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The effect of self-efficacy enhancement program on medication adherence among post-acute myocardial infarction

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ABSTRACT

Aim and background: Studies have reported that adherence to medications after hospital discharge for myocardial infarction is poor with about 12% to 20% of patients discontinue their medications six months after discharge. This study aimed to examine the effect of self-efficacy enhancement program on medication adherence in post-acute myocardial infarction patients.
Methods: A total 44 patient with post-acute myocardial infarction were recruited from the in-patient department, Police General Hospital. The participants were random assigned into control group and experimental group. The control group received conventional care while the experimental group attended a four-week self-efficacy enhancement program, which included motivation, skill practice, and monitoring skills. The mean self-efficacy score between groups was assessed. The pill count was used to measure medication adherence. Correlations between self-efficacy and medication adherence were examined. Data were analyzed using descriptive statistic, Pearson's correlation, and t-test.
Results: The mean score on medication adherence of the experiment group who attended the self-efficacy enhancement program was significantly greater than the control group ($t = -2.77$; $df = 21$; $p = 0.01$). The mean scores of self-efficacy between the experimental and control group were 35.73 ($SD = 4.11$) and 35.41 ($SD = 3.78$). The correlations between self-efficacy and medication adherence were significantly ($r = 1.00$, $p = 0.00$).
Conclusion: The effectiveness of self-efficacy enhancement program was effective in improving medication adherence in Thai post-acute myocardial infarction.

1. Introduction

Acute myocardial infarction (AMI) is a leading cause of death in developed countries (van der Elst, Bouvy, Blaey, and de Boer, 2007). After receiving acute treatment, post-AMI patients must adhere to specific medication regimens because they play a crucial role in ensuring their ongoing recovery (Maddox and Ho, 2009; Polsook, Aungsuroch, and Thanasilp, 2013). Studies have shown that effective medication adherence reduces cardiac events, morbidity, mortality, rehospitalization rates, and health care costs, and enhances well-being among patients with AMI (Choudhry, Patrick, Antman, Avorn, and Shrank, 2008; Corrao, Conti, Merlino, Catapano, and Mancia, 2010; Dragomir, Cote, White, et al., 2010; Jackevicius, Li, and Tu, 2008; Perreault, Dragomir, Roy, et al., 2009). However, prior studies have reported that adherence to medications after hospital discharge for myocardial infarction is poor. For example, Kronish and Ye (2013) found that approximately 50% of patients with cardiovascular disease did not adherence to their prescribed medications. Other studies also reported that only 8% of post-AMI patients adhere to their medications regimen exactly as prescribed (Albert, 2008; Choudhry et al., 2008; Jackevicius et al., 2008; Polack, Jorgenson, and Robertson, 2008) and about 12% to 20% of patients discontinue their medications six months after discharge (Shah, Dunlay, Ting, et al., 2008). Poor adherence has been associated with adverse and poor health outcomes such as increased rehospitalizations and mortality across a range of cardiovascular conditions as well as contributes to increased health care costs (Knafl and Riegel, 2014; Ye, Krupka, and Davidson, 2012). There have been speculations that medication adherence is favorable to behaviors (adherence to medical advice), socioeconomic characteristics (access to health care and social support), and the patients recognizing the potential consequences of non-adherence to their medications (Ooterom-Calo et al., 2013; Sheridan et al., 2011).

In Thailand, Khuwatsamrit (2006) conducted a study exploring self-efficacy in medication adherence among patients with coronary artery disease (CAD) and found that although they had high self-efficacy in adhering to their medications, they had low knowledge of why they must be taken. In another study, Polsook et al. (2013) explored the factors influencing medication adherence among Thai patients with post-acute MI and found that depression, self-efficacy, and barriers were

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the highest factors influencing medication adherence. In Thailand, cardiac rehabilitation programs have focused on physical and psychological factors to facilitate and empower patients to adhere to healthy behaviors (Dakhunthod, 2006).

Consistent with Bandura's self-efficacy theory, self-efficacy refers to the degree of confidence of a person in his/her ability to successfully perform health behavior modification that bridged the gap between knowledge and action (Bandura, 1997). Bandura (1986) suggested that "the stronger the perceived self-efficacy, the more probable persons are able to select challenging tasks, the longer they persist at them, and the more likely they are to perform them successfully" (p.397). He emphasized that cognition-based programs or interventions offer people the knowledge and abilities for support. People with lower levels of self-efficacy may dedicate less effort and probably have a greater tendency to abandon their attempts to perform the target activity. By contrast, people with stronger beliefs in their abilities to perform a set of actions are more likely to initiate attempts, as well as persist in the given events or activities (Bandura and Cervone, 1986). Bandura (1986) based his concept of behavioral change on two key components: *efficacy expectations* and *outcome expectations*. The underlying assumption suggests that behavior results from a person's belief that he or she is able to execute particular behaviors combined with the belief that the action will result in certain outcomes (Bandura, 1997). In post-AMI patients, Schoenthaler, Ogedegbe, and Allegrante (2009) found that self-efficacy was a predictor of health-related behavior. Additionally, Kang, Yang, and Kim (2010) and Chiou et al. (2009) found that self-efficacy was the strongest predictor for medication adherence in patients with coronary artery disease.

In patients with cardiovascular disease, studies of self-efficacy have focused on its role in cardiac rehabilitations (Carlson et al., 2001; Izawa et al., 2005). However, from literature reviews documented medication adherence was low in the first three months after discharge (Kramer et al., 2006; Jackevicius et al., 2008; Ho, Bryson, and Rumsfeld, 2009) and there have not been studies to evaluate self-efficacy to improve medication adherence during the first three months after discharge in post-AMI patients (Polsook et al., 2013; Polsook, Aungsuroch, Thanasilp, and Duffy, 2014). Thus, the purpose of the study was to examine the effect of self-efficacy enhancement program on medication adherence in post-AMI patients. It was hypothesized that participants in the intervention group who received the self-efficacy enhancement program will have higher medication adherence when compared to the control group receiving conventional care.

2. Research methods

2.1. Study design and sample

A quasi-experimental design was used in this study. All participants admitted with AMI were recruited from the in-patient department of Police General Hospital (Fig. 1). The inclusion criteria were: Thai male and female participants diagnosed with AMI, age 20 years or older, no cognitive impairment, and must be literate in Thai. Participants were excluded if they had a history of any mental illnesses or any other complications such as heart failure or renal failure. Participants with AMI were randomly assigned into the control group and experimental group. Randomization process was performed in permuted blocks of four with random order of the blocking number. The first block was created once the first participant was enrolled into the study. Then the first, second, third, and fourth participants were allocated to either the experimental or control group based on selected block until the last participant was enrolled into the study. The control group received conventional care while the experimental group attended a four-week self-efficacy enhancement program and conventional care.

The sample size was calculated based on the power analysis and effect size determination (Cohen, 1988; Munro, 2005; Polit and Beck, 2006). The significant criteria were set as Cronbach's alpha 0.05 and a power of 0.08 and effect size (d) = .75. This effect size was based on a previous study by Vibulchai, Thansilp, and Prechawong (2015). Based on this power analysis, the sample size needed for each group was 20. With an expected attrition rate of 10%, for each group, the total sample size recruited for this study was 44.

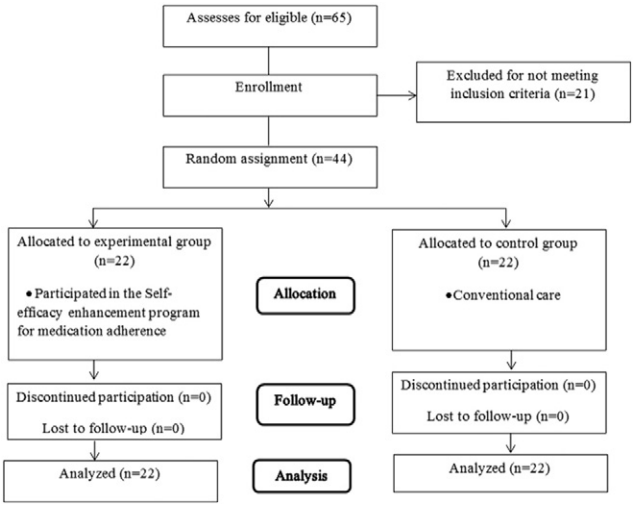

Fig. 1. Flow of participant.

2.2. Research instruments

2.2.1. Self-efficacy for appropriate medication use scale SEAMS

The 13-item Self-efficacy for Appropriate Medication Use Scale (SEAMS) was used to measure self-efficacy. Patients were asked to rate their level of confidence about taking medication from 1 = not confident, 2 = somewhat confident, to 3 = very confidence. The score ranged from 13 to 39, higher scores indicate higher levels of self-efficacy for medication adherence. The internal consistency reliability of the SEAMS was Cronbach's alpha coefficient 0.90 (Polsook et al., 2013). In this study the internal consistency reliability was Cronbach's alpha 0.77.

2.2.2. Socio-demographic and clinical profile

The socio-demographic profile of the participants including age, gender, marital status, education, income, type of health coverage was assessed. The clinical data collected included MI class according the Cardiac Canadian Society Class (CCSC) and co-morbidity.

2.2.3. Self-report using a patient diary

At one month after discharge, the participants in the experimental and control groups were assessed for medication adherence at posttest using a patient diary. The participants were to record their medication usage in the daily diary and the data were used for self-report medication adherence.

2.3. Intervention

Self-efficacy is a psychological construct based on social cognitive theory describing the interaction between behavioral, personal, and environmental factors (Bandura, 1986) in health and chronic disease such as coronary heart disease. In this study, the self-efficacy enhancement program (SEP) was developed and designed using Bandura's (1997) four self-efficacy components including: (1) enactive mastery experience; (2) vicarious experience; (3) verbal persuasion; and (4) physiological and emotional states or physiological feedback. The SEP was provided to the experimental group over four weeks by the same researcher. The SEP included: (a) motivation-building aimed at increasing the practice of medication adherence. Individual teaching about AMI