18
Female	137	82
Race		
White	144	13.8
Other	23	86.2

Figure 1.

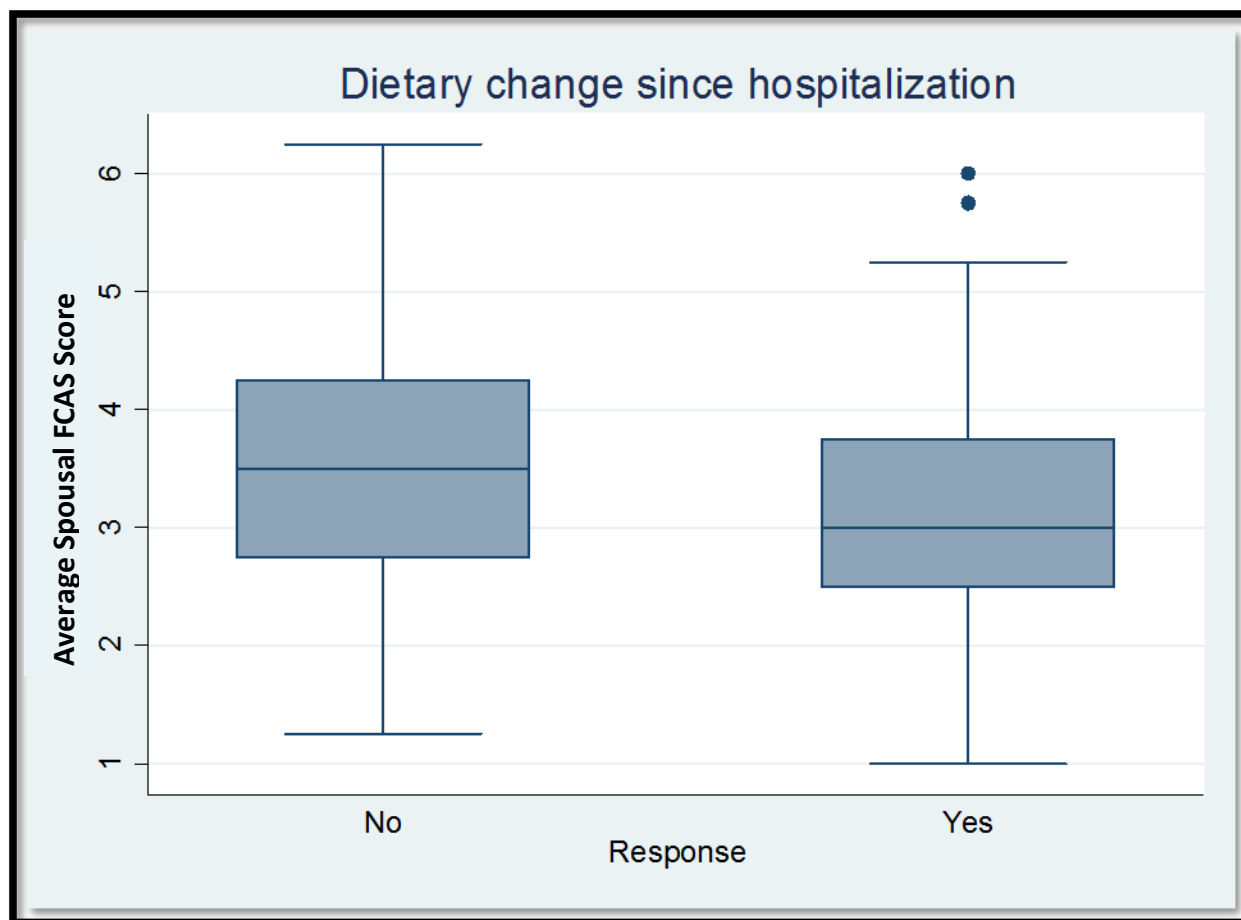
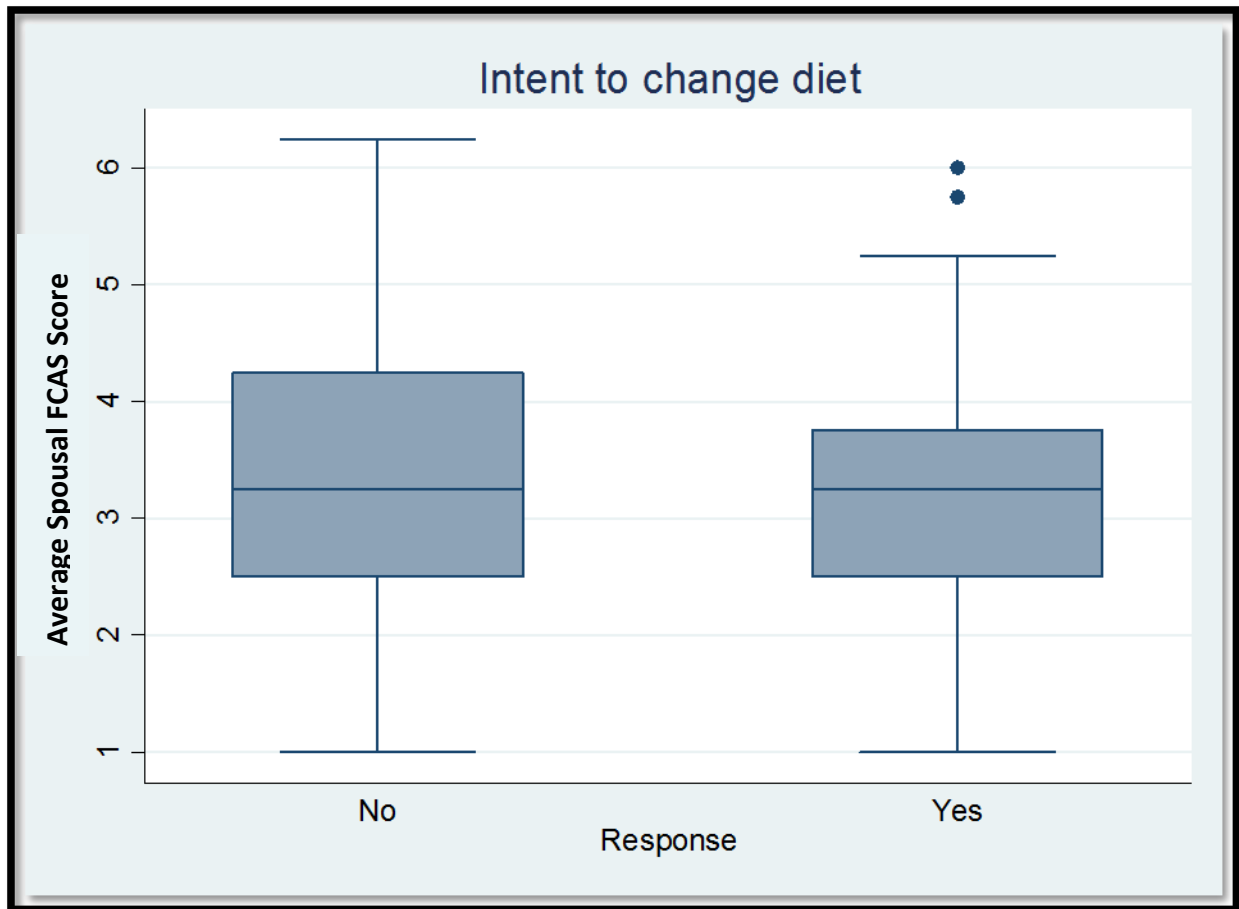


Figure 2



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