



## Original Articles

# Predictors of health-promoting behaviors in Taiwanese patients with coronary artery disease



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## ABSTRACT

**Aim:** This study aims to describe health-promoting behaviors and their predictors in patients with coronary artery disease.

**Background:** Health-promoting behaviors may improve quality of life and reduce cardiac mortality yet more than 80% of heart patients fail to maintain their health-promoting behaviors.

**Methods:** This cross-sectional study recruited 200 patients with coronary artery disease from a medical center in Taiwan. Instruments were used to measure health-promoting behaviors, cognitions and affect, social support, and quality of life. Hierarchical multiple regression analysis was performed to examine the predictive variables on health-promoting behaviors.

**Results:** Participants demonstrated a moderate level of health-promoting behaviors with a lowest mean score on the physical activity subscale; 40.6% of variance of health-promoting behaviors was predicted by no smoking, no obesity, perceived risk factors, self-efficacy, perceived control of health, and family support.

**Conclusions:** Health-promoting behaviors were affected by multidimensional factors including cognitions and affect variables and social support.

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## 1. Introduction

Coronary artery disease (CAD) is the most common form of heart disease, and may increase the risk of morbidity and mortality resulting in higher medical costs and poor quality of life (Go et al., 2013; Xie et al., 2008). CAD mortality was 379, 559 in the United States, representing about one in every six deaths in 2010 (Go et al., 2013). In Taiwan, heart disease also has been the second leading cause of death (Ministry of Health and Welfare, 2014). Poor health behaviors including smoking, physical inactivity, and unhealthy diet were identified as major modifiable risk factors for CAD. Additionally, health-promoting behaviors such as smoking cessation and exercise are shown to improve quality of life and reduce the risk of cardiovascular morbidity and mortality (Go et al., 2013). Thus self-management of modifiable risk factors should be integral to the secondary prevention of CAD. However, research demonstrated that more than 80% of heart patients failed to maintain their health-promoting behaviors (Hamilton, Kives, Micevski, & Grace, 2003). This study examined factors associated with health-promoting behaviors in patients with CAD.

## 2. Background

### 2.1. Health-promoting behaviors

Health-promoting behaviors referred to individual actions to attain one's positive health outcomes (Pender, Murdaugh, & Parsons, 2011). Therefore, health-promoting behaviors could include individual actions to modify risk factors such as smoking cessation, having regular exercise, eating a healthy diet, or controlling weight. Improving health-promoting behaviors may lead to lower incidence of coronary events. However, most patients did not practice health-promoting behaviors regularly (Thanavaro, Thanavaro, & Delicath, 2010). Tingstrom, Ekelund, Kamwendo, and Bergdahl (2006) also reported that only 35% patients with CAD achieved an adequate level of physical activity. In Taiwan, Chiou et al. (2009) reported that Taiwanese patients with CAD had relatively lower adherence on monitoring blood pressure, exercising regularly, and controlling their weight. Therefore, understanding factors related to health-promoting behaviors was important to improve the implementation of these behaviors and reduce the risk of morbidity and mortality of patients with CAD.

### 2.2. Health-promoting behaviors and predictive variables

Previous studies suggested that health-promoting behaviors were associated with demographic characteristics, health status, behavior-specific cognitions and affect, and psychosocial factors such as

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depression and social support in the older adults, women, and CAD patients of Western countries (Pischke, Frenda, Ornish, & Weidner, 2010; Sol, van der Graaf, van Petersen, & Visseren, 2011; Thanavaro et al., 2010; Tulloch et al., 2009). Behavior-specific cognitions and affect included self-efficacy, perceived severity, perceived benefits and barriers (Pender et al., 2011). Thanavaro et al. (2010) reported that the best predictors for health-promoting behaviors included education, hyperlipidemia, perceived benefits and barriers in 39 women with chest pain. In another study, more health-promoting behaviors were predicted by fewer perceived barriers, higher CAD knowledge levels, and no smoking history (Thanavaro, Moore, Anthony, Narsavage, & Delicath, 2006). Self-efficacy and perceived severity were also identified as predictors for exercise behavior in patients with CAD (Sol et al., 2011; Tulloch et al., 2009). Lim, Sung, and Joo (2010) reported that social support, self-efficacy, perceived health status, education, and presence of a spouse could explain the health-promoting behaviors of older women.

In Taiwan, several variables including age, perceived health status, chronic diseases, self-efficacy, depression, and social support were also found to be related to health-promoting behaviors in diabetes patients (Wu et al., 2013), postpartum women (Chen, Kuo, Chou, & Chen, 2007), and community adults (Chen, Wu, Hwang, & Li, 2010). One study by Chiou et al. (2009) reported that self-efficacy, cardiovascular risk factors, work status, and health beliefs could predict modifying behaviors of patients with CAD.

### 2.3. Health-promoting behaviors and quality of life

Quality of life was used as an indicator of health outcome. It was multidimensional and included individual's physical and mental health perceptions. Patients with CAD had lower quality of life scores in the dimensions of physical activity, mental health, and vitality than patients without CAD (Broddadottir, Jensen, Norris, & Graham, 2009). Age, gender, perceived health status, cardiovascular risk scores, and health behaviors could explain 40.2% of variance in quality of life (Park et al., 2008). Additionally, better health-promoting behaviors were shown to improve quality of life and reduce cardiac mortality (Hamilton et al., 2003). Therefore, health-promoting behaviors should be recognized and managed to improve patients' quality of life.

Based on the above-described literature, previous studies have examined selected factors influencing health-promoting behaviors or quality of life in Western countries. However, little was known about factors related to health-promoting behaviors of patients with CAD in Taiwan. Thus, the purposes of this study were to explore the following research questions: 1) What are the health-promoting behaviors of Taiwanese patients with CAD? 2) What are the predictors of health-

promoting behaviors among Taiwanese patients with CAD? 3) What are the relationship between health-promoting behaviors and quality of life?

In this study, a hypothesized model of health-promoting behaviors was derived from Pender's health promotion model (HPM) and previous research evidence. Pender's HPM proposed that the determinants of health promoting-behaviors included individual characteristics and experiences, behavior-specific cognitions and affect, interpersonal and situational influences such as social support, and behavioral outcomes (Pender et al., 2011). This model has been applied to older women and hypertensive patients (Baker, 2011; Kamran, Azadbakht, Sharifirad, Mahaki, & Mohebi, 2015). Fig. 1 presented the conceptual model of health-promoting behaviors in patients with CAD in this study. We hypothesized that demographic characteristics, disease status, behavior-specific cognitions and affect, and social support were associated with health-promoting behaviors. In addition, health-promoting behaviors were positively related to quality of life.

## 3. Methods

### 3.1. Sample and setting

This study used a cross-sectional, correlational design to examine the predictors of health-promoting behaviors in Taiwanese patients with CAD. Participants were recruited from two cardiovascular units of a medical center in Taipei, Taiwan. The inclusion criteria were age  $\geq 20$  years, ability to speak and read Mandarin, and a diagnosis of CAD or myocardial infarction by practicing cardiologists, and with post percutaneous coronary intervention. Patients diagnosed with psychiatric disorders and heart failure or underwent coronary artery bypass graft were excluded. Of the 227 patients eligible for the inclusion criteria, 16 refused to participate and 11 failed to complete questionnaires, leaving 200 patients who actively participated. A post-hoc power analysis indicated that a sample of 200 would have 99.7% power to detect a medium effect size of 0.19 using the hierarchical multiple regression analysis with an alpha of .05 for 18 predictive variables.

### 3.2. Procedures and ethical considerations

Ethical approval for this study was obtained from the institutional review board of the study hospital. Once recruited, the patients were given the study purpose and procedure, and asked to sign a written informed consent. Participants were then interviewed by the trained nurses to complete a structured questionnaire. The clinical data were obtained from medical record by the trained nurses.

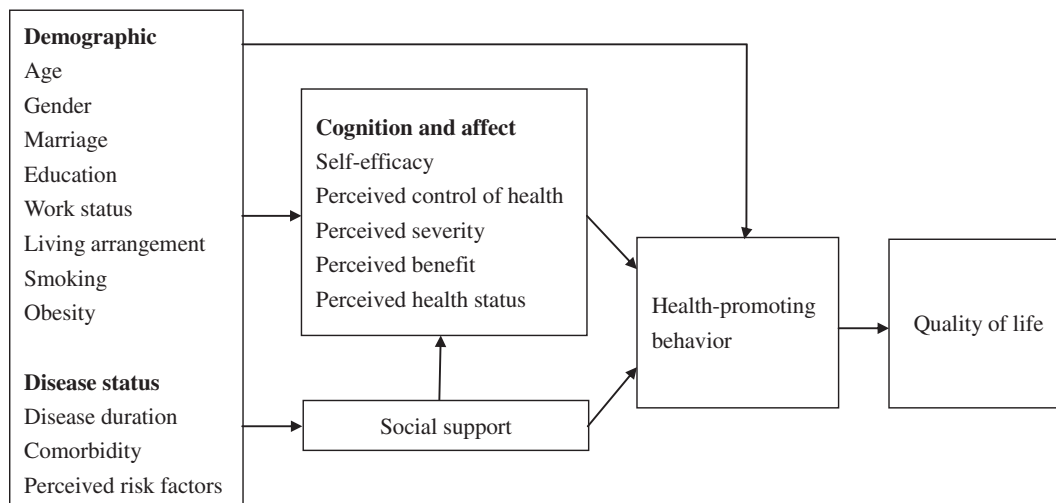


Fig. 1. Conceptual model of health-promoting behavior in Taiwanese patients with coronary artery disease.

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