Asian Nursing Research 10 (2016) 158–163

Contents lists available at ScienceDirect

Asian Nursing Research

journal homepage: www.asian-nursingresearch.com

Research Article

Effects of Self-care Health Behaviors on Quality of Life Mediated by Cardiovascular Risk Factors Among Individuals with Coronary Artery Disease: A Structural Equation Modeling Approach

Sukhee Ahn, RN, PhD, [1] Rhayun Song, RN, PhD, [1,*] Si Wan Choi, MD, PhD [2]

[1] College of Nursing, Chungnam National University, Daejeon, South Korea
[2] College of Medicine, Chungnam National University, Daejeon, South Korea

ARTICLE INFO

Article history:
Received 21 August 2015
Received in revised form
26 January 2016
Accepted 28 March 2016

Keywords:
coronary artery disease
health behavior
quality of life
risk
self efficacy

SUMMARY

Purpose: The project was to test a structural equation model in which self-efficacy, self-care health behaviors, and modifiable risk factors predict the quality of life (QOL) of individuals with coronary artery disease.

Methods: The data set from the intervention study with 130 patients with coronary artery disease before the intervention was included in the secondary analysis for this study. The following parameters were measured: self-efficacy, self-care health behaviors with the subscales of health responsibility, exercise, consumption of a healthy diet, stress management, and smoking cessation; modifiable risk score; and QOL (assessed using the 36-item Short-Form Health Survey instrument).

Results: The mean age of the participants was 66.1 years. The following evaluation parameters indicated that the proposed model provided a good fit to the data: comparative fit index at .87, goodness of fit index at .91, adjusted goodness of fit index at .84, standardized root mean square residual at .06, root mean square error of estimation at .09, and confidence interval at 0.06–0.13. Self-efficacy, self-care health behaviors, and modifiable risk factors had significant effects on QOL and explained 64.0% of the variance, with modifiable risk factors mediating between self-care health behaviors and QOL.

Conclusions: The findings indicate that self-efficacy, self-care health behaviors, and modifiable risk factors play an important role in QOL in adults with coronary artery disease. Patients could be more confident in performing self-care health behaviors, leading to a better QOL, by more effectively managing their cardiovascular risk factors. Nursing strategies to improve QOL in this population should include motivating them to perform self-care health behaviors.

Introduction

Cardiovascular disease (CVD) is one of the leading causes of premature mortality worldwide. Although the prevalence rate of CVD has decreased over the past decade, cardio-cerebrovascular diseases (e.g., hypertension, ischemic heart disease, and stroke), which share common risk factors, remain the main cause of mortality in Korea [1]. Patients diagnosed with CVD have at least one modifiable risk factor, such as an inactive lifestyle, hypertension, obesity, or smoking [2], resulting in morbidity, decreased quality of life (QOL), and even death. Individuals with a CVD are required to perform self-care health behaviors to manage modifiable risk factors. Self-care health behaviors refer to actions that an individual can take to deal with a health problem or to promote his or her health [3]. Performing self-care health behaviors is one of the key elements in this population toward preventing or reducing recurrent episodes of cardiac disease and the frequency of hospitalizations, and consequently promoting positive health outcomes [4].

Self-efficacy may influence the performing of self-care health behaviors that can prevent or moderate the impact of risk factors on the individual's QOL [5]. Self-efficacy, derived from Bandura's Social Cognitive Theory, refers to self-confidence or the belief in one's ability to achieve a desired result [6]. Self-efficacy plays a very important role in management and control of health behaviors and adoption of a healthy lifestyle in individuals with chronic disease such as diabetes and cardiac patients [7,8]. Unfortunately, self-care

* Correspondence to: Rhayun Song, RN, PhD, College of Nursing, Chungnam National University, 266 Munwha-ro, Jung-Gu, Daejeon, South Korea.
E-mail address: songry@cnu.ac.kr

http://dx.doi.org/10.1016/j.anr.2016.03.004

among CVD patients is generally poor, and most of them have low self-confidence in performing self-care [9]. Several reviews have documented that low levels of self-efficacy are related to poor self-care adherence, especially for exercise, while the self-care ability of performing health behaviors improves when self-efficacy is increased in cardiac patients [10,11].

Self-care is the cornerstone of therapy in cardiovascular risk factor management, and consequently in improving QOL [12]. The positive impact of self-care health behaviors on QOL in cardiac patients has been confirmed in several randomized controlled trials (RCTs) involving short-term (< 6 months) self-care interventions, with 71.0% of findings from RCTs showing improved QOL in the intervention group [13]. Previous research has also produced evidence that self-care management plays a significant role in the improvement of self-care and the reduction of modifiable risk factors such as cholesterol and body mass index (BMI) [14]. Moreover, cardiovascular risk factors such as obesity are associated with greater disease severity, increased number of hospitalizations, subsequent prognosis, and poorer QOL among patients with heart diseases than those without such risk factors [15,16]. It is therefore necessary to pay more attention to factors that affect QOL in this patient population, because it is clear that maintaining a good QOL plays an important role in the rapid recovery of patients to a normal life, reducing complications, and preventing recurrences of heart diseases [17]. Little attention has been paid to the effect of modifiable risk factors on the relationship between self-care health behaviors and QOL. If patients can achieve short-term outcomes such as the reduction of risk factors through self-care health behaviors, this will enhance their QOL.

A comprehensive model for the secondary prevention of coronary artery disease (CAD) therefore seems necessary for improving our understanding in this field. The findings of previous studies suggest that self-efficacy is one of the most influential factors explaining self-care activity, and that performing a greater number of self-care activities plays an important role in reducing CAD risk factors, which could consequently positively impact QOL (Figure 1). The model proposed as explaining QOL in the present study could provide useful information regarding the way motivation factors (self-efficacy) and self-care health behaviors play a role in the promotion of QOL in people with CAD through risk factor modification as a mediator. Verification of the relationships among these variables can help health-care providers develop intervention strategies to attain optimal health conditions and QOL in this population.

Purpose

The aims of this study were to identify the relationships among self-efficacy, self-care health behaviors, modifiable risk factors, and QOL, and to test a proposed model among people with CAD. In addition, the mediation effect of modifiable risk factors between self-care health behaviors and QOL was examined.

The following hypotheses were tested in this study: (a) Self-efficacy directly predicts self-care health behaviors. (b) Self-efficacy indirectly predicts modifiable risk factors. (c) Self-efficacy indirectly predicts QOL. (d) Self-care health behaviors directly predict modifiable risk factors. (e) Self-care health behaviors indirectly predict QOL. (f) Modifiable risk factors directly predict QOL. (g) Modifiable risk factors mediate the relationship between self-care health behaviors and QOL.

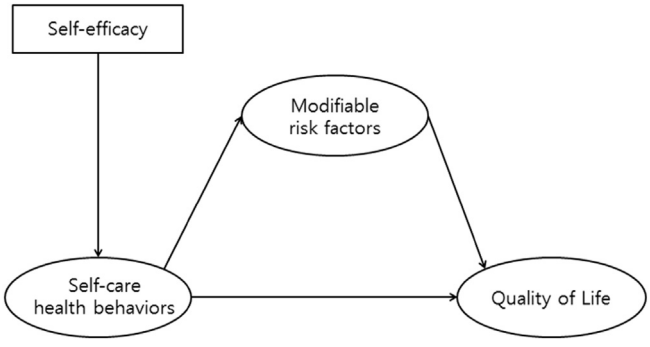

Figure 1. Proposed model for quality of life in adults with coronary artery disease.

Methods

Study design

A cross-sectional, correlational study design was used. The data from the previous intervention study [18] comprised two data sets collected in 2010 and 2011. Both data collection applied the same inclusion criteria with a convenience sampling of outpatients with CAD registered at the cardiovascular center of a university hospital in Korea.

The goal of the previous research was to evaluate the effects of the outpatient cardiac rehabilitation program on cardiovascular risks, recurrence risk in 10 years, and cardiac specific QOL in individuals with CAD [18]. The total sample of this study was 130 individuals diagnosed with CAD for the intervention study. We used data from pretest measures for this secondary data analysis so that the intervention did not influence the current data analysis.

Study sample

In total, 130 patients were included in this secondary analysis. Potential participants were recruited from outpatients at the cardiovascular center using the following inclusion criteria [18]: (a) diagnosed with CAD at least 6 months previously, (b) were able to communicate and understand the questionnaire, and (c) agreed to participate in the survey with written consent. The sample size was estimated based on the rule of thumb for structural equation modeling (SEM), such that at least 10–15 cases per measured variable or empirical indicator were required [19]. There were three latent constructs with 10 empirical indicators, resulting in a required sample size of 100–150 cases for this study.

Instrumentation

Self-efficacy

Self-efficacy was measured using a subscale of the Motivation Scale for Health Behavior developed in a previous study involving myocardial infarction patients [20]. The perceived self-efficacy scale comprised six items that were scored on a 10-point numerical rating scale, from 1 (not confident at all) to 10 (very confident). Higher scores in the perceived self-efficacy scale represent a more confident state for performing health behaviors. Song and Lee [20] reported psychometric tests of the scale, and reliability coefficients of the perceived self-efficacy scale to be .86. Cronbach α for the present study was .61.

Self-care health behaviors

The Cardiac Health Behavior Scale [21] was used to measure the likelihood of engaging in the following five types of self-care health behaviors: health responsibility (5 items), consumption of a healthy diet (8 items), exercise (4 items), stress management (5 items), and smoking cessation (3 items). This 25-item self-report scale employs a 4-point response format from 1 (never) to 4 (routinely), and uses a summated score, whereby a higher score indicates a higher frequency of performing behaviors that are favorable for cardiac