PREDICTING FACTORS OF SMOKING CESSATION IN ACUTE CORONARY SYNDROME PATIENTS AFTER HOSPITAL DISCHARGE

Flight Lieutenant Jirapinya Khamrath

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By	Flight Lieutenant Jirapinya Khamrath
Field of Study	Nursing Science
Thesis Advisor	Associate Professor Jintana Yunibhand, Ph.D., APN
Thesis Co-Advisor	Assistant Professor Sunida Preechawong, Ph.D., APN

Accepted by the Faculty of Nursing, Chulalongkorn University in Partial Fulfillment of the Requirements for the Doctoral Degree

.....Dean of the Faculty of Nursing
(Associate Professor Sureeporn Thanasilp, D.N.S., APN)

THESIS COMMITTEE

.....Chairman
(Associate Professor Pol. Capt. Yupin Aungsuroch, Ph.D., RN.)

.....Thesis Advisor
(Associate Professor Jintana Yunibhand, Ph.D., APN)

.....Thesis Co-Advisor
(Assistant Professor Sunida Preechawong, Ph.D., APN)

.....Examiner
(Associate Professor Waraporn Chaiyawat, D.N.S., APN)

.....Examiner
(Associate Professor Siripaarn Suwanmonkma, Ph.D.)

.....External Examiner
(Stephen Hamann, Ph.D.)

จิรภิญญา คำรัตน์ : ปัจจัยทำนายการเลิกบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล (PREDICTING FACTORS OF SMOKING CESSATION IN ACUTE CORONARY SYNDROME PATIENTS AFTER HOSPITAL DISCHARGE) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ดร.จินตนา ยูนิพันธุ์, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: ผศ. ดร.สุนิดา ปรีชาวงษ์, 238 หน้า.

การศึกษาเชิงความสัมพันธ์ในครั้งนี้ มีวัตถุประสงค์เพื่อทดสอบอิทธิพลทางตรงและทางอ้อมของปัจจัยทำนายการเลิกบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล โดยใช้การทบทวนวรรณกรรมเป็นกรอบแนวคิดในการวิจัย กลุ่มตัวอย่างคือ ผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลัน 161 คน ที่สูบบุหรี่และนอนรักษาตัวในโรงพยาบาล 7 แห่งทั่วทุกภาคในประเทศไทย คัดเลือกกลุ่มตัวอย่างโดยการสุ่มแบบหลายขั้นตอน เก็บรวบรวมข้อมูลโดยใช้แบบสอบถามจำนวน 8 ชุด ซึ่งแบบสอบถามทุกชุดผ่านการตรวจความตรงตามเนื้อหาและความเที่ยงได้ค่าที่อยู่ในเกณฑ์ยอมรับได้ ดำเนินการเก็บรวมรวมข้อมูลในช่วงเดือนมกราคม 2557 – สิงหาคม 2558 กลุ่มตัวอย่างส่วนใหญ่เป็นเพศชาย (95.7%) และมีอายุเฉลี่ย 54.8 ปี หนึ่งในสามของกลุ่มตัวอย่างสูบบุหรี่16-20 มวนต่อวัน (31.1%) และสูบบุหรี่มานาน 21-30 ปี (31.4%) การศึกษาครั้งนี้ทดสอบเส้นทางอิทธิพลความสัมพันธ์ระหว่างตัวแปรโดยใช้โปรแกรมลิสเรล 8.80

ผลการศึกษาพบว่าโมเดลที่สร้างขึ้นมีความสอดคล้องกับข้อมูลเชิงประจักษ์ และสามารถอธิบายความผันแปรของการเลิกบุหรี่ได้ 53 เปอร์เซ็นต์ (Chi-square = 2.75, df= 3; p-value= .43, Chi-square/df=.92, GIF=.99, AGIF=.95, RMSEA= .00) ปัจจัยทำนายมีอิทธิพลต่อการเลิกบุหรี่อย่างมีนัยสำคัญทางสถิติที่ระดับ .05 โดยสมรรถนะแห่งตนในการเลิกบุหรี่มีอิทธิพลทางตรงด้านบวกต่อการเลิกบุหรี่ (β= .59) และการมีประวัติเป็นโรคหลอดเลือดหัวใจมีอิทธิพลทางตรงด้านลบต่อการเลิกบุหรี่ (β= -.34) ส่วนภาวะซึมเศร้ามีอิทธิพลทางอ้อมด้านลบต่อการเลิกบุหรี่ผ่านสมรรถนะแห่งตนในการเลิกบุหรี่ (β= -.27)

ผลการศึกษาแสดงให้เห็นว่าปัจจัยที่มีอิทธิพลต่อการเลิกบุหรี่คือ สมรรถนะแห่งตนในการเลิกบุหรี่ ประวัติการเป็นโรคหลอดเลือดหัวใจ และภาวะซึมเศร้า ดังนั้นการประเมินปัจจัยเหล่านี้จึงมีความสำคัญที่จะนำไปพัฒนาการบริการเพื่อช่วยเลิกบุหรี่ในผู้ป่วยกลุ่มนี้ต่อไป

สาขาวิชา พยาบาลศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2558 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

ลายมือชื่อ อ.ที่ปรึกษาร่วม .....

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This study was a correlational study aimed to examine the direct and indirect relationships of the predictors of smoking cessation in acute coronary syndrome (ACS) patients following hospital discharge. The conceptual framework was developed based on literature review. Multi-stage sampling was used to recruit the samples. They were 161 ACS patient smokers from seven hospitals in Thailand. Data were collected from January 2014 to August 2015. Participants completed eight self-administered questionnaires. All questionnaires demonstrated acceptable content validity and reliability. The majority of the participants was male (95.7%), and mean age was 54.8 years old. One-third of the participant smoked 16-20 cigarettes per day (31.1%) and smoked 21-30 years before admission (31.4%). Path analysis (Lisrel 8.80) was used to test the relationship among variables.

The findings revealed that the hypothesized model fit the empirical data and could explain 53% (Chi-square=2.75, df=3; p-value=.43, Chi-square/df=.92, GIF=.99, AGIF=.95, RMSEA=.00) of the variance of smoking cessation. Independent variables could significantly predict smoking cessation at significance level of .05. Self-efficacy in smoking cessation had a significant positive direct effect (β=.59) on smoking cessation. Previous CAD had a significant negative direct effect (β= -.34). Depressive symptom had a significant negative indirect effect on smoking cessation through self-efficacy in smoking cessation (β= -.27).

The results demonstrated that self-efficacy in smoking cessation, previous CAD, and depressive symptom were the important factors influencing smoking cessation in ACS patients. Identifying these variables can be used to develop smoking cessation interventions to help ACS patients stop smoking.

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Student's Signature .....
Advisor's Signature .....
Co-Advisor's Signature .....

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CHAPTER I

INTRODUCTION

Background and significance of the study

Smoking is one of the leading causes of acute coronary syndrome (ACS) (Cordero et al., 2012). Despite of being aware of the harmful impact of smoking on ACS, these patients still indulged in smoking even after being admitted in the hospital (Merin, Limpin, Ayuyao, & De Guia, 2012). Previous studies showed that 30 - 60% of these patients were smokers at the time of hospitalization (Chow et al., 2010; Cordero et al., 2012; Craciun et al., 2009; Weisz et al., 2005). In Thailand, National Statistical Office documented that 42,000-52,000 Thai people died from smoking. Out of these total deaths, more than 7,900 smokers died because of coronary artery disease (CAD) due to smoking (National Statistical Office, 2007). Recent studies have also found that more than half of Thai ACS patients who were admitted in the hospital were smokers (Tungsubutra et al., 2007; Watanasawad, Watanasawad, Chamsa-ard, Tanthuwatt, & Lapanun, 2010) , and despite hospitalization, their smoking habits further increased (Srimahachota et al., 2012; Srimahachota et al., 2007).

It has been observed that patients' motivation to stop smoking increases during hospitalization and many attempt to quit smoking during this period (Sciamanna, Hoch, Duke, Fogle, & Ford, 2000). However, many patients are unable to discontinue smoking after being discharged from the hospital (Bolman, de Vries, & van Breukelen, 2002; Hajek, Taylor, & Mills, 2002; Holtrop, Stommel, Corser, & Holmes-Rovner, 2009). Recent studies found that over half of the patients suffering from cardiac diseases are those who smoked prior to the cardiac event, and continued

to smoke after being discharged (Berndt et al., 2012; Scholte op Reimer et al., 2006). Previous study has found that about half of the patients who were hospitalized for ACS had resumed smoking within seven days following their discharge (Perez, Nicolau, Romano, & Laranjeira, 2008). Furthermore, one fifth of ACS patients reported that though they had stopped smoking shortly after their hospitalization, but they resumed smoking within three months of their discharge (Holtrop et al., 2009). Literature reviews reveal that patients who continue to smoke after being diagnosed with ACS are at a higher risk of another cardiac event, cardiac related rehospitalization and sudden death (Chow et al., 2010; Goldenberg et al., 2003; Hilleman, Mohiuddin, & Packard, 2004; Howe, Leidal, Montgomery, & Jackson, 2011; Mohiuddin et al., 2007; van Domburg, op Reimer, Hoeks, Kappetein, & Bogers, 2008; van Werkhoven et al., 2011; Wilson, Gibson, Willan, & Cook, 2000). Therefore, to avoid the aforementioned problems, smoking cessation after ACS is needed.

Smoking cessation refers to the smoker changes their behaviors from smoking to stop smoking after the quit date (Ockene et al., 2000; Thorndike et al., 2008). It is an important intense and forced behavioral change in patients addicted to smoking that occurs because of hospitalization (Berndt et al., 2012). The review of the literature showed that smoking cessation had been associated with significant reduction in morbidity and mortality after the onset of ACS and prevented future cardiovascular incidents (Critchley & Capewell, 2012; Gerber et al., 2011; Twardella et al., 2004; Wilson et al., 2000). Therefore, cardiac nurses should provide smoking cessation intervention that can significantly improve a patient's health and quality of life.

The guidelines of article 14 of the World Health Organization Framework Convention on Tobacco Control (WHO-FCTC) state that to design and implement effective smoking cessation intervention, health care professionals need to understand the factors that influence smoking cessation such as age, sex, education level, etc. (World Health Organization, 2005). Thus, to develop an effective smoking cessation intervention for Thai ACS patients who are admitted in the hospital, cardiac nurses need to understand the predictors that can help these patients practice smoking cessation following their hospital discharge. However, some western country findings about factors of smoking cessation in these patient groups are still unclear and may not apply to developing countries due to different socioeconomic conditions, health care system, and cultural contexts as well as disparities in tobacco control policies and social acceptability of smoking (Abdullah & Husten, 2004; Siahpush, Borland, Yong, Kin, & Sirirassamee, 2008). In Thailand, little is known about predictors associated with smoking cessation in ACS patients after their hospital discharge. Some studies identified predictors of smoking cessation in general population or in general patients (Boonchan, 2007; Charoenkittiyawat, 2007). Therefore, this study aimed to examine predictors of smoking cessation in ACS patients following their hospital discharge.

Research questions

1. What are the predictors of smoking cessation among Thai ACS patients after hospital discharge?

2. Do the predictors include self-efficacy in smoking cessation, social support, motivation to quit smoking, nicotine dependence, depressive symptom, previous CAD, and intensity of smoking cessation intervention predict smoking cessation among Thai ACS patients after hospital discharge?

Objectives of the study

1. To identify predictor of smoking cessation among Thai ACS patients after hospital discharge.

2. To examine the direct and indirect relationship among self-efficacy in smoking cessation, social support, motivation to quit smoking, nicotine dependence, depressive symptom, previous CAD, and intensity of smoking cessation intervention on smoking cessation among Thai ACS patients after hospital discharge.

Conceptual Framework of the study

There are various theoretical frameworks that explain health behaviors; for example, Health Belief Model (HBM) (Rosenstock, 1974); Social Cognitive Theory (SCT) (Bandura, 1977); Theory of Reasoned Action and Theory of Planed Behavior (TPB) (Ajzen, 1991); Health Promotion Model (HPM) (Pender, 1987); and Transtheoretical Model (TTM) (Prochaska & DiClemente, 1983).

Systematic reviews showed that the predictors associated with smoking cessation among ACS patients after hospital discharge are diverse and include intrapersonal predictors and interpersonal predictors (Berndt et al., 2012; Wang et al., 2008). Some theories explain only self- efficacy of an individual such as SCT. Furthermore, some theories emphasize the intention of individuals such as TBP and TTM. However, smoking is an addictive chronic illness and not only behavior. In addition, nicotine dependence, and previous CAD are clinical factors (Wiggers et al., 2005). Therefore, the conceptual framework for this study was developed based on a literature review to identify the factors that related to smoking cessation in ACS patient smokers after hospital discharge. From a review of literature on smoking cessation in ACS patients found that predictors of smoking cessation include self-

efficacy in smoking cessation (Quist-Paulsen, Bakke, & Gallefoss, 2005; Wang, Harrell, & Funk, 2008), social support (Berndt et al., 2012; Holtrop et al., 2009), nicotine dependence (Quist-Paulsen et al., 2005; Vogiatzis, Tsikrika, Sachpekidis, Pittas, & Kotsani, 2010), depressive symptoms (Attebring et al., 2004; Brummett et al., 2002; Dawood et al., 2008; Holtrop et al., 2009; Perez et al., 2008), intensity of smoking cessation intervention (Attebring et al., 2004; Dawood et al., 2008; Vogiatzis et al., 2010), previous CAD (Attebring et al., 2004; Perez et al., 2008; Quist-Paulsen et al., 2005), and motivation to quit smoking (Berndt et al., 2012; Rigotti, McKool, & Shiffman, 1994). The proposed relationships among the testing predictors and concepts are depicted as in Figure 1.

Hypotheses with rationales

The research hypotheses and rationales were listed below:

1. Self-efficacy in smoking cessation has a positive direct relationship with smoking cessation in ACS patients after hospital discharge.

Self-efficacy has been identified as a key social cognitive predictor in smoking cessation (Baldwin et al., 2006; Gwaltney, Metrik, Kahler, & Shiffman, 2009; Gwaltney, Shiffman, Balabanis, & Paty, 2005; Leung, Chan, Lau, Wong, & Lam, 2008; Van Zundert, Ferguson, Shiffman, & Engels, 2010). Self-efficacy represents the confidence in individual's ability to perform a behavior in a given situation (Leung et al., 2008). Higher level of self-efficacy is more likely to successfully help a person in making and maintaining behavior changes (Bandura, 1997). Self-efficacy in smoking cessation is defined as the perceived ability or confidence to abstain from smoking (Niaura, 2000). Self-efficacy in smoking

cessation has been related to intent to stop smoking, success in smoking cessation and risk for smoking relapse (Berg, Sanderson Cox, Mahnken, Greiner, & Ellerbeck, 2008). Patients with serious illnesses are more motivated to stop smoking and more receptive to smoking cessation interventions that enhance their self-efficacy in smoking cessation (Rigotti et al., 2000). People with a high confidence in their ability to quit smoking are more often successful in smoking cessation (Baldwin et al., 2006; Chouinard & Robichaud-Ekstrand, 2007). Reid et al. (2003) showed that self-efficacy in smoking cessation is one of the predictors of abstinence at three months. Higher baseline levels of confidence in not smoking (a 12% higher baseline average) were significantly related to higher abstinence rates at three months.

2. Social support has a positive direct relationship with smoking cessation; and it has a positive indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation.

Social support is known to play an important role in health behavior change and is known as an important determinant of success in smoking cessation (Park, Schultz, Tudiver, Campbell, & Becker, 2004). Social support includes family members, friends, colleagues, and communities are part of patients' natural support network and can play a role in the provision of social support (Verheijden, Bakx, van Weel, Koelen, & van Staveren, 2005). A substantial body of literature indicates that the support by partner or significant persons who were identified or picked up from smoker can predict successful smoking cessation (Fiore, 2008). Chouinard and Robichaud-Ekstrand (2007) reported that cardiac disease patients who quit smoking received more social support and were more confident of refraining from smoking. Bursey and Craig (2000) confirmed the important influence of significant others in the

resumption of smoking among cardiac disease patient because many cardiac disease patients get their first cigarette after hospital discharge from family or friends. Some studies have showed that social support influences smoking cessation by increasing self-efficacy of those quitting (Gulliver, Hughes, Solomon, & Dey, 1995; Sorensen, Barbeau, Hunt, & Emmons, 2004).

3. Nicotine dependence has a negative direct relationship with smoking cessation and it has a negative indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation.

Nicotine dependence is an important factor affecting smoking cessation in ACS patients. A strong dependence on nicotine result in difficulty initiating and maintaining smoking cessation (McKenna & Higgins, 1997). Smokers with highly nicotine dependence continue smoking because they crave cigarettes; that is, they regularly experience in intense urge to smoke (Allen, Bade, Hatsukami, & Center, 2008; Carter et al., 2008; Ferguson, Saul Shiffman, & Gwaltney, 2006; Knott et al., 2008). Acute coronary syndrome patients may face many challenges from nicotine withdrawal symptoms; which decreases one's ability to quit smoking (American Heart Association, 2007). Various studies suggested that patients with high level of nicotine dependence are more likely to continue smoking after hospitalization for a cardiac event (Holtrop et al., 2009; Japuntich, Piper, Leventhal, Bolt, & Baker, 2011). A previous study reported that having a high level of nicotine dependence is an important negative predictor of smoking cessation in patients admitted for coronary disease (Quist-Paulsen et al., 2005). Patients with ACS who had higher levels of nicotine dependence were more likely to continue smoking (Attebring et al., 2004). In addition, a study by Hajek et al. (2002) supported that low nicotine dependence was a

significant predictor of smoking cessation in coronary disease patients. Moreover, a recent study demonstrated that high level of nicotine dependence to be a main factor related to a decreased likelihood of smoking cessation after diagnosed with cardiac disease (Abu-Baker, Haddad, & Mayyas, 2010). A study of Berndt et al. (2013) revealed that nicotine dependence was negatively associated with self-efficacy in smoking cessation which was associated with a reduced likelihood of smoking cessation in cardiac patients.

4. Depressive symptoms have a negative direct relationship with smoking cessation; and have a negative indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation.

Depressive symptoms are significant mood disturbances in patients recovering from ACS (Thombs et al., 2006). Depressive symptoms are associated with maladaptive coping strategies and negative cognitions, such that patients may continue to smoke to regulate their emotions (Barth & Bengel, 2007; Herrmann-Lingen, 2001). Depressive symptoms have been linked to difficulties in changing smoking behavior (Brummett et al., 2002; Mayou et al., 2000). Patients with depressive symptoms during the ACS hospitalization were less likely to remain smoking cessation (Dawood et al., 2008). Thorndike et al. (2008) supported that depression at the time of ACS predicts failure to cessation in smoking following ACS. Another previous study found that smokers who were persistently depressed during the three months after admission for acute coronary symptoms were less likely to perform smoking cessation (Kronish et al., 2006). Furthermore, Mayou et al. (2000) reported that 41% of smoker with psychological disturbances (neuroses, depressive

symptom) who suffered an infarction cannot continued to stop smoking during the first three months following their discharge from hospital. Depressive symptoms have been found to be related with low smoking cessation rate, and self-efficacy turned out to be a mediator in this relationship (Cinciripini et al., 2003; Ong & Walsh, 2001). Smokers with depressive symptoms cannot quit smoking because they have less self-efficacy to smoking cessation than non-depressed smokers. Likewise, Makaremi (2000) documented that depressive symptoms has been shown to be negatively associated with self-efficacy.

5. Intensity of smoking cessation intervention has a positive indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation and motivation to quit smoking.

Several studies have examined the efficacy of interventions to help cardiac patients to stop smoking. Success of smoking cessation intervention is dependent on whether intervention is brief or more intense and delivered over a longer period. Most of the more intense interventions have reported moderate to good results in helping smoker stop smoking (Nawaz, Javed, Curry, & Murday, 2013). Patients with serious illnesses are more motivated to stop smoking and more receptive to smoking cessation interventions that enhance their self-efficacy in smoking cessation (Rigotti et al., 2000). Smokers who failed to quit smoking after participation in an intensive smoking cessation intervention were significantly likely to report low self-efficacy and motivation to quit smoking than those who succeed in smoking cessation (Colivicchi et al., 2011).

Systematic reviews of the effects of the intensity of smoking cessation programs showed that 1) brief advice or counseling is more effective than without

such active intervention, 2) intensive counseling is more effective than brief advice, 3) brief advice or counseling will be more effective if it includes relapse prevention, and 4) the program are most effective in intensive counseling plus follow up (Fiore, Jaen, Baker, Bailey, Benowitz, & Curry, 2008; Rice, Hartmann-Boyce, & Stead, 2013). Smoking cessation interventions are provided during hospitalization with more intense, and these patients are probably more highly motivated to quit smoking (Rigotti, Munafo, Murphy, & Stead, 2003). Moreover, Hajek et al. (2002) stated that a brief smoking cessation intervention to help coronary patients stop smoking during hospitalization is not effective; concluding that single session interventions should be delivered as a part of routine care.

6. Previous CAD has a negative direct relationship with smoking cessation in ACS patients after hospital discharge.

Previous CAD was one of the factors related to smoking cessation in ACS patient after hospital discharge. Smoking is known as the most preventable risk factor that contributes to premature death of CAD (Sohn, Hawk, Kirsten, & Sivarajan Froelicher, 2010). Patients who are newly aware of the seriousness of their illness are more likely to be inclined to work to improve their prognosis, and are probably more frequently urged to stop smoking by their health care providers such as their cardiologist (van Berkel, van der Vlugt, & Boersma, 2000). Also, patients with new diagnosis of CAD, having suffered a cardiac event, those patients would show increased motivation to stop smoking (Attebring et al., 2004). Furthermore, acute hospitalizations strongly motivate patients to quit smoking (Rigotti, Munafo, & Stead, 2008). A study of Vogiatzis et al. (2010) revealed that previous CAD was a significant predictor of smoking cessation among ACS patients who were admitted in

the hospital. The finding showed that ACS patients with previous CAD history continued smoking during the follow-up period. According to a study by Quist-Paulsen et al. (2005), it was found that ACS patients who have no previous CAD and has been admitted in the hospital were statistically significant negative predictors of smoking cessation. Perez et al. (2008) also supported that among smoker with ACS, if they do not stop smoking after first MI it is less likely that they will stop smoking after other cardiac event.

7. Motivation to quit smoking has a positive relationship with smoking cessation in ACS patients after hospital discharge.

Motivation is an individual's need or desire which inspires a certain behavior as originated from intrinsic forces and extrinsic forces (E. L Deci & R. M Ryan, 1985). Intrinsic motivation occurs from inside of the individual such as health concerns. Extrinsic motivation occurs from outside of the individual such as social pressure (Ryan & Deci, 2000). High motivation to quit smoking is important the factor in successful smoking cessation (Stoklosa et al., 2010). A number of previous studies have confirmed that motivation to quit is a significant predictor of smoking cessation (Attebring et al., 2004; Williams, Gagne, Ryan, & Deci, 2002). Rigotti et al. (2008) stated that acute hospitalizations strongly motivate patients to quit smoking. Patients with cardiac disease who had high level of motivation to quit smoking were more likely to quit smoking (Rigotti et al., 1994) .

The proposed of hypothesized model of this study is shown below:

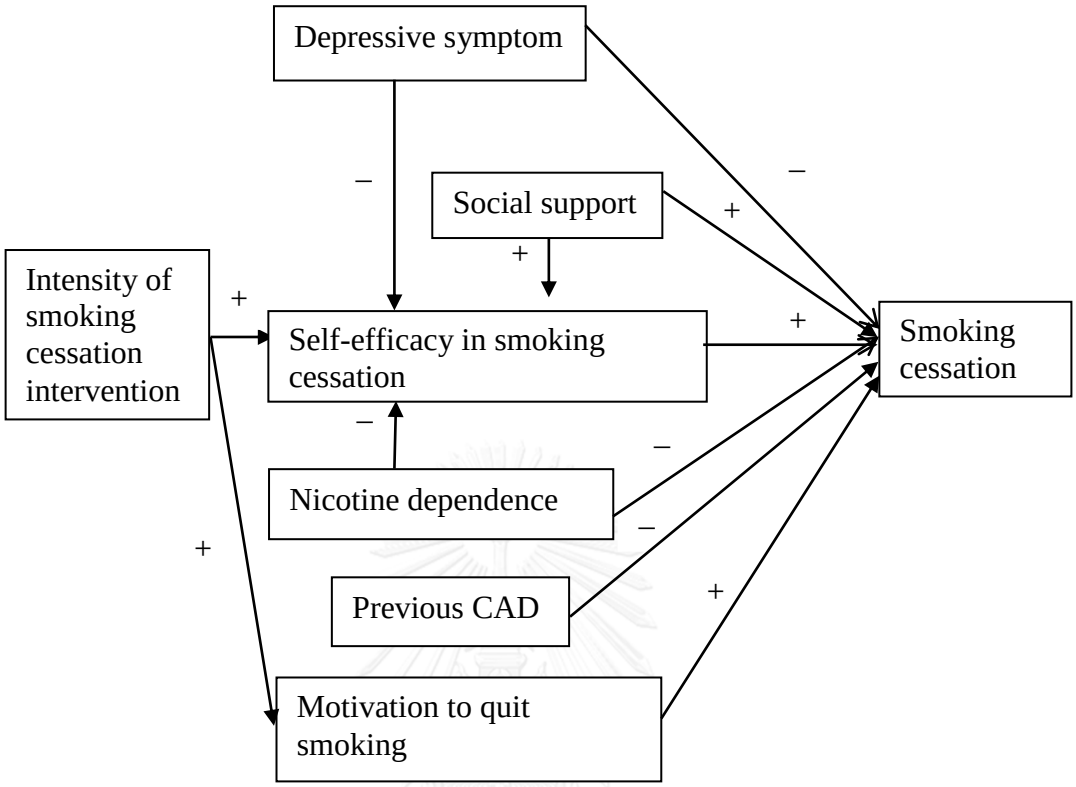


Figure 1 Hypothesized model of the study

Scope of the study

This study was a prospective, correlational research design, which aimed to examine direct and indirect relationships of self-efficacy in smoking cessation, social support, motivation to quit smoking, nicotine dependence, depressive symptoms, previous CAD, and intensity of smoking cessation intervention in Thai ACS patient smokers who admitted in the hospital and smoking cessation following hospital discharge, age 18 years and older. The setting was conducted at tertiary care government hospitals in Thailand. The data were collected from January 2014 to August 2015.

Operational definitions

Acute coronary syndrome patient refers to the patients medically diagnosed with one of the followings: ST segment elevation myocardial infarction (STEMI); Non-ST segment elevation myocardial infarction (NSTEMI), and Unstable angina (UA).

Smoking cessation was defined as ACS patient's self-reported change in behavior from smoking to not smoking. It was measured as continuous smoking abstinence (not having smoking even a puff) for three months following hospital discharge. The score was interpreted as can or cannot stop smoking for three months following hospital discharge.

Self-efficacy in smoking cessation was defined as the confidence of ACS patients in their ability to refrain from smoking in a variety of different situations involving both internal and external stimuli. It was measured by the self-efficacy questionnaires (SEQ-12). Higher score indicated greater self-efficacy in smoking cessation.

Social support was defined as the perceptions of ACS patients' in their support received from a spouse or romantic partner, or other significant person which is picked up or identified by ACS patients in their attempt to stop smoking. It was measured by the Partner Interaction Questionnaire (PIQ). Higher score indicated ACS patient received high level of social support.

Nicotine dependence was defined as the level of severity of an addiction to tobacco products caused by nicotine from any kinds of cigarettes. It was measured by

the Fagerstrom Test for Nicotine Dependence scale (FTND). Higher score indicated higher level of nicotine dependence.

Depressive symptom was defined as mood disorder that can affect ACS patients though, feeling, emotion, expressive behavior and physical change. It was measured by the Center for Epidemiology Scale of Depression (CES-D). Higher score indicated greater level of depressive symptom.

Intensity of smoking cessation intervention was defined as the degree of smoking cessation intervention that ACS patients receive from their health care providers include individual or group counseling/advice, self-help materials, and follow-up services. It was measured using the Intensity of Smoking Cessation Intervention Questionnaires (ISCIQ) which was developed by the researcher. Higher score indicated receive high intensity of smoking cessation intervention.

Previous CAD was defined as the ACS patients had a history of CAD before this admission. It was obtained from medical record. The scoring was interpreted as having history of CAD or not having history of CAD.

Motivation to quit smoking refers to ACS patients perceived the strength of internal and external forces that influence their desire to stop smoking. *Internal forces* refer to the state inside of ACS patients that stimulate their desire to stop smoking including health concerns, and self-control. *External forces* refer to the state that occurs from outside of ACS patients to stimulate their desire to stop smoking including social influence, and immediate reinforcement. It was measured by the reasons to quit questionnaires (RFQ-20). Higher score indicated higher level of motivation to quit smoking.

Expected benefits

1. This study was undertaken to provide a basic knowledge base to explain and predict the phenomena of smoking cessation in Thai ACS patients after hospital discharge.

2. The findings of this study will provide the basis for the development of science-based guideline for health care providers, and multidisciplinary teams to provide suitable support and guidance to promote smoking cessation in cardiac patients.

3. Nurses will be able to use the findings of this study to develop research and nursing interventions to enhance smoking cessation for cardiac patients.

CHAPTER II

LITERATURE REVIEW

This chapter presents a comprehensive literature review in order to describe smoking cessation related to the population of interest including smoking related to ACS patients, an overview of acute coronary syndrome patient smokers, smoking cessation in ACS patients, nurses' roles in smoking cessation in ACS patients, and factors related to smoking cessation among ACS patients are presented.

An overview of acute coronary syndrome patient smokers

Acute coronary syndrome (ACS) is a serious medical condition associated with high morbidity and mortality (Srimahachota et al., 2007). The American Heart Association (AHA) and American College of Cardiology (ACC) use ACS to refer to a host of clinical symptoms compatible with myocardial ischemia secondary to coronary artery disease (CAD) that includes ST-segment elevation myocardial infarction (STEMI), non-ST-elevation myocardial infarction (NSTEMI), and unstable angina (UA) (Anderson et al., 2007). Acute coronary syndrome patients represent people with an emergent, potentially life threatening cardiac condition (Reid, Pipe, Quinlan, & Oda, 2007).

Smoking is one of the leading cause coronary artery diseases. Smoking increases blood coagulation and platelet aggregation, reduces oxygen delivery, causes coronary vasoconstriction and increases myocardial work via the hemodynamic effects of nicotine (Ludvig, Miner, Eisenberg, 2005; Roald, Orvim, Bakke et al., 1994). Therefore, ACS patients who are smokers have higher risk and are more aggressively treated than other smoking groups (Himbert, Kultman, Steg, White, &

Gulba, 2005). The four principal mechanisms of cardiovascular damage caused by cigarette smoking are induction of a hypercoagulable state, reduction of oxygen delivery because of carbon monoxide, coronary vasoconstriction, and nicotine-induced hemodynamic effects (Ludvig, Miner, & Eisenberg, 2005). The risk of developing CAD among smokers is 2-4 times that of non-smokers because of smoking's contribution to increased atherosclerosis. Development of atherosclerosis, progressive artery hardening, which forms from the deposition of fatty plaques in association with scarring and thickening of the artery walls, is tied to toxins in the blood that come directly from cigarette smoking. These arterial wall changes lead to inflammation and formation of blood clots which can progress to CAD.

Smoking is a major public health concern worldwide, including in Thailand. According to the World Health Organization (2011), smoking is the single largest preventable cause of disease and premature death. Smoking continues to kill nearly 6 million people each year and causes hundreds of billions of dollars of economic damage worldwide each year. In Thailand, the National Statistical Office (2007) documented that 42,000-52,000 Thai people die annually from smoking. Of this number, more than 7,900 smoker's deaths are from coronary artery disease (CAD). Patumanon and colleagues (2001) examined the impact of smoking on CAD health care expenditure and on quality of life and the total expenditure on treatment associated with CAD was 17,746 baht per person per year. Furthermore, Leartsakulpanitch and others (2007), analyzed the economic burden of smoking-related health care, and showed that the number of cases attributable to smoking in 2006 was 52,605 for CAD. The out-of-pocket expenditures for treatment were 1773.7 million baht for CAD.

Western countries designed the European Action on Secondary Prevention through Intervention to Reduce Events (EUROASPIRE) surveys, which were undertaken in nine European countries. The survey aimed to determine whether the major risk factors for coronary artery disease are recorded in patient medical records. In this survey, 4863 medical records were reviewed with 25% from women which 3569 patients interviewed. Findings showed that 19% of patients smoked cigarettes (EUROASPIRE Study Group, 1997). During 1999-2000, EUROASPIRE II was conducted in 15 European countries. It reported results from a review of 8181 medical records (25% women) with 5556 patients interviewed. At interview, 21% of patients smoked cigarettes (EUROASPIRE II Study Group, 2001). Previous studies also reported that most patients admitted for ACS were current smoker. Smoking incidence before hospital admission for a cardiac event was 68.3% (Cracium et al., 2009).

In Thailand, the Ministry of Public Health reported that the number of in-patients diagnosed with ACS was 197,576 (Ministry of Public Health, 2010). In addition, the Thai ACS registry (TRACS), which is a multi-center prospective project of nationwide registration in Thailand, invited 17 hospitals, both government public and private, from every region in Thailand to participate in this project. The Thai ACS registry project documented information from 9,373 ACS patients. About 32.0% of participants had a history of smoking (Srimahachota et al., 2007). In addition, the second TRACS review documented that 32.1% of participants in 39 participating medical centers were smokers. Therefore, the prevalence of smoking in ACS patients did not change in the two surveys (Srimahachota et al., 2012).

In fact, most smokers quit smoking while hospitalization. However, most of them relapse soon after hospital discharge. Smoker who can quit smoking were more likely result in shorter hospital stays, improved health outcomes, and increased quality of life for individuals (Bock, Becker, Niaura, & Partridge, 2000; France, Glasgow, & Marcus, 2001). There still remain a great number of hospitalized smokers who either choose to, or are unable to successfully quit smoking even after hospitalization for a serious cardiac event (Holtrop et al., 2009). Physicians and nurses are encouraged to provide coronary risk information to every smokers and to promote the therapeutic lifestyle changes to high-risk patients (Courville & Thompson, 2001; Hooper, Coughlan, & Mullen, 2008). Therefore, cardiac nurses who are vital caregivers that are trusted to care for cardiac patient needs must realize the important role that they can play in developing and providing smoking cessation interventions to cardiac patients.

Smoking cessation in acute coronary syndrome patient smokers

Smoking cessation is the most effective behavior modification in the management of patients with cardiac disease (Critchley & Capewell, 2012). Smoking cessation has been accepted as a crucial strategy in tobacco control because it can reduces the incidence and impact of a range of costly chronic diseases, improve quality of life and yield savings in health care cost (Brown, Larkin, & Davis, 2000; Parrott & Godfrey, 2004). The risk of sudden cardiac death in smokers decreases significantly as soon as they can quit smoking. Smoking-related cardiac events are significantly reduced within one year after smoking cessation (Thomson & Rigotti, 2003).

Smoking cessation is an important as other secondary treatments for cardiac patients, such as statins for lowering cholesterol (29% reduction), acetylsalicylic acid (15%), beta-blockers (23%) and angiotensin-converting enzyme inhibitors (23%) (Critchley & Capewell, 2003). A meta-analysis by van Berkel, Boersma, Roos-Hesselink, Erdman, and Simoons (1999) studied the impact of smoking cessation intervention on the prognosis for cardiac patients. They reported that those who stop smoking following cardiac event can reduce their mortality by an average of 35%, and mortality or non-fatal myocardial re-infarction by 36% in those who have stopped smoking. The relative risk of mortality following a coronary event for quitters compared to permanent smokers ranged from 0.13 to 0.72, while the relative risk of myocardial infarction ranged from 0.23 to 0.68.

Smoking cessation has also been found to significantly affect morbidity among cardiac patients. Short-term benefits have been demonstrated in cardiac patients after a myocardial infarction or coronary artery revascularization. Smoking status at 1-year follow-up was associated with a significant reduction in subsequent cardiac events (myocardial infarction, ischemic cerebrovascular event, revascularization, or death from CHD when smokers who quit after an initial cardiac event were compared with continuing smokers (Twardella et al., 2004).

According to the AHA and American College of Cardiology (ACC) guidelines for care, patients with known CAD should be asked about smoking with every visit, advised to quit, and offered options regarding smoking cessation therapy (Smith et al., 2006). The Joint Commission on Accreditation of Hospital Organizations (JCAHO) requires that smoking cessation intervention which involves brief advised form health care providers should provide to hospitalized smokers.

Hospitalization represents a teachable moment for quitting smoking (Rigotti et al., 2000; Stevens, Glasgow, Hollis, & Mount, 2000). Moreover, hospital smoking bans can encourage smokers to quit smoking (Hennrikus et al., 2005). The smoking cessation interventions that were documented in general hospital care include:

Pharmacotherapy for smoking cessation

Nicotine Replacement Therapy (NRT) is the most frequently used pharmacotherapy for smoking cessation. It reduces the severity of physiological withdrawal symptoms, by replacing the nicotine obtained from cigarettes, and as such helps to first handle three psychosocial aspects of withdrawal (Silagy, Lancaster, Stead, Mant, & Fowler, 2002). The US Food and Drug Administration (FDA) approved five NRTs for treating smoking cessation: nicotine patch, nicotine gum, nicotine inhaler, nicotine nasal spray and nicotine lozenge (Fiore, Jaen, Baker, Bailey, Benowitz, Curry, et al., 2008).

Additionally, smoking cessation can cause lower levels of dopamine, serotonin and norepinephrine, and may cause symptoms such as anxiety and depression. Therefore, antidepressants used for smoking cessation such as bupropion are non-nicotine agents, that appear to act on pathways in the brain that are involved in nicotine addiction (Fiore, Jaen, Baker, Bailey, Benowitz, Curry, et al., 2008). Other drugs for smoking cessation are clonidine and varenicline (Eisenberg et al., 2008; Gourlay, Stead, & Benowitz, 2004). Varenicline is a novel agent that is a centrally acting partial nicotinic acetylcholine receptor agonist. It has both agonistic and antagonistic properties that together are believed to account for reduction of craving and withdrawal as well as blocking the rewarding effects of smoking. Its targeted

mechanism of action, better efficacy and tolerability makes varenicline a useful therapeutic option for smoking cessation (Mohanasundaram, Chitkara, & Krishna, 2008).

Unfortunately, the use of pharmacotherapy for smoking cessation has interactions with the drugs that ACS patients receive (Kroon, 2006). For example, beta-blockers have been found to be less effective in controlling heart rate and blood pressure in smokers, probably because of the counteracting effects of the increased catecholamine release caused by nicotine. The FDA also warned that varenicline may be associated with a small, increased risk of certain cardiovascular adverse events in patients with cardiovascular disease. Because of the adverse interaction from pharmacotherapy for smoking cessation and the fact that pharmacotherapy is costly, it is argued that drug therapy might not be a necessary for all patients (Corelli & Hudmon, 2006). Thus, the behavioral therapies are recommenced for smoking cessation in all smokers (Fiore, Jaen, Baker, Bailey, Benowitz, Curry, et al., 2008).

Behavioral therapies for smoking cessation

Behavioral therapies for smoking cessation are defined as verbal instructions to modify health related behaviors, and are commonly used for smoking cessation (Mottillo et al., 2009). Four commonly used behavioral interventions include minimal clinical intervention (brief advice from a healthcare professional) (Stead, Bergson, & Lancaster, 2008) and more intensive smoking interventions, including individual counseling, group counseling, and telephone counseling (Stead & Lancaster, 2002; Stead, Lancaster, & Perera, 2003).

The brief smoking cessation interventions (less than 10 minutes) can be provided by all clinicians (e.g., physicians, nurses, physician assistants, nurse practitioners, medical assistants, dentists, hygienists, respiratory therapists, mental health counselors, pharmacists, etc.) (Fiore, Jaen, Baker, Bailey, Benowitz, Curry, et al., 2008). The five major components (the "5 A's") of a brief smoking cessation intervention as follows:

- Ask about tobacco use: identify and document tobacco use status for every patient at every visit.
- Advice to quit: a clear, strong, and personalized manner, urge every smoker to quit.
- Assess willingness to make a quit attempt: Is the tobacco user willing to make a quit attempt at this time.
- Assist in quit attempt: for patient who willing to make a quit attempt, offer medication and provide or refer for counseling or additional treatment to help the patient quit. For patients who unwilling to quit at the time, provide interventions designed to increase future quit attempts.
- Arrange follow up: For the patient willing to make a quit attempt, arrange for follow up contacts, beginning within the first week after the quit date. For patients unwilling to make a quit attempt at the time, address tobacco dependence and willingness to quit at next clinic visit.

An intensive smoking cessation counseling can be provided by any suitably trained clinician. In many cases, intensive smoking cessation interventions are provided by clinicians who specialize in the treatment of tobacco dependence. Specialists possess the skills, knowledge, and training to provide effective

interventions across a range of intensities. They often are affiliated with programs offering intensive treatment interventions or services (e.g., programs with staff dedicated to smoking cessation interventions in which treatment involves multiple counseling sessions, including quitlines) (Fiore, Jaen, Baker, Bailey, Benowitz, Curry, et al., 2008).

Practical counseling (problem solving/skills training) refers to treatment for smoker and trained to identify and cope with events or problems that increase the likelihood of their tobacco use. For example, quitters might be trained to anticipate stressful events and to use coping skills, such as distraction or deep breathing, to cope with an urge to smoke. Moreover, coping skill training, relapse prevention, and stress management are related with practical counseling.

Nurses' roles in smoking cessation

A key aspect of a comprehensive approach to quit smoking is smoking cessation advice and support from health care providers. In 1992 the Joint Commission's Tobacco Control standards resulted in the nation's first industry-wide ban of work place smoking. These standards have been instrumental in making the hospital a smoke free environment for patients. This means that they cannot smoke during their hospitalization (Joint Commission on Accreditation of Healthcare Organizations, 1998). In health care settings it is highly recommended that nurses should be part of systems that record the smoking status of outpatients and inpatients to ensure that these records are kept up to date. This allows for suitable advice to be offered to patients (Youdan & Queally, 2005). Similarly, Thailand has advocated for tobacco consumption control for over 30 years. The Ministry of Public Health, Thailand has recognized tobacco consumption as an important health problem;

therefore, the National Strategic plan for Tobacco Control 2010-2014 was developed. This strategic plan complies with the WHO Framework Convention on Tobacco Control (FCTC). The ultimate goals are to reduce the prevalence of tobacco consumption among Thais and protect the health of Thais for exposure to tobacco consumption. Moreover, one of eight strategic areas is promoting cessation and reduction of tobacco use among tobacco consumers (Bureau of Tobacco Consumption Control, 2010).

According to AHA/ ACC secondary prevention guidelines for patients with coronary and other vascular diseases, the goal in taking care of patients who are smokers is that, cardiac patients should complete cessation and have no exposure to environmental tobacco smoke. The recommendations for cardiac nurses include asking about tobacco use status at every visit, advising every tobacco user to quit, assessing the tobacco user's willingness to quit, assisting by counseling and developing a plan for quitting, arranging follow-up, referral to special programs, or pharmacotherapy (including nicotine replacement and bupropion), and urging avoidance of exposure to environmental tobacco smoke at work and home (Smith et al., 2006). Therefore, Nurses represent the largest group of health care professionals and greatest contact with patients. Nurses are well positioned to play a significant role and work with clinicians involved in smoking cessation and disease management among patients with CAD, and to support implementation of smoking cessation intervention for smoke-free environments (International Council of Nursing, 2012b).

Factors related to smoking cessation in acute coronary syndrome patients

A number of previous studies have indicated that a variety of factors affect smoking cessation in ACS patients. From a critical literature review, statistically

significant factors of smoking cessation in cardiac patients including ACS patients are as follows:

Rigotti et al. (1994) conducted a randomized controlled trial study to test the efficacy of a smoking cessation program for inpatients recovering from coronary artery bypass graft surgery and to identify predictors of cessation. Participants were 672 patients scheduled for coronary artery bypass surgery 93 patients who smoked and agreed to participate. Smoking status was assessed six times in the year after surgery and 5.5 years after surgery. Self-reported nonsmoking was validated by saliva cotinine assay. The results identified four factors that were independently associated with nonsmoking for 1 year: fewer than 3 previous attempts to quit; more than 1 week of preoperative nonsmoking; definite intention to quit smoking; and no difficulty not smoking in the hospital. Nonsmoking for 5.5 years was independently associated with two of these factors: fewer than three previous attempts to quit and intention to quit smoking after surgery. Smoking cessation was not related to demographic factors, daily cigarette consumption, disease severity, hospital course, social support, or beliefs and attitudes.

Hasdai et al. (1998) conducted a case control study to identify factors predictive of smoking cessation after successful percutaneous coronary revascularization. Participants were 1169 patients who underwent percutaneous coronary revascularization in the non-peri-infarction setting (no acute myocardial infarction within 24 hours of the intervention) who smoked at the time of the index procedure. Maximal duration of prospective follow-up was 16 years. Patients were classified into those who permanently quit smoking immediately after the procedure

(N = 435; mean follow-up, 5.1 ± 3.7 years) or those who continued to smoke at some time during follow-up (N = 734; mean follow-up, 5.3 ± 3.7 years). Finding showed that predictors of continued smoking were greater prior cigarette consumption and having one or more risk factors for coronary artery disease other than cigarette smoking. Older age and unstable angina at time of initial assessment were associated with less likelihood of continued smoking.

Brummett et al. (2002) examined demographic, psychosocial and clinical variables as predictors of smoking cessation in patients with CAD. Participants were recruited from the population of patients undergoing coronary angiography. Participants were followed up at three months then annually for up to six years for smoking status. Smoking status was assessed as a report of one or more cigarettes smoked per day in the past six weeks. Researchers found that 40 % of patients with CAD quit smoking without relapse. Education, disease severity, and coronary artery bypass surgery were associated with a lower likelihood of relapse. Conversely, higher levels of hostility, concern about health, tension, and depressive feelings were associated with a higher risk of continued to smoking.

Vogiatzis et al. (2010) conducted a prospective study to examine factors that affect smoking resumption in patients who have suffered from ACS. Participations were active smokers at the time of admission, who were hospitalized for an acute coronary episode. Patients' data (history, risk factors, and smoking habits) were retrieved from their medical files. During their hospitalization they were asked to stop smoking and to attend the smoking cessation clinic to be advised about smoking cessation. The participants were followed for one year and logistic regression analysis was used to evaluate the independent predictors of smoking resumption and

continuation. The results showed that 280 (66.67%) of the total patient population visited the smoking cessation clinic and followed a special program. Most relapses were recorded during the first 3 months of follow up, after which time 223 (53.1%) were still smoking, compared with 256 (61.43%) at 1 year. Independent predictors of smoking resumption were non-participation in the smoking cessation program (OR: 4.32, p=0.0007); the use of antidepressants (OR: 2.28, p=0.01); a history of vascular disease (OR: 2.32, p=0.03); a history of chronic obstructive pulmonary disease (OR: 1.35, p=0.001; and a degree of nicotine dependency >8 on the Fagerstrom scale (OR: 1.42, p=0.04).

Attebring et al. (2004) conducted a study to identify factors that can predict who will continue smoking after hospitalization for ACS. Participants were patients below 75 years of age, admitted to a Swedish university hospital coronary care unit with ACS. During their hospitalization, an experienced nurse interviewed the patients using a structured questionnaire to obtain additional information. Patients were followed up 3 months after the discharge. Those who continued to smoke (non-quitters) were compared with those who had stopped (quitters) with regard to age, sex, medical history, clinical course, and intention to quit. They found that 33% of patients admitted were current smokers. Three months after discharge, 51% of these patients were still smoking. There were no significant differences in age, gender or marital status between non-quitters and quitters. In a multivariate analysis, independent predictors of continued smoking were non-participation in the heart rehabilitation program; use of sedatives/ antidepressants at time of admission; history of cerebral vascular disease; history of previous cardiac event; history of smoking related pulmonary disease and cigarette consumption at index.

Quist-Paulsen et al. (2005) conducted a randomized controlled trial (RCT) of smoking cessation intervention in 240 smokers aged less than 76 years admitted for myocardial infarction, unstable angina, or cardiac bypass surgery. Baseline characteristics were prospectively recorded. They assessed the predictors of smoking cessation in this RCT of a smoking cessation intervention in those patients. Smoking cessation was determined by self-report and biochemical verification at 12 months follow-up. They found that a high level of nicotine addiction, low level of self-confidence in quitting and having previous coronary heart disease were significant negative predictors of smoking cessation at 12 month follow up. Having previous coronary heart disease and a diagnosis other than acute myocardial infarction as a reason for admission were important negative predictors of abstinence in the usual care group, in contrast to the intervention group, although this did not reach a level of significance in the subgroup interaction analyses. A high level of nicotine addiction was a strong negative predictor in both groups.

Wang et al. (2008) conducted a longitudinal correlational study to examine factors associated with smoking cessation behavior among male adult smokers hospitalized for a cardiac event in Taiwan during the three-month period following their discharge from hospital. Participants were male CHD patients (including with angina, unstable angina, or acute myocardial infarction) who having been admitted to a cardiac unit and smoked one or more cigarettes per day prior to hospitalization. They found that three months after hospital discharge, 43.9% of subjects were defined as “continuous abstainers” (i.e., not a single cigarette puff taken during the period), 33.8% were “non-continuous abstainers” (i.e., abstained for at least 1 day, but had smoked at some point during the period), and 22.3% were “continuous smokers” (i.e.,

had not abstained from smoking for any period equal to or exceeding 24 hours during the period). Multivariate analysis (hierarchical logistic regression) revealed that subjects with higher self-efficacy in not smoking and greater perceived social support by family support were more likely to quit smoking for at least 24 hours (i.e., “attempters”). Attempters who stayed in hospital for longer periods of time, had higher self-efficacy in not smoking or perceived more positive and fewer negative family support behaviors were more likely to become continuous abstainers.

Ota et al. (2008) conducted a prospective cohort study for Japanese patients with established ischemic heart disease (IHD). They investigated the rate of success of smoking cessation 3 months after hospital discharge and its related factors. The subjects included 90 current smokers admitted for IHD. A total of 58 subjects (64%) had quit smoking for 3 months after being discharged. In comparison with subjects with acute myocardial infarction, those with stable angina (SA) showed a significantly lower frequency of smoking cessation (relative risk of resuming smoking). This relationship remained significant even after controlling for sex, age, and scores on the Fagerstrom Test for Nicotine Dependence (adjusted odds ratio: 3.39 (1.01-11.37), p=0.048). However, it became insignificant when hospital admission followed by emergency medical service (EMS) care was additionally adjusted (adjusted odds ratio: 2.48 (0.36, 16.97), p=0.356). The smoking cessation rate in this study was identical to that observed in studies conducted in Japan prior to the recent social changes with regard to tobacco use. SA still appears to be a risk factor for smoking resumption after discharge. Experiencing EMS care appears to be an intermediate variable in this relationship.

Dawood et al. (2008) conducted a study which hypothesized that the presence of smoking cessation programs and referral to cardiac rehabilitation programs might be associated with higher smoking cessation rates after MI, and examined the smoking cessation rates among smokers recovering from an MI in the multicenter Prospective Registry Evaluating Outcomes After Myocardial Infarction Events and Recovery (PREMIER) registry. Smoking behavior was assessed by self-report during hospitalization and 6 months after an MI. Extensive sociodemographic, comorbidity, psychosocial, disease severity, and treatment data were collected by interview and medical record abstraction. Smoking behavior at 6 months was assessed by telephone interview using the same questionnaire used at baseline. Patients were classified as having quit if they had not smoked, even a puff, within the past 30 days. They found that 297 patients were not smoking at 6 months (46%). The odds of smoking cessation were greater among those receiving discharge recommendations for cardiac rehabilitation and being treated at a facility that offered an inpatient smoking cessation program. However, medical chart–based individual smoking cessation counseling did not predict smoking cessation rates. Patients with depressive symptoms during the MI hospitalization were less likely to quit smoking.

Perez et al. (2008) conducted a study to investigate whether depression is a predictor of post discharge smoking relapse among patients hospitalized for myocardial infarction (MI) or unstable angina (UA) in a smoke-free hospital. The results showed that relapsers (40.4%) were more frequently and more severely depressed, had higher anxiety and lower self-efficacy scale scores, diagnosis of UA, shorter hospitalizations, started smoking younger, made fewer attempts to quit, had a consort less often, and were more frequently at the ‘precontemplation’ stage of

change. Multivariate analysis showed relapse-positive predictors to be MD, ‘precontemplation’ stage of change, and previous coronary bypass graft surgery. Negative predictor were diagnosis of MI, duration of hospitalization, smoking onset age, number of attempts to quit smoking, and action stage of change.

Holtrop et al. (2009) conducted a study to determine factors that predict smoking cessation, smoking relapse, or continued smoking among post hospitalized cardiac patients who were smoking at the time of admission. Participants were 136 patients hospitalized with ACS who were smokers and who were interviewed at baseline and completed the follow-up surveys. Interview data were collected shortly after hospital discharge and 3 and 8 months later to describe patient demographics, clinical characteristics, tobacco use, and other health behaviors. The findings showed that 56.8% (n = 111) of patients who completed both follow up interviews were not smoking at 8 months. A significant predictor of successful smoking cessation was higher household income (odds ratio [OR] = 4.72; P = 0.003), while having other smokers in the household decreased the odds of smoking cessation (OR = 0.20; P = 0.001). History of depression increased the odds of smoking relapse (OR = 6.38; P = 0.002) and being a lighter smoker decreased the odds of smoking relapse (OR=0.16; P=0.026).

Berndt et al. (2012) conducted a longitudinal study to identify risk groups among cardiac patients who smoked from their social cognitive profiles, and to assess predictors of smoking abstinence shortly after hospital discharge. Participants were 133 cardiac patient smokers who completed questionnaires at hospital admission and 1 month after hospital discharge. The results showed that three groups of smokers were distinguished that differed significantly on the pros of nonsmoking, self-efficacy

expectancies toward nonsmoking, social support, social modeling, and smoking behavior. Abstinence from smoking 1 month after hospital discharge was predicted by group membership and a stronger intention to quit. A previous hospital admission because of a cardiac event significantly decreased the likelihood of abstinence.

Chou, Chang, Kao, Lin, and Huang (2013) conducted a descriptive, correlational study to investigate factor affecting smoking cessation in male smokers with CAD. A total of 130 male patients with coronary artery disease were recruited from the cardiac clinic at a regional hospital in Taiwan from August to December 2008. The response rate was 93% (n = 121). Descriptive statistics, chi-square, t-tests and logistic regression analysis were conducted. During the survey, 64.5% of the respondents reported that they had stopped smoking after a coronary event. Five factors were significantly associated with smoking cessation after diagnosis of coronary artery disease: age, the severity of heart diagnoses, antismoking norms (perceived that smoking was against the social norms), nicotine dependence level, and contrary views of smoking (perceived negative expectancy of smoking). Multivariate analysis revealed antismoking norms to be the most important predictor (AOR = 4.27; $P < .05$) after adjusting age.

Table 1 Summary of factors influencing smoking cessation in cardiac patients

Authors	Study variables	Findings	Odds Ratio (95% Confidence Interval)
N. A. Rigotti et al. (1994)	-Age, Gender -Marital status -Education -Smoking history -Medical history -Hospital course -Social support -Proportion of friends or family who smoke -Knowledge and attitudes -Intention to quit -Self-efficacy	-Fewer than 3 previous attempts to quit -More than 1 week of preoperative nonsmoking -Intension to quit -No difficulty of not smoking in the hospital	7.4(1.9-29.1) 10.0(1.0-50.2) 12.0(2.6-55.1) 9.6(1.8-52.2)
Hasdai et al. (1998)	- Age, Gender -Angina -Smoking consumption -Previous CAD -Extent of CAD	- prior cigarette consumption -Having one or more risk factors for CAD other than smoking -Unstable angina	-1.00(1.00-1.01) -1.49(1.15-1.93) 0.69(0.52-0.91)

Table 1 Summary of factors influencing smoking cessation in cardiac patients (Continued)

Authors	Study variables	Findings	Odds Ratio (95% Confidence Interval)
Brummett et al. (2002)	- Education -Marital status -Gender -Age -Disease severity -CABG -PTCA -Hostility -Concern about health -Tension -Depressive symptom -Lack of energy	-Depressive symptom -Education -Disease severity	-1.60 (1.12-2.27) 0.61(0.44-0.84) .58(0.40-0.84)
Attebring et al. (2004)	-Motivation to quit -Age -Gender -Marital status -Education	-Depressive symptom -Previous CAD -Cigarettes consumed	-8.4 (2.36-30.0) -1.8 (1.13-2.88) -1.33(1.03-1.72)

Table 1 Summary of factors influencing smoking cessation in cardiac patients (Continued)

Authors	**Study variables**	**Findings**	**Odds Ratio (95% Confidence Interval)**
Attebring et al. (2004)	-Mood disturbances (anxiety, distressed, depressive symptom) -Severity of disease -Number of cigarettes consumed -Non-participated in cardiac rehabilitation program	-Non-participated in cardiac rehabilitation program	-2.25(1.40-3.61)
Quist-Paulsen et al. (2005)	-Previous CAD -Self-efficacy in smoking cessation -Nicotine dependence -Reason for admission -Number of days spent in ICU -Having a partner who smoked	-Self-efficacy in smoking cessation -Previous CAD -Nicotine dependence	1.2 (1.0-1.3) -2.7 (1.2- 6.2) -3.2 (1.7-6.0)

Table 1 Summary of factors influencing smoking cessation in cardiac patients (Continued)

Authors	Study variables	Findings	Odds Ratio (95% Confidence Interval)
Wang et al. (2008)	-Age, Education -Number of cigarettes smoked per day -Number of previous quit attempts -Diagnosis -Treatments -Length of hospital stay -Outcome expectancy -Self-efficacy -Social support -Social contagion -Smoking ban	-Social support -Self-efficacy in	1.28 (1.14-1.44) 1.09 (1.02-1.16)
Dawood et al. (2008)	-Age, Gender -Marital status - Duration of smoking -Cigarettes smoked per day -History of alcohol abuse -Previous CAD -Depressive symptom - Availability of smoking cessation program	-Depressive symptom -Receiving discharge recommendations for cardiac rehabilitation -being treated at a facility that offered an inpatient smoking cessation program	-.57 (.36-.90) 1.80(1.17-2.75) 1.71(1.03-2.83)

Table 1 Summary of factors influencing smoking cessation in cardiac patients (Continued)

Authors	Study variables	Findings	Odds Ratio (95% Confidence Interval)
Ota et al. (2008)	-Age, Gender -Previous CAD -Diagnosis(UA, AMI, Stable angina) -Number of cigarettes smoked per day -Number of years of smoking -Length of hospital stay -Number of diseased coronary arteries -Dyspnea at admission -Killip Classification at admission -Nicotine dependence -Smoking habit	- Stable angina diagnosis	-2.06(1.09-3.92)
Perez et al. (2008)	-Depressive symptom -Stage of change -Previous CABG -Previous anxiolytic use -Diagnosis of MI -Length of hospital stay -Smoking onset age -Number of prior of quit attempt	-Depressive symptom -Previous CAD -Length of hospital stay -Number of attempts to quit smoking	-2.55(1.52-4.28) -4.06(1.36-12.17) -4.06(1.36-12.17) .94(.89-.97) .80(.68-.96)

Table 1 Summary of factors influencing smoking cessation in cardiac patients (Continued)

Authors	Study variables	Findings	Odds Ratio (95% Confidence Interval)
Holtrop et al. (2009)	-Depressive symptom -Household income -Intensity of smoking -Having other smoker in the household	-Depressive symptom -Higher household income -Having other smoker in the household - Lighter smoker	-2.66 (1.02-7.49) 4.72 (1.69-12.87) -.20(.08-.55) .20(.04-.99)
Vogiatzis et al. (2010)	-Previous CAD -Nicotine dependence -Motivation to quit -Depressive symptom -Medical history -Participation in desensitization program	-Nicotine dependence -Previous CAD -Non-participation in desensitization program	-1.42 (1.05-2.01) -2.32 (1.37-3.86) - 4.32 (4.06-4.59)
Berndt et al. (2012)	-Age, Gender -Education -Previous CAD -Nicotine dependence -Past smoking practice -Smoking behavior at admission -Intention to quit - Depressive symptom -Anxiety	-Previous CAD -Intention to quit -Age	-.91 (.80-1.03) 1.35(1.08-1.69) 1.96(.92-1.00)

Table 1 Summary of factors influencing smoking cessation in cardiac patients (Continued)

Authors	Study variables	Findings	Odds Ratio (95% Confidence Interval)
Chou et al. (2013)	-Age -Severity of heart diagnosis -Antismoking social norms -Nicotine dependence -Decision balance	-Nicotine dependence -Con of smoking -Antismoking social norms	-.83 (.71-.97) 1.15(1.03-1.29) 6.43(2.36-19.59)

Smoking cessation

Definition of smoking cessation

Smoking cessation typically refers to the point at which a person attains abstinence (Ossip-Klein et al., 1986). In addition, many authors also define smoking cessation as follow:

Kim, Lee, Hwang, and Lee (2005) defined smoking cessation as absence of smoking since the last quit attempt.

Lam, Abdullah, Chan, and Hedley (2005) defined smoking cessation as the practice towards smoking cessation and the methods of smoking reduction for patients and physicians.

Sittipunt (2005) defined smoking cessation as a process for active smoker in order to refrain from tobacco use permanently.

Smith et al. (2009) defined smoking cessation as self-reported 7 day point prevalence of smoking abstinence (not even a puff for a minimum of 7 consecutive days before the assessment) and continuous smoking abstinence, which was measured by self-reported 7 day point-prevalence at 3, 6, and 12 months.

Collins, Witkiewitz, Kirouac, and Marlatt (2010) stated that smoking cessation typically refers to the point at which a person attains smoking cessation.

From a review of the literature, this study concludes that smoking cessation for ACS patients refers to ACS patient's self-reported change in behavior from smoking to not smoking.

Measurement of smoking cessation

The measures of smoking cessation can be broadly classified as self-reported smoking cessation and biochemical verification (Velicer, Prochaska, Rossi, & Snow, 1992).

Self-reported smoking cessation measures can be classified into three classes of measures (Velicer et al., 1992) consisting of: (1) point prevalence smoking abstinence (PPA) refers to subjects report of not smoking at a point in time. Point prevalence smoking abstinence is considered to be the most sensitive and valid measure of smoking cessation, (2) continuous smoking abstinence (CA) refers to subjects report of not smoking at all since the occurrence of the intervention or a critical event; and (3) prolonged smoking abstinence (PA) refers to subjects report for some specified interval of extended duration.

Review of the literature shows that no standard measure of self-report smoking cessation exists. Self-reported smoking cessation is typically measured by asking question such as:

May, West, Hajek, McEwen, and McRobbie (2006) measured smoking cessation by asking the following question: 'Have you smoked at all since the last visit?' Response options were: 'No not even a puff', 'Yes just a few puffs', 'Yes between one and five cigarettes', 'Yes more than five cigarettes'.

Dornelas, Sampson, Gray, Waters, and Thompson (2000) measured smoking cessation using PPA and sustained abstinence (SA). For SA, participants were asked 1). Are you currently smoking? 2). Have you smoked one cigarette, even a puff, during the past week? 3). Have you smoked one cigarette, even a puff, since you left the hospital?.

Berndt et al. (2012) measured smoking cessation by used PPA and CA. Point prevalence abstinence was based on patients self-reported smoking behavior over the past 7 days and was addressed with the question: "Have you refrained from smoking during the past 7 days?". CA was based on patient's self-reported abstinence from smoking after hospital discharge at one month.

Holtrop et al. (2009) measured self-reported smoking cessation by asking questions after hospital discharge. Each patient's reported smoking status and frequency was reassessed through several items: ''Have there been any changes in your tobacco use in the past three months?'' and ''During the last month, have you smoked every day, some days, or not at all?'' If the patient reported current smoking, then he/she was asked ''on the average, when you smoked during the past 30 days,

how many cigarettes did you smoke a day?'' If the patient reported quitting, he/she was asked ''How long ago did you quit smoking?''.

Previous studies have shown that among patients with cardiac disease self-reports smoking behavior was a valid measure for this population (Rice et al., 1994). Furthermore, previous study found that cardiac patients are mostly truthful regarding their smoking behavior during follow up (Attebring, Herlitz, Berndt, Karlsson, & Hjalmarson, 2001). Ellerbeck et al. (2009) also found that self-reported smoking cessation can be considered sufficient for population-based smoking cessation studies.

Additionally, previous study reported that relapse is common among smokers as they attempt to quit. The critical timeframe for relapse is during the first three months of smoking cessation, with the first few days following the quit date being especially crucial (Kenford & Fiore, 2004). Therefore, measuring smoking cessation at three months after hospital discharge is beneficial to maintain smoking cessation and as a relapse prevention strategy.

In conclusion, smoking cessation in this study was measured using smoking cessation questions which were developed by the researcher.

Self-efficacy in smoking cessation

Definition of self-efficacy in smoking cessation

Self-efficacy is a core component of theories of behavior change (Ajzen, 1991; Bandura, 1977; Marlatt & Gordon, 1985; Prochaska, DiClemente, & Norcross, 1992). Self-efficacy is commonly defined as the belief in one's ability to perform the behaviors necessary for a desired outcome (Bandura, 1997). Self-efficacy emphasizes people's self-directed change through the effect of one's motivation, perception, and

behavior. More specifically, willingness to change is influenced by perceived self-efficacy (e.g., in smoking cessation) (Bandura, 1997). Self-efficacy depends on past experience with the behavior, influence of others, physiological state and outcome expectations (Kok et al., 1992).

Niaura (2000) defined self-efficacy in smoking cessation as the perceived ability or confidence to abstain from smoking.

van Berkel et al. (2000) defined self-efficacy in smoking cessation as the confidence of the cardiac patients to be able to stop smoking.

In brief, self –efficacy in smoking cessation in the present study was defined as the confidence of ACS patients in their ability to refrain from smoking in a variety of different situations involving both internal and external stimuli.

Measurement of self-efficacy in smoking cessation

Smoking self-efficacy questionnaires (SSEQ-17)

The SSEQ was developed by Colletti, Supnick, and Payne (1985), which measures beliefs about one's ability to resist the urge to smoke. This scale composed of 17 items. Respondents were asked to read each of 17 situations and then to assess whether they could expect to control their smoking behavior. The SSEQ is scored by totaling respondent's confidence ratings on a scale from 10 to 100. Score divided by the number of items answered and range from 0 % to 100%. A psychometrics property of this scale was on 128 smokers who participated in an ongoing, behaviorally oriented smoking cessation program. The internal consistency coefficient was better than .90, indicating excellent internal consistency. Test- and retest reliabilities were lower by significant, ranging from .41-.62. The validity testing

showed correlations between smoking rate and the SSEQ were statistically significant, suggesting good concurrent and predictive validity (Colletti et al., 1985).

Smoking Self-Efficacy Scale (SSES- 20)

The SSES-20 was developed by Velicer, Diclemente, Rossi, and Prochaska (1990). This scale is composed of 20 items including three sub-scales which measure the ability to refrain from smoking when facing different situations. The three different sub-scales in the questionnaire include positive affect/social situations, negative affect situations, and habitual/craving situations. The sub-scale scores are obtained by averaging the responses to items within each sub-scale. An overall score is computed by averaging the 20 different questions. Participants were asked to indicate how confident they were that they could avoid smoking in each situation using a 6 points Likert scale that ranged from 0 (not at all confident) to 5 (extremely confident), with higher scores indicating greater self-efficacy in smoking cessation. The internal consistency and reliability was α =.96 assessed from 199 ex-smokers recruited from the community and quitting smoking web sites (Simmons, Heckman, Ditre, & Brandon, 2010).

Smoking Abstinence Self-efficacy Questionnaire (SASEQ)

The SASEQ was developed by Spek et al. (2013). The SASEQ was constructed based on extensive experience with smoking cessation interventions and knowledge of the literature. The SASEQ was derived from the eight-item self-efficacy subscale as developed by Dijkstra, De Vries, and Roijackers (1998). It consists of two dimensions: four items describing “social” situations and four items describing “emotional” situations. The SASEQ includes six self-report items that describe

situations about which smokers can indicate on a 5-point Likert scale (0–4) whether they are able not to smoke. The range of the SASEQ scale is 0 to 24. The higher the score indicates the higher the level of self-efficacy in not smoking. The psychometric properties of the SASEQ were investigated in 513 smokers, result showed an internal consistency coefficients of 0.89 with all factor loadings ≥0.73 (Spek et al., 2013).

Smoking self-efficacy questionnaire (SEQ-12)

The SEQ-12 was developed by Etter, Bergman, Humair, and Perneger (2000). The SEQ-12 measured the self-confidence of current and former smokers and their ability to refrain from smoking in various situations. The instrument is intended to measure two dimensions: internal stimuli (items 1-6) and external stimuli (items 7-12). The internal stimuli subscale includes intrapersonal and physiological factors; the external stimuli subscale includes social factors. Responses were rated on a 5- point Likert scale ranging from 1= “not at all sure” to 5= “absolutely sure”. The range of the SEQ-12 is 12 to 60 where greater values indicates that the respondent perceived greater confidence in resisting smoking in the context of the question. Psychometric properties for the SEQ-12 have been established by many studies (Christie & Etter, 2005; Etter et al., 2000; Leung et al., 2008). Content validity was initially established with the use of content experts, empirical evidence, and collected qualitative data from current and former smokers (Etter et al., 2000). Construct validity was also established initially through a varimax rotated factor analysis which yielded two factors (Etter et al., 2000) and with confirmation with a confirmatory factor analysis (Leung et al., 2008). Test-retest reliability was initially established with the administration of the SEQ-12 at two points in time with an average of 38 days between, and the correlation between times for the SEQ-12 was 0.95 for the internal

subscale and 0.93 for the external subscale (Etter et al., 2000). Item-scale correlation coefficients ranged from 0.72 to 0.91, and a correlation coefficient of 0.79 was obtained between the two subscales (Etter et al., 2000). Internal consistency was adequate with a Cronbach's alpha coefficient ranging from 0.77- 0.94 in three studies (Christie & Etter, 2005; Etter et al., 2000; Leung et al., 2008).

The SEQ-12 was used to assess self-efficacy in smoking cessation for the present study because it focuses on confidence in ability to refrain from smoking in various situations. It is a valid and reliable scale with high internal consistency, which has applications in both research and clinical settings. Moreover, it is a short assessment measure and is easy to answer.

The relationship between self-efficacy in smoking cessation and smoking cessation

Self-efficacy in smoking cessation is defined as the perceived ability or confidence to abstain from smoking (Niaura, 2000). Person with higher level of self-efficacy more likely to succeed in making and maintaining behavior changes (Bandura, 1997). Numerous studies have demonstrated that self-efficacy is an important predictor of smoking cessation (Baer, Holt, & Lichtenstein, 1986; Condiotte & Lichtenstein, 1981; McIntyre, Lichtenstein, & Mermelstein, 1983; Stuart, Borland, & McMurray, 1994). Previous study hypothesized that there would be a positive correlation between self-efficacy and success in smoking cessation (Condiotte & Lichtenstein, 1981). Results strongly supported the hypothesis, adding to the body of literature theorizing that higher self-efficacy is beneficial for behavior execution.

Patients with serious illnesses are more motivated to stop smoking and more receptive to smoking cessation interventions that enhance their self-efficacy in smoking cessation (Rigotti et al., 2000). Self-efficacy in smoking cessation was stronger in cardiac disease patients who were able to quit smoking, which means they are fairly certain they will not smoke in difficult situations. In contrast, cardiac disease patients who smoke had negative self-efficacy about smoking cessation, which means they did not think they would be able to refrain from smoking, for example, during stress, after dinner, or when other people are smoking (van Berkel et al., 2000). In smokers hospitalized for cardiac disease, low self-efficacy in smoking cessation also contributed to the failure of smoking cessation (Bolman et al., 2002; Chouinard & Robichaud-Ekstrand, 2007; Johnston, Johnston, Pollard, Kinmonth, & Mant, 2004; van Berkel et al., 2000; Wang et al., 2008; Wiggers et al., 2005). Reid et al. (2003) evaluated the efficacy of a stepped-care approach to smoking cessation treatment among smokers with CAD. They found that self-efficacy in smoking cessation was one of the predictors of abstinence at three months. Higher baseline levels of confidence in not smoking (12% higher on the average) were significantly related to higher abstinence rates at three months.

Social support

Definitions of Social support

Social support is widely defined as the existence or availability of people on whom one can rely; people who let one know that they are cared about, valued, and loved (Sarason, Levine, Basham, & Sarason, 1983).

Cohen, Mermelstein, Kamarck, and Hoberman (1985) defined social support as ‘any behavior by others that is presumed by either the giver or receiver to facilitate a positive and desired behavior change.

Cobb (1976) defined social support as information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations.

Leavy (1983) defined social support as “helping relationships” that assist behavior change by reducing the stresses change entails and increase self-efficacy, or the belief that change will occur.

Cohen, Gottlieb, and Underwood (2000) defined social support as “the social resources that persons perceive to be available or that are actually provided to them by nonprofessionals in the context of both formal support groups and informal helping relationships”.

Gurung (2006) defined social support as the experience being valued, respected, cared about, and loved by others who are present in one’s life.

Social support is used for a broad range of concepts such as emotional, instrumental, informational, and appraisal support (Antonucci & Johnson, 1994; S. Cohen et al., 2000; Cohen, Halvorson, & Gosselink, 1994; Vaux, 1988). Social support is typically categorized as either structural support (marital status, number of social relationships, membership in groups) or functional support (tangible and emotional resources perceived to be available to the person) (Helgeson, 2003). Structural support refers to the availability of significant others (spouses, family members, friends, co-workers, social, and religious groups) irrespective of the actual

exchange of support. Structural support is also referred to as social integration (Cohen et al., 2000). Functional support refers to a subjective measure of the perception of support, depending on individual characteristics and expectations (Connell & D'Augelli, 1990; Yopp, 1988).

Sources for social support include family members, friends, colleagues, and communities that are part of the patients' natural support network and can play a role in the provision of social support (Verheijden et al., 2005). Brothers and Borrelli (2011) stated that social support includes perceived general support, perceived support from one's partner, and simply having a partner or spouse. According to van Berkel et al. (2000), when advising a patient to stop smoking, it would be advisable to involve their partner, and make the members of the smoker's environment aware of the importance of smoking cessation for cardiac patients. Partners were defined as spouses, friends, co-workers, buddies or other significant others who support the smoker (Park, Tudiver, & Campbell, 2012).

In conclusion, social support in this study refers to the perceptions of ACS patients' in their support received from a spouse or romantic partner, or other significant person which is picked up or identified by ACS patients in their attempt to stop smoking.

Measurement of social support

The Interpersonal Support Evaluation List (ISEL)

The ISEL was developed by Cohen et al. (1985). It was used to measure perceived support (aid/assistance) that is available to the respondent from others. This measure is a shortened version of the original ISEL 40 items (Cohen & Hoberman,

1983). The 12-item version of this measure includes three subscales, each measuring a different aspect of social support: appraisal support (e.g., availability of significant others for talking or trust), belonging support (e.g., availability of significant others to participate in some activity), and tangible support (e.g., availability of others in a time of need). Each item is rated on a 4-point scale ranging from 0 (definitely false) to 3 (definitely true). All items are summed to yield a total score (scores range from 0–36), with higher scores representing higher perceived support. The psychometric properties were investigated with four samples from health care settings (N=1,399), and the results showed that coefficient alphas for the total scale ranged from .80-.90 (Cohen, 2008). Criterion and construct validity was also report with acceptable values (Cohen, 2008; Cohen et al., 2000).

The Support Provided Measure (SPM)

The SPM was developed by Thomas et al. (2005). The SPM is revised from the Support interview by Patten et al. (2004); Thomas, Patten, Offord, and Decker (2004). The SPM is 29 items is a self-administered format and adding additional behaviors found to be important in smoking cessation efforts. Each item had a three-level response set, indicating whether the behavior occurred during the prior two week period (i.e., Yes, No, or I don't know). The SPM total score was calculated by summing the number of items endorsed in the direction of supportive behaviors. This score could take on values from 0 to 29. The revised was designed to assess support provided by a concerned other to a smoker at any level of readiness to quit smoking. The SPM was administered to a college sample of young adults, aged 18 to 24 years. The results indicated that the SPM has a two-factor structure with good internal

consistency reliability (Cronbach's alpha=0.77) and appears to assess a wide range of individual differences in the provision of support (Thomas et al., 2005).

The Partner Interaction Questionnaire-20 (PIQ-20)

The PIQ-20 was developed by S Cohen and Lichtenstein (1990). It is a widely used measure of perceived support for smoking cessation. The PIQ-20 measures both positive and negative behaviors and taps the perceptions of support received by spouses or partners if smokers have one. If not, smokers were asked to pick the person, friend or relative, who would follow their progress in quitting most closely. The PIQ-20 has two subscales, one for positive and one for negative behavior. The positive behaviors are characterized by cooperation and reinforcement for the quitting attempt, the negative behaviors by nagging and policing. Each subscale consists of 10 items. The response format was a five-point scale ranging from never (0) to very often (4). Separate scores were calculated for positive and negative behaviors by summing responses to the 10-items within each subscale. In creating the positive/negative ratio score, participants who reported 0 negative behaviors were assigned 1 negative behavior so that proportions could be calculated (Cohen & Lichtenstein, 1990). Good internal reliability was shown by a Cronbach's alpha of .89 for the positive subscale and .85 for the negative subscale (Cohen & Lichtenstein, 1990). More recently, the PIQ-20 has been utilized to assess support provided by spouses and partners to a smoker (McBride et al., 2004).

The ENRICHD Social Support Instrument (ESSI)

The ESSI was developed by identifying items on the Medical Outcomes Survey and earlier work examining the influences of social support (Berkman, Leo-

Summers, & Horwitz, 1992; Gorkin et al., 1993; Williams et al., 1992). The ESSI is a seven-item measure, used in recent clinical trials, that assesses the four defining attributes of social support: emotional, instrumental, informational, and appraisal. Individual items are then summed for a total score, with higher scores indicating greater social support. The ESSI has demonstrated acceptable psychometric properties in cardiac patients with test-retest reliability showing no significant differences in mean scores among ESSI questionnaires administered 1 month apart ($p = 0.98$). The intra-class correlation coefficient was 0.94 and Cronbach's alpha was 0.88 (Vaglio et al., 2004).

This study selected the PIQ-20 to assess social support because it was conceptualized on social support for the present focus of this study. The psychometric properties reported are also acceptable and it contains considerably fewer items and has an easier and shorter response format.

The relationship between social support and smoking cessation

In many studies both general support and abstinence-specific support by partners, friends and colleagues have generally been found to predict success in smoking cessation (Chandola, Head, & Bartley, 2004; Cohen & Lichtenstein, 1990; Cohen et al., 1988; Cohen et al., 1985). The initiation, maintenance and cessation of smoking are strongly influenced by family members. Smokers are more likely to marry smokers, to smoke the same number of cigarettes as their spouse, and to quit at the same time (Venters, Jacobs, Luepker, Maimaw, & Gillum, 1984). In fact, having a partner who smokes can influence the spouse's initiation of smoking, or return to smoking after a previous quit attempt. Additionally, it is possible that a nonsmoking

partner can influence his/her spouse to stop smoking (Homish & Leonard, 2005). Several studies have demonstrated that support from the spouse is highly predictive of successful smoking cessation (Coppotelli & Orleans, 1985; Gulliver et al., 1995).

Support from partners and family/friends have often been shown to be an important factor in achieving long-term cessation in the general population of smokers (Appleton & Pharoah, 1998; Cohen & Lichtenstein, 1990). Greater social support has consistently been shown to have a positive effect on smoking cessation (Gulliver et al., 1995; Mermelstein, Cohen, Lichtenstein, Baer, & Kamarck, 1986). Some studies showed that social support influences smoking cessation by increasing self-efficacy in smoking cessation (Gulliver et al., 1995; Sorensen et al., 2004). Furthermore, Holtrop et al. (2009) found that ACS patients who reported having other smokers in the household had a more difficult time to quit smoking. Chouinard and Robichaud-Ekstrand (2007) reported that cardiac disease patients who quit smoking received more social support and were more confident to refraining from smoking. Bursey and Craig (2000) also found a big influence of significant others in the resumption of smoking among cardiac disease patients because many cardiac disease patients get their first cigarette after hospital discharge from family and/or friends. Additionally, van Berkel et al. (2000) documented the fact that cardiac disease patient smokers were more likely to have other smokers in their environment and to receive less support for smoking cessation from them. In particular the persistent smoker's partner, family, and friends more often smoked than did those of quitters. In contrast, cardiac disease patients who did stop smoking reported experiencing more support

from their partner, cardiologist, family and colleagues than those who did not stop smoking.

Nicotine dependence

Definitions of nicotine dependence

The definition of nicotine dependence has been suggested in many ways. Addiction and dependence are commonly used as interchangeably terms. Addiction is defined as a syndrome of impaired control over behavior, with loss of control leading to significant harm. Dependence is defined as a physical dependence or a psychological dependence; a physiological adaptation to a drug is needed to prevent withdrawal symptoms. The term dependence is useful in referring to a state in which an individual, for whatever reason, feels a need for something. Dependence is different in a subtle way form addiction, which is a syndrome involving a behavior and feeling (West & Hardy, 2006). In this study the term nicotine dependence is used.

Nicotine dependence is a hypothetical construct that is designed to explain and predict societally important outcomes, such as an inability to quit smoking, heavy use, and other problems occasioned by smoking (Piper, McCarthy, & Baker, 2006). Nicotine dependence is associated with heavy consumption of tobacco products, compulsive use, tolerance, intake regulation and withdrawal (Shadel, Shiffman, Niaura, Nichter, & Abrams, 2000).

The Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) defines nicotine dependence as the occurrence of symptom of dependence on nicotine include compulsive use, tolerance, withdrawal symptoms, a persistent consumption or unsuccessful attempts to cut down or control usage, social disruption

caused by tobacco use, and continued use despite physical or psychological symptoms. Withdrawal symptoms include dysphoria or depressed mood, insomnia, irritability, frustration or anger, difficulty concentrating, restlessness, decreased heart rate, and increased appetite, and cravings (American Psychiatric Association, 1994).

Fagerstrom and Schneider (1989) defined nicotine dependence as the compulsive use of tobacco. Compulsive use includes a present state of being unable to quit or stay quit or a past state of difficulty in quitting characterized by withdrawal and/or craving. The latter refers to those who successfully abstain but have great difficulty in doing so.

Brandon, Herzog, Irvin, and Gwaltney (2004) defined nicotine dependence as previous loss of control over smoking and or/difficultly to abstain from smoking.

In conclusion, this study sees nicotine dependence as the level of severity of an addiction to tobacco products caused by nicotine from any kinds of cigarettes.

Measurement of nicotine dependence

The Fagerstrom Test for Nicotine Dependence (FTND)

The FTND was developed by Heatherton, Kozlowski, Frecker, & Fagerstrom (1991). It is a modified version of the eight items Fagerstrom Tolerance Questionnaire (FTQ) which was developed by Fagerstrom (1978). This instrument measures the physiological and psychological construct of nicotine dependence. The FTND is a six-item self-report measure of nicotine dependence. Scores range from 0 to 10 with higher scores reflecting greater nicotine dependence. The FTND is also used as a dichotomous variable, with the cut-off point varying from 2 to 8 depending on the study (Moolchan et al., 2002). The FTND has been shown to have adequate validity

and reliability (Heatherton et al., 1991; Weinberger et al., 2007). The coefficient of construct reliability in previous study was 0.73 (Picco, Subramaniam, Abdin, Vaingankar, & Chong, 2012). The FTND has been widely used in a number of different countries and translated into a number of different languages. In Thailand, the FTND has demonstrated good psychometric properties in a sample of adult smokers with a Cronbach's alpha of .80-.91 (Boonchan, 2007; Parn-in, 2009).

The Heaviness of Smoking Index (HSI)

The HSI was developed by (Heatherton, Kozlowski, Frecker, Rickert, & Robinson, 1989). It is a two item self-report index. Its scale is based on the two main questions of the FTND (number of cigarettes per day and time to first cigarette in the morning). It has a six-point scale calculated from the number of cigarettes smoked per day (1–10, 11–20, 21–30, 31+ cigarettes) and the time to first cigarette after waking (≤5, 6–30, 31–60, and 61+ min). Nicotine dependence is categorized into a three category variable: low (0–1), medium (2–4) and high (5–6). The HSI has been shown to be a reasonably reliable and valid measure of nicotine dependence (de Leon et al., 2003; Etter, Duc, & Perneger, 1999).

The Cigarette Dependence Scale (CDS)

The CDS-12 was developed by Etter, Le Houezec, and Perneger (2003). This scale was developed using smoker self-reports of signs that they believe indicates addiction to cigarettes. The scale is a 12- items self-administered scale, scored using an algorithm that range from 12 (low dependence) to 60 (high dependence). The CDS demonstrated a Cronbach's alpha of .90; test-retest of 578 participants over a median of 18 days was 0.83. Furthermore, construct validity of daily smokers had higher

scores than for occasional smokers across all dependence items. This scale is promising in that it can be used with paper and pencil administration and it has good reliability, but meaningful evaluation awaits additional validity research (Etter et al., 2003).

The Hooked on Nicotine Checklist (HONC)

The HONC was developed by (DiFranza et al., 2002). The HONC was derived from a theory based definition of nicotine dependence, which postulates that a person is hooked when they have experienced a loss of autonomy over their use of nicotine. The HONC includes 10 dichotomous items (yes, no). It is a self-administered measure of nicotine dependence that assesses cravings, loss of control, withdrawal symptoms, and psychological addiction. This measurement has been validated for use with adolescents and adults, and for smoked and oral tobacco products. Internal consistency was high (Cronbach's alpha .83), but inter-item correlations were low to moderate (DiFranza et al., 2002).

The Nicotine Dependence Syndrome Scale (NDSS)

The NDSS was developed by Shiffman, Waters, and Hickcox (2004). It is a 19-item multidimensional scale based on the 1976 theory of the alcohol dependence syndrome by Edwards and Gross. The NDSS assesses five dimensions of nicotine dependence: "Drive" reflects craving, withdrawal, and smoking compulsions; "Priority" reflects preference for smoking over other reinforcers; "Tolerance" reflects reduced sensitivity to the effects of smoking; "Continuity" reflects the regularity of smoking rate; and "Stereotypy" reflects the invariance of smoking. Each item has a five point rating scale (1= not at all true to 5= extremely true), with high scores

indicating high nicotine dependence. The internal consistency for the NDSS total scale is good (Shiffman et al., 2004). A recent study, using the NDSS with the Finnish Twin Cohort Study population, found that a 3-factor structure (priority/drive, continuity/ stereotypy, and tolerance) best fit the data, with the internal consistencies of the three factors ranging from 0.83 to 0.92 (Broms et al., 2007).

The FTND was used to assess nicotine dependence in this study because it has been shown to be a reasonably reliable and valid measure of nicotine dependence. Moreover, this scale is short and easily applicable in research, and can be considered the most practical measure to identify nicotine dependence. It also has an accessible reading level. In addition, while there are concerns regarding its structure and reliability, it has been found to predict smoking heaviness and cessation outcomes. This scale was translated into Thai with acceptable psychometric properties.

The relationship between nicotine dependence and smoking cessation

Nicotine is the major chemical compound of cigarette that causes and sustains cigarette addiction (Benowitz, 2009; US Department of Health and Human Services, 2010). Nicotine is the addictive substance in tobacco, keeping the smoker dependent on smoking. Nicotine is not life-threatening, but it has addictive effect and can cause the health risks (Haustein, 2003). Nicotine causes sympathetic stimulation with hemodynamic effects that include an increase of heart rate and blood pressure, and increase myocardial contractility. Catecholamine release also results in constriction of coronary arteries. These effects increase myocardial work, which is of obvious concern to patients with compromised myocardial function (Joseph & Fu, 2003).

Highly dependent smokers continue smoking because they crave cigarettes, that is, they regularly experience an intense urge to smoke (Allen, Bade, Center, Finstad, & Hatsukami, 2008; Carter et al., 2008; Ferguson, S. Shiffman, & Gwaltney, 2006; Shiffman, 2005). In addition, high nicotine dependence among hospitalized patients decreases the likelihood of smoking cessation and achieving long-term abstinence (Sadr Azodi et al., 2009). Nicotine dependence has a high predictability for smoking cessation among ACS patients (Abu-Baker et al., 2010). Various studies suggest that patients with high nicotine dependence are less likely to quit smoking after hospitalization for a cardiac event (Chou et al., 2013; Holtrop et al., 2009; Japuntich et al., 2011). A recent study demonstrated nicotine dependence level was significantly associated with smoking cessation after diagnosis of CAD. The results showed that CAD patients with high dependence on nicotine were less likely to quit (OR= .83, 95% CI= .71-.97, $p < .05$) (Chou et al., 2013). Findings by Vogiatzis et al. (2010) support the finding that high dependency on nicotine, as expressed by the Fagerstrom score, is a significant predictive factor for smoking cessation. Results show that high nicotine dependence had a negative related to smoking cessation (OR= 1.42, 95% CI=1.55-2.01, $p < .05$). High-risk smokers with greater nicotine dependence, such as cardiac disease patients are more likely to relapse into smoking (Allen et al., 2008; Attebring et al., 2004; Holtrop et al., 2009; Japuntich et al., 2011).

Depressive symptom

Definition of depressive symptoms

The Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) provided diagnostic criteria for depressive disorders compose of depressed

mood and/or loss of interest or pleasure in life activities for at least 2 weeks and at least five of the following symptoms that cause clinically significant impairment in social, work, or other important areas of functioning almost every day. The symptoms include depressed mood most of the day, diminished interest or pleasure in all or most activities, significant unintentional weight loss or gain, insomnia or sleeping too much, agitation or psychomotor retardation noticed by others, fatigue or loss of energy, feelings of worthlessness or excessive guilt, diminished ability to think or concentrate, or indecisiveness, recurrent thoughts of death (American Psychiatric Association, 2000)

Depressive symptoms are a disorder of mood, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, negative views of the self and hopelessness, disturbed sleep or appetite, low energy, poor concentration, and recurrent suicidal thoughts or acts (World Health Organization, 2005). Common depressive symptoms include anhedonia, depressed mood, insomnia/hypersomnia, fatigue, appetite fluctuation, feelings of worthlessness, and decreased concentration (McClave et al., 2009).

Beeber (1998) defined depressive symptoms as a spectrum of cognitive, affective, behavioral and somatic phenomena that accompany an unremitting sad mood.

This study defines depressive symptom as mood disorder that can affect ACS patients though, feeling, emotion, expressive behavior and physical change.

Measurement of depressive symptoms

The Center for Epidemiological Studies Depression Scale (CES-D)

The CES-D scale was developed by Radloff (1977). The scale is a self-report scales designed to measure self-reported symptoms associated with depression experienced in the past week. It includes 20 items comprising six scales reflecting major dimensions of depression: depressed mood, feeling of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance. This scale takes about five minutes to complete by self- or interviewer- administration. Its items were selected from a pool of items from previously validated depression scales (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Gardner, 1968; Raskin, Schulterbrandt, Reatig, & McKeon, 1969; Zung, 1965). The main components of depressive symptomatology were identified from clinical literature and factor analyses. Each item was rated on a 4-point scale ranging from 0 = rarely or none of the time (less than 1 day) to 3 = most or all of the time (5-7 days). A total score is calculated by summing the responses after reversing the positive affect items. Higher scores reflect greater levels of depressive symptom. Screening test scoring ranges include less than 15 means normal depression, 15-20 means mild to moderate depression, over 21 means possibility of major depression. The CES-D has been shown to be a reliable measure for assessing the number, types, and duration of depressive symptoms across racial, gender, and age categories (Knight, Williams, McGee, & Olaman, 1997; Radloff, 1977; Roberts, Vernon, & Rhoades, 1989). Radloff (1977) reported good internal consistency with a Cronbach's alpha coefficient of .84-.85 in white community samples and .90 in clinical samples. Test–retest correlations range between 0.45 and 0.70. This scale also has strong evidence for

validity. Concurrent validity by clinical and self-report criteria, as well as substantial evidence of construct validity has been demonstrated.

The Zung Self-rating Depression Scale (ZSDS)

The ZSDS was developed by Zung (1965). It is a short self-administered survey to quantify the depressed status of a patient. There are 20 items on the scale that rate the four common characteristics of depression: the pervasive effect, the physiological equivalents, other disturbances, and psychomotor activities. There are ten positively worded items and ten negatively worded items. Each item is scored on a scale of 1 to 4 (a little of the time, some of the time, good part of the time, most of the time). The scores range from 25-100: 25-49 means normal range, 50-59 means mildly depressed, 60-69 means moderately depressed, 70 and above severely depressed (Zung, 1965). This scale has been accepted as a reliable and valid instrument for measuring depressive symptoms (Biggs, Wylie, & Ziegler, 1978).

The Beck Depression Inventory (BDI)

The BDI was developed by Beck et al. (1961). This scale is a 21-item self-reported scale for assessing characteristic attitudes and depressive symptoms. Item response options range from 0 to 3. Total scores range from 0 to 63, with higher scores indicating more severe depressive symptoms. In patients with medical illness, a score of 16 or higher indicates moderate to severe depressive symptoms (Lustman et al., 1997). Beck and Beamesderfer (1974) urged that cut-off scores for the BDI should be based upon the clinical decisions for which the instrument was being used. The BDI showed acceptable test–retest reliability, internal consistency, and concurrent validity with major diagnostic systems. The psychometric properties of the

BDI with psychiatric and non-psychiatric samples were reviewed for the years 1961 through June, 1986. A meta-analysis of the BDI internal consistency estimates yielded a mean coefficient alpha of 0.86 for psychiatric patients and 0.81 for non-psychiatric subjects. The concurrent validity of the BDI with respect to clinical ratings and the Hamilton Psychiatric Rating Scale for Depression (HRSD) were also high. The mean correlations of the BDI samples with clinical ratings and the HRSD were 0.72 and 0.73, respectively, for psychiatric patients. With nonpsychiatric subjects, the mean correlations of the BDI with clinical ratings and the HRSD were 0.60 and 0.74, respectively (Beck, Steer, & Carbin, 1988). The BDI takes approximately 10 minutes to complete and clients require a fifth to sixth grade reading level to adequately understand the questions (Groth-Marnat, 1990).

The CES-D scale was used to measure experience of depressive symptoms in this study because it was developed from items appearing no longer that have, well-validated depression scales. The CES-D discriminates between psychiatric inpatient and general population samples, and among levels of severity within patient groups; and is associated with other measures of depressive symptoms. CES-D has been widely used in Thailand with acceptable psychometric properties, This scale was translated to Thai by Worapongsathorn, Pandee, and Triamchaisri (1990) and reported an acceptable psychometric properties with internal consistency a Cronbach's alpha of .92, sensitivity= 93.3%, and specificity= 94.2% (Kuptniratsaikul & Pekuman, 1997).

The relationship between depressive symptoms and smoking cessation

Mild depressive symptoms during hospitalization for a myocardial infarction are common (Thombs et al., 2006). Previous studies found that depressive symptoms

are associated with smoking and smoking cessation among women smokers with cardiac disease (Gravely-Witte, De Gucht, Heiser, Grace, & Van Elderen, 2007). In a study of Gravely-Witte et al. (2007), the results showed depressive symptoms may contribute to the failure of smoking cessation efforts in smokers hospitalized for ACS (Lespe´rance, Frasure-Smith, Talajic, & Bourassa, 2002). Depressive symptoms are associated with maladaptive coping strategies and negative cognitions, such that patients may continue to smoke to regulate their emotions (Barth & Bengel, 2007; Herrmann-Lingen, 2001). Moreover, depressive symptoms are often exacerbated in quitters, causing difficulties in abstaining (Glassman, Covey, Stetner, & Rivelli, 2001; Murphy, Michael, Robbins, & Sahakian, 2003).

Depressive symptoms are common among patients hospitalized for a cardiac event (Denollet, 2008; Denollet & Pedersen, 2009; Janszky, Ahnve, Lundberg, & Hemmingsson, 2010) and are related to the resumption of smoking after discharge (Kuhl, Fauerbach, Bush, & Ziegelstein, 2009; Pedersen, Deckers, van Os, & Erdman, 2002; Thorndike et al., 2008). Depressive symptoms have been found to be related to low smoking cessation rates, and self-efficacy turned out to be a mediator in this relationship (Cinciripini et al., 2003; Ong & Walsh, 2001). Smokers with depressive symptom may not quit smoking because they have less self-efficacy for smoking cessation than non-depressed smokers. Accordingly, depressive symptoms could decrease self-efficacy for smoking cessation, and smokers with depressive symptoms might be more likely than non-depressed smokers to be convinced that they will fail at future quit attempts (Lerman et al., 1996). There are further indications that high levels of these emotions in cardiac patients lead to lower self-efficacy and smoking cessation (Perez et al., 2008). Previous study found that smokers who were

persistently depressed during the three months after admission for acute coronary symptoms were less likely to quit smoking (Kronish et al., 2006).

Intensity of smoking cessation intervention

Definition of intensity of smoking cessation intervention

The Department of Health and Human Services (DHHS) 2008 update on Clinical Practice Guidelines for Treating Tobacco Use and Dependence recommends that health care providers use hospitalization as an opportunity to promote smoking cessation and to prescribe medications to alleviated smokers' cravings for cigarettes in the smoke-free environment of the hospital (Fiore, Jaen, Baker, Bailey, Benowitz, Curry, et al., 2008). Hospitalization represents a potent 'teachable moment' for the delivery of smoking cessation interventions. Many smokers are hospitalized for smoking related diseases that personalize the risks of persistent smoking and thereby enhance motivation to quit and receptivity to smoking cessation assistance. Most hospitals are smoke free and many have adopted broad, smoke-free campus policies that further restrict smoking on hospital grounds, making smoking during hospitalization particularly difficult and inconvenient (Ostroff, 2013).

Rice and Stead (2008) defined smoking cessation interventions as provision of advice or other information and strategies to help patients stop smoking. They classified smoking cessation strategies into low and high intensity interventions based primarily on the duration of the intervention.

Brief intervention was developed and is defined pragmatically as a single episode (of less than 30 minutes duration) in which a healthcare or other professional provides advice and possibly other support (such as bio-feedback, self-help manuals,

pharmacotherapy, and a discussion o for referral to smoking cessation services) to generate and possibly aid a smoking cessation attempt as part of his or her routine activities. The 30 minutes cut-off relates to the first session. Follow-ups are not included in this definition. Smoking cessation interventions can either be delivered opportunistically (i.e. during consultation for reasons unrelated to smoking behavior) or after self-referral by the smoker. Likewise, use of a telephone helpline or seeking out and consulting self-help material is also included in the definition (Stead et al., 2005).

Rigotti and other (2008) recommended addressing the need for effective smoking cessation interventions for smokers and defined intensity of smoking cessation interventions as follow:

- Low intensity of smoking cessation intervention was defined as the provision of advice provided during a single consultation lasting 10 minutes (with or without material)

- High intensity of smoking cessation intervention was defined as the provision of advice where the initial contact lasted more than 10 minutes, there were additional materials and there was usually more than one follow-up contact.

Wolfenden, Campbell, Walsh, and Wiggers (2003) suggested that the initial smoking cessation counseling interventions should be 20 minutes or greater in duration and accompanied by extended post-discharge follow-up of at least five intervention contacts via phone or in person over a period of at least one month.

Measurements of intensity of smoking cessation intervention and smoking cessation

Rice and Stead (2008) conducted a systematic review of nursing smoking cessation interventions that were grouped into low and high intensity. In addition, they measured the intensity of smoking cessation interventions by: the number of sessions, the length of time of consultation, the materials provided, and the number of follow-ups**.**

Reviews by Rigotti et al. (2008) documented that high intensity smoking cessation intervention should be followed by at least 1 month of supportive contact after discharge to promote smoking cessation among hospitalized patients. The intervention could be delivered by physicians, nursing staff, psychologists, smoking cessation counselors, or other hospital staff. They developed four categories of counseling intensity based on the duration of contact in the hospital and the duration of follow-up contact after discharge: one contact in hospital lasting 15 minutes or less and no post discharge support, one or more contacts in hospital lasting more than 15 minutes total and no post discharge support, any hospital contact plus post discharge support lasting one month or less, any hospital contact plus post discharge support lasting more than one month.

This study measured intensity of smoking cessation intervention by self-report of the length of time of intervention, the number of sessions, the amount of material receive, and the total amount of contact time for follow ups, received either through a cardiac rehabilitation program or receiving pharmacotherapy that ACS patients

receive from their health care provider. The questionnaire on intensity of smoking cessation intervention was developed by the researcher.

The relationship between intensity of smoking cessation intervention and smoking cessation

Patients with serious illnesses are more motivated to stop smoking and more receptive to smoking cessation interventions that enhance their self-efficacy in smoking cessation (Rigotti et al., 2000). Smokers who failed to quit smoking after participation in an intensive smoking cessation intervention were significantly likely to report low self-efficacy and motivation to quit smoking than those who succeed in smoking cessation (Colivicchi et al., 2011).

The evidence suggests that the success of smoking cessation interventions for hospitalized patients is dependent on the intensity of the intervention, particularly the level of follow up after discharge (Munafo, Rigotti, Lancaster, Stead, & Murphy, 2001). Offering smoking cessation counseling to all hospitalized smokers is effective as long as supportive contacts continue for more than one month after discharge. Moreover, intensive follow-up contact by telephone or appointment and support from health care providers after discharge might be helpful to maintain patients' motivation to remain abstinent (Abu-Baker et al., 2010).

Colivicchi et al. (2011) examined the associations between unsuccessful quit smoking and post-treatment self-efficacy and motivation to quit. They found that smokers who failed to quit after participation in an intensive smoking cessation program were significantly less likely to report high self-efficacy and motivation than were those who succeeded.

A study by Vogiatzis et al. (2010) showed that ACS patients who did not visit the smoking cessation clinic or did not participate in a smoking cessation program had a low rate of smoking cessation. Furthermore, previous study demonstrated that a brief smoking cessation intervention in cardiac patients during hospital admission was found unlikely to result in smoking cessation following discharge (Martínez García, Morchón Ramos, Masuet Aumatell, & Ramón Torrell, 2009).

Studies of hospitalized smokers indicate that interventions with insufficient follow-up after discharge are ineffective (Hennrikus et al., 2005; Rigotti et al., 2008; Silagy, Lancaster, Stead, Mant, & Fowler, 2004; Stead et al., 2008). However, studies with interventions that include contact with patients after hospital discharge (for at least one month) can be effective (Rigotti et al., 2008; Stevens et al., 2000).

Previous studies found that ACS patients who participated in the cardiac rehabilitation program were more likely to be successful at smoking cessation. The finding could be interpreted in two ways: either that more patients who had already stopped smoking were interested in stopping smoking participating in the program, or that the cardiac rehabilitation program in itself had a positive influence on smoking cessation (Attebring et al., 2004; Dawood et al., 2008).

Reid et al. (2003) evaluated the efficacy of a stepped-care approach to smoking cessation treatment among smokers with CAD. They defined stepped-care as the practice of initiating treatment with low-intensity intervention and then exposing treatment failures to successively more intense interventions. Smokers hospitalized with CAD were provided a brief cessation intervention and then were assigned randomly to either a more intensive stepped-care treatment (counseling and nicotine

patch therapy) or no additional treatment. The results showed that stepped-care treatment increased smoking cessation rates from 42% to 53% during three months follow-up period, but showed little effect at the one year follow-up assessment, as evidenced by a cessation rate for the minimal intervention group of 36% versus 39% for the stepped-care group. Furthermore, they reported that smokers hospitalized with CAD who preferred individualized counseling over self-help or no assistance at baseline were 3 times more likely to relapse by one year.

van Berkel et al. (2000) stated that self-efficacy, or the confidence of the cardiac patients to be able to stop smoking, might be enhanced by appropriate support such as information leaflets and smoking cessation interventions, which is related to intensity of smoking cessation intervention. Patients with serious illnesses are more motivated to stop smoking and more receptive to smoking cessation interventions that enhance their self-efficacy in smoking cessation (Rigotti et al., 2000). Smokers who failed to quit smoking after participation in an intensive smoking cessation intervention were significantly likely to report low self-efficacy and motivation to quit smoking than those who succeed in smoking cessation (Colivicchi et al., 2011).

Previous coronary artery disease

Definition of previous coronary artery disease

According to the American College of Cardiology Foundation (ACCF) and the American Heart Association (AHA) indicated previous MI means the patients has had at least one documented previous MI. This means any occurrence between birth and arrival (Cannon et al., 2013).

In this study previous CAD refers to patients who had a history of CAD (MI, Angina pectoris) before admission.

Measurement of previous coronary artery disease

A number of studies used medical record to retrieved the history of previous CAD (Abu-Baker et al., 2010; Dawood et al., 2008; Perez et al., 2008; Vogiatzis et al., 2010). Medical records were used only to obtain disease history data, which included type of disease diagnosis, date and length of diagnosis, and history of other diseases. For example, Abu-Baker et al. (2010) measured previous cardiac disease from medical records. Also, Vogiatzis et al. (2010) recorded the previous CAD from the patients' history and medical record. Therefore, previous coronary artery disease was obtained from the medical record for this study.

The relationship between previous coronary artery disease and smoking cessation

Previous CAD is one of the significant predictors of smoking cessation in ACS patients after hospital discharge. Patients who are newly aware of the seriousness of their illness are more likely to be inclined to work to improve their prognosis, and are probably more frequently urged to stop smoking by their health care provider such as their cardiologist (van Berkel et al., 2000). Patients with a history of cardiac disease were significantly more likely to continue smoking compared with those who are newly diagnosis (Attebring et al., 2004; Rigotti, Singer, Mulley Jr, & Thibault, 1991). A prospective observational study by Rigotti et al. (1991) examined the impact of an episode of serious cardiovascular disease on smoking behavior and also identified factors associated with smoking cessation. The

findings showed that patients, who had a new diagnosis of CAD during hospitalization, were more likely to stop smoking than were patients whose CAD was already known (53% vs. 36%, $p < 0.05$). They found that smoking cessation was more likely if patients had no previous history of CAD.

In addition, findings from Vogiatzis et al. (2010) reported that history of vascular disease such as MI or angina was a significant independent predictor of smoking cessation after hospital discharge. They found that patients with a history of vascular disease were more likely to resume smoking after hospital discharge. Perez et al. (2008) also found that among ACS smokers if they do not stop smoking after their first MI, it is less likely that they will stop smoking after other cardiac events.

A recent study again confirmed that cardiac patients with previous cardiac disease have a significantly decreased probability of smoking cessation after hospital discharge (Berndt et al., 2012). Also, a study of van Berkel et al. (2000) showed previous CAD was a significantly negative predictor of smoking cessation in ACS patients. Moreover, previous study found that having previous CAD was a strong negative predictor for smoking cessation (Quist-Paulsen et al., 2005).

Motivation to quit smoking

Definition of motivation to quit smoking

There are many theories that explain motivation**.** Some theories focus on the cognitive antecedents of motivation such as knowledge, attitudes and beliefs. For example, the health belief model would suggest that people are motivated to change by their general health values as well as by specific beliefs about their susceptibility to a particular disease and about its likely severity. The Theory of Reasoned Action

(TRA) suggests that beliefs about the outcomes of the behavior and the value they attach to these outcomes are also important. In addition, TRA recognizes that subjective norms (perceived social pressure) are also important motivating factors (Fishbein & Ajzen, 1975). One of the well-known theories related to motivation is the transtheoretical model. This model identifies a series of motivational stages through which people progress and relapse in order to achieve health behavior goals (Prochaska & DiClemente, 1983). It is usually presented as consisting of five stages of change: pre-contemplation (not thinking about the behavior), contemplation (deliberating about change in the near future), preparation (preparing to make change), action (initiating change), and maintenance (continuing to perform the behavior).

Motivation is used to refer both to reasons for action (what is your motive?) and to enthusiasm for doing it (how motivated are you?). It has been defined in the psychology literature as 'the psychological forces or energies that stimulate a person towards a specific goal' (Sheldon, Joiner, Pettit, & Williams, 2003). Motivation may as an internal or external force. The concept of internal or intrinsic motivation refers to the origins of the desire to engage in specific behavior. External or extrinsic motivation refers to a source outside of the individual (Deci & Ryan, 1985).

Curry, Grothaus, and McBride (1997) stated that motivation is one of the key elements in the smoking cessation process, including both the level of smokers' readiness to quit and the particular reasons why they plan to quit. They defined motivation for quit smoking as the strength or level of smokers' desire to quit and the why or type of motivation.

Miller and Rollnick (2002) argue that motivation to discontinue smoking arises from a discrepancy between current behavior (smoking) and certain life goals (health, success, image, etc.). Indeed, the most common reasons smokers give for quitting include regaining a healthy life-style, reducing expenses, repairing a tarnished self-image, and pleasing a significant other (Riedel, Robinson, Klesges, & McLain-Allen, 2002; Singleton & Pope, 2000).

Attebring et al. (2004) assessed motivation to quit smoking in cardiac disease patients. They defined motivation to quit smoking as intention to quit and the number of previous attempts to quit.

The term ‘motivation’ is used to refer both to our reasons for action (what is your motive?) and to our enthusiasm for doing it (how motivated are you?). It has been defined in the psychology literature as ‘the psychological forces or energies that impel a person towards a specific goal’ (Ryan & Deci, 2000).

In conclusion, motivation to quit smoking in this study refers to ACS patients perceived strength of internal and external forces that influence their desire to stop smoking. Internal forces refer to the state inside of ACS patients that stimulates their desire to stop smoking including health concerns, and self-control. External forces refer to the state that occurs from outside of ACS patients to stimulate their desire to stop smoking including social influence, and immediate reinforcement.

Measurement of motivation to quit smoking

The Treatment Self-Regulation Questionnaire (TSRQ)

The TSRQ was first developed by Ryan and Connell (1989) and has been modified and adapted to assess various health behaviors. The TSRQ is a 15 item

questionnaire with 7-point Likert scale which is based on Self-Determination Theory and relates to the reasons why people engage in healthy behaviors such as smoking cessation, and assesses the degree to which one's motivation to stop smoking is self-determined (or autonomous). The TSRQ contains two subscales: the autonomous motivation subscale (6 items), which represents the most self-determined form of motivation, and the controlled motivation subscale (6 items). Each item response ranges from 1 (not true at all) to 7 (very true). The responses from the autonomous motivation subscale were averaged to reflect an autonomous motivation score, and the responses from the controlled motivation subscale are averaged to reflect a controlled motivation score. The subscale scores can be used separately, or can be combined into a Relative Autonomous Motivation Index by subtracting the average for the controlled reasons from the average for the autonomous reasons. Invariance analyses support the validity of the TSRQ. Overall, the internal consistency of each subscale is acceptable (most a values >0.73) (Levesque et al., 2007).

The Motivation To Stop Scale (MTSS)

The MTSS was developed by Kotz, Brown, and West (2013). This scale consists of one item with seven response categories. It measures all the relevant aspects of motivation including intention, desire and belief into a single item. Smokers were asked: "Which of the following describes you?". The response categories (and coding) were: (1) "I don't want to stop smoking"; (2) "I think I should stop smoking but don't really want to"; (3) "I want to stop smoking but haven't thought about when"; (4) "I really want to stop smoking but I don't know when I will"; (5) "I want to stop smoking and hope to soon"; (6) "I really want to stop smoking and intend to in the next 3 months"; (7) "I really want to stop smoking and

intend to in the next month". The ordering reflects: 1, absence of any belief, desire or intention; 2, belief only; 3, moderate desire but no intention; 4, strong desire but no intention; 5, moderate desire and intention; 6, strong desire and medium-term intention; and 7, strong desire and short-term intention. Higher score indicates high motivation to quit smoking. The MTSS provides a strong and accurate prediction of quit attempts and is a candidate for a standard single-item measure of motivation to quit smoking. The accuracy of the MTSS for discriminating between smokers who did and did not attempt to quit was ROC_{AUC} = 0.67 (95% CI = 0.65–0.70) (Kotz et al., 2013).

The Motivational Aspects of Smoking Cessation Questionnaire (MASC)

The MASC was developed by Rundmo, Smedslund, and Gotestam (1997). It is a well-established 10 item questionnaire used to measure various aspects of participants' motivation to quit smoking. Participants are rated on a 5 point Likert scale (0= "no, not at all motivated" to 4= "yes, very motivated"). Higher score indicates high motivation to quit smoking. The MASC has demonstrated good internal consistency (Cronbach's α=.95). Research using the MASC also supports its validity, finding that levels of motivation to quit are associated with perception of smoking consequences (Rundmo et al., 1997).

The Reasons for Quitting Questionnaire (RFQ)

The RFQ was developed by S. Curry, Wagner, and Grothaus (1990). It is 20 items with a four response rating scale (0 = not at all true to 4 = extremely true) measured in two dimension of intrinsic motivation (self-control and health concern) and two dimension of extrinsic motivation (immediate reinforcement and social

influence). The RFQ contains 10 intrinsic items that define two 5-item sub dimensions related to health concerns (e.g. “I am concerned about illness”) and self-control (e.g. “I want to show myself or others I can quit”) and 10 extrinsic items that define two 5-item sub dimensions related to immediate reinforcement (e.g. “I will save money on cigarettes”) and social pressure (e.g. “I want people to stop nagging me”). The score is scaled as average ratings across the relevant subdimension items. Items with missing ratings can be excluded from the denominator. For example, the health concerns score = Sum of items (1+5+9+13+17)/5. If item 9 is missing data, the calculation would be the sum of items (1+5+13+17)/4. Level of intrinsic relative to extrinsic motivation is calculated as a difference score with the extrinsic scale score subtracted from the intrinsic score. The total score was obtained by summing up all items including intrinsic motivation and extrinsic motivation. Higher scores indicate greater motivation to quit. This scale has acceptable psychometric properties with a Cronbach’s alpha coefficients for the overall intrinsic and extrinsic scales of .83 and .75, respectively (S. Curry et al., 1990).

This study uses the RFQ to measure motivation to quit smoking among ACS patients. The reasons are that the definition of motivation to quit smoking in this questionnaire is similar to the operational definition of that in this study. This questionnaire has been shown to be a reasonably reliable and valid. Moreover, it is short, easily applicable in research, and can be considered the most practical measure to identify the motivation to quit smoking.

The relationship between motivation to quit smoking and smoking cessation

Motivation to quit is also, an important construct in the smoking cessation process (Font-Mayolas, Planes, Gras, & Sullman, 2007; Prochaska et al., 1992). Higher motivation to change has been associated with quitting and greater concern about the negative consequences of smoking (McCaul, Mullens, Romanek, Erickson, & Gatheridge, 2007). Motivation to quit smoking is important because "treatments" to assist with smoking cessation will not work in smokers who are not highly motivated (Boardman, Catley, Mayo, & Ahluwalia, 2005). Previous study indicates that motivation is a significant predictor of smoking cessation (Williams et al., 2002). Most smokers wish to quit smoking, with health reasons being the motivation for the majority of them. High motivation to quit smoking seems to be an important factor in successful smoking cessation (Stoklosa et al., 2010).

Attebring et al. (2004) stated that patients expressing little ambition to stop smoking are unlikely to do so, while those who have a definite intention are more likely to stop smoking. According to Rigotti et al. (1994), long term smoking cessation in cardiac disease patients was found to be related to definite intention to quit after surgery. Patients who have contemplated quitting or who are ready to take action towards quitting are more likely to succeed.

In summary, this a review of literature on smoking cessation in ACS patients found that predictors of smoking cessation include self-efficacy in smoking cessation (Quist-Paulsen et al., 2005; Wang et al., 2008), social support (Berndt et al., 2012; Holtrop et al., 2009), nicotine dependence (Quist-Paulsen et al., 2005; Vogiatzis et al., 2010), depressive symptom (Attebring et al., 2004; Brummett et al., 2002; Dawood et

al., 2008; Holtrop et al., 2009; Perez et al., 2008), intensity of smoking cessation intervention (Attebring et al., 2004; Dawood et al., 2008; Vogiatzis et al., 2010), previous CAD (Attebring et al., 2004; Perez et al., 2008; Quist-Paulsen et al., 2005), and motivation to quit smoking (Berndt et al., 2012; Rigotti et al., 1994).

CHAPTER III

METHODOLOGY

This chapter describes the research design and methodology used in the present study. The population and sample, instrumentation, protection of human subjects, data collection, and data analysis procedure are included.

Research design

This study is a prospective, correlational research. The objective is to examine the direct and indirect relationship between smoking cessation and a set of influencing factors among Thai ACS patients following hospital discharge.

Population and sample

The population of interest in this study was Thai ACS patient smokers over 18 years old who were admitted in seven tertiary government hospitals in Thailand.

The sample of this study was Thai ACS patient smokers over 18 years old who were admitted at cardiac care wards in the tertiary care hospitals in all part of Thailand including Naresuan University hospital, Sunpasitthiprasong hospital, Prince of Songkla University hospital, Bhumiphol adulayadej hospital, King Chulalongkorn memorial hospital, Pramongkutklao hospital, and Siriraj hospital.

Sample selection

The criteria for recruitment of participants included:

a) diagnosed with ACS and admitted in the hospital. According to the American Heart Association (AHA) and American College of Cardiology (ACC), use ACS diagnosis refers to a host of clinical symptoms compatible with myocardial

ischemia secondary to coronary artery disease (CAD) that include ST-segment elevation myocardial infarction (STEMI), non-ST-elevation myocardial infarction (NSTEMI), and unstable angina (Anderson et al., 2007).

b) age 18 years old or older;

c) having smoked cigarettes at least one cigarette per day in the month before admission;

d) having a spouse, partner, or significant persons;

e) has been admitted in the hospital for 24 hours or greater

f) able to understand and communicate in Thai;

Sample size

The exact number of ACS patient smokers required was not determined. There is no standard rule for calculating the sample size for a path analysis and structural equation modeling (SEM) (Jöreskog & Sörbom, 1996-2001). The sample size determination was based on a desired ratio of 20 respondents for seven independent variables (Hair, Black, & Babin, 2010). Therefore, this study required 140 Thai ACS patient smokers, 15 % of the total sample size was added to take into account drop out. Thus, at least 161 participants were invited to participate in this study.

Sampling technique

Multi-stage sampling procedure was used for a probability sample of ACS patient smokers. The following steps were followed in order to obtain samples:

1) According to the Bureau of Policy and Strategy (2014), the number of hospitals, number of hospital beds and establishment of health facilities a separated by

jurisdiction region and province. There are five regions in Thailand: the Northern, Northeastern, Southern, Central, and Bangkok. There are 1032 hospitals in all regions of Thailand.

2) According to the American College of Cardiology (ACC)/American Heart Association (AHA) Task Force on Practice Guidelines, patients with ACS require complex and a high level of technological support for diagnostic needs and patient treatment (Anderson et al., 2007). Acute coronary syndrome patients are referred from primary care units to tertiary care hospitals, which have the capability to take care of this patient group. Thus, participants for this study were recruited from tertiary care hospitals. There were 45 tertiary care hospitals included in the sample selection for this study. Therefore, the researcher used a proportion of the hospitals to recruit the number of participating hospitals in each region. There were 6 hospitals in Northern, 7 hospitals in Northeastern, 6 hospitals in Southern and 26 hospitals in Central and Bangkok. So, there was one hospital from the Northern region, the Northeastern region, and Southern region; and 4 hospitals from the Central region and Bangkok.

3) A simple sampling without replacement procedure was used to recruit hospitals in each region. Seven hospitals were selected with one hospital from the North (Naresuan University hospital), one hospital from the Northeast (Sunpasitthiprasong hospital), one hospital from the South (Prince of Songkla University hospital); and four hospitals from the Central region and Bangkok (Bhumiphol adulayadej hospital, King Chulalongkorn memorial hospital, Pramongkutklao hospital, and Siriraj hospital).

4) There were no statistical records of Thai ACS patient smokers. A sample proportion was used for recruiting participants for this study. This study required 161 ACS patient smokers from seven participating hospitals. Therefore, 23 ACS patient smokers from each hospital were invited to participate in this study.

5) Participants were recruited from seven participating hospitals. The researcher and research assistants screened the list of ACS patients in each setting and asked about smoking history before admission. Participants were selected using a purposive sampling technique based on inclusion criteria. The sampling steps are shown in Figure 2.

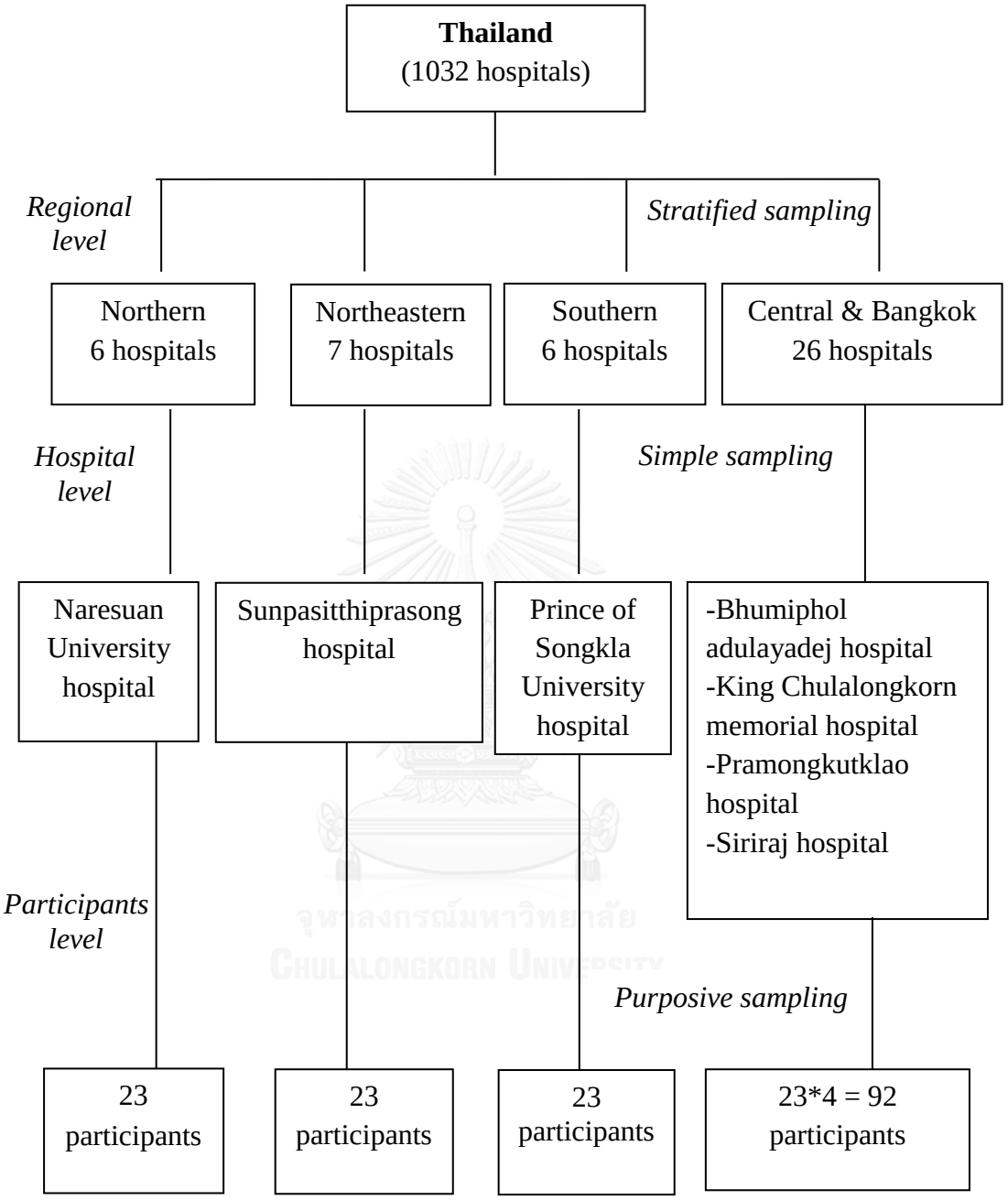


Figure 2 Sampling steps of the study

Instrumentation

The research instruments of this study consisted of eight questionnaires, totaling 99 items including: 1) the demographic data questionnaire, 2) the smoking self-efficacy questionnaire (SEQ), 3) the partner interaction questionnaire (PIQ), 4) the Fagerstrom test for nicotine dependence (FTND) 5), the center of epidemiology scale of depression (CES-D), 6) an intensity of smoking cessation intervention questionnaire (ISCIQ), 7) the reasons for quitting questionnaire (RFQ), 8) the smoking cessation questionnaire.

Three instruments (the SEQ, the PIQ, and the RFQ) were translated from English into the Thai language. The other two instruments (the ISCIQ and the smoking cessation questionnaire) were developed by the researcher. The details of translation, content validity and reliability are presented as follows:

1. **Demographic Data Questionnaire** (Appendix D)

The demographic data questionnaire was developed by the researcher. It consists of 12 items, regarding the ACS patients' demographic characteristics, their medical history, and their smoking history. This questionnaire was used to collect about age, gender, education level, marital status, household income, and household living situation. Also, the participants were asked to response about their illness, duration of illness, treatment and co-morbidities, Moreover, this questionnaire also asked about smoking history regarding number of cigarettes consume, number of prior quit attempts, and length of time that patients had quit smoking in previous quit attempts.

A question about previous CAD was included in this questionnaire. The question assessed history of CAD before current admission. The data was confirm from the medical record. The scoring was dichotomized into "1 = having history of CAD versus "0 = not having history of CAD.

2. The Smoking Self-efficacy Questionnaire (SEQ) (Appendix D)

The smoking self-efficacy questionnaire (SEQ) was developed by Etter et al. (2000). It has been used to measure the self-confidence of smokers and their ability to refrain from smoking in a variety of difference situations. This questionnaire consisted of 12 items. The instrument intended to measure two dimensions: internal stimuli (items 1-6) and external stimuli (items 7-12) (Etter et al., 2000). Respondents were asked to indicate whether they were sure that they could refrain from smoking in the situations presented. The example of situations in the internal stimuli items was "when you feel nervous", or "when you feel depressed". The example of situations in the external stimuli items was "when you having a drink with friends", or when you are with smokers".

Respondents were asked to rate each item on a five point Likert scale:

1 point means not at all sure

2 points means sometimes sure

3 points means fairly sure

4 points means very sure

5 points means absolutely sure

The total score was obtained by summing all items, with possible scores ranging from 12-60 points. A greater value indicated that the respondent perceived greater confidence in resisting smoking in the context described.

After obtaining permission from the developer, the SEQ was translated using the Brislin's back translation model (Brislin, 1970). First, the instrument was translated from English into the Thai language by linguistic experts in the translation and interpretation service unit at the Language Institute, Chulalongkorn University. Then, the Thai version was back translated to English by the different linguistic experts than were used in the first step. After that, the researcher compared the original and Thai back translated version, and discussed the Thai back translated version in relation to the original version to ensure linguistic and conceptual equivalence with the back translator experts.

Content Validity

The Smoking self-efficacy questionnaire was tested for content validity. Content validity concerns the degree to which an instrument has an appropriate sample of items for the construct being measured and adequately covers the construct domain (Nunnally & Bernstein, 1994). The content validity was assessed using a panel of five experts. Three experts were nurse professionals who had at least ten years' experience in smoking studies. One expert was an instructor with experience in instrument development. Furthermore, one expert was a physician with experience in smoking cessation. These five experts evaluated content validity of instruments for content validity by rating each item in one of four-point scales reflecting relevance to the operational definition and content domain (1= not relevant, 2= somewhat relevant,

3= quite relevant, 4= very relevant) (Polit, Beck, & Owen, 2007). In addition, the experts were asked to clarify their reasons if they did not agree with any of the items. Acceptable score were equal to or higher than .80 (Polit et al., 2007). The content validity index of the SEQ-Thai version was .83 on the scale-content validity index (S-CVI) and .80-1.00 for the item-content validity index (I-CVI).

Reliability

In this study, a pilot study was conducted with 30 ACS patient smokers with similar characteristics to the participants at Bhumipol Adulayadej Hosptial. Reliability of the SEQ for determined considering internal consistency analysis using Cronbach's alpha coefficient. The acceptable score for Cronbach's alpha coefficient was equal to or higher than .70 (George & Mallery, 2003). The results showed that the SEQ for Cronbach's alpha was .78. Moreover, the reliability of instruments in this present study was tested after collecting data. Therefore, a Cronbach's alpha coefficient of the SEQ was .97 in 161 ACS patient smokers. A summary of the measure is presented in Table 2.

3. The Partner Interaction Questionnaire (PIQ) (Appendix D)

The Partner Interaction Questionnaire (PIQ- 20) was developed by S Cohen and Lichtenstein (1990), designed to measure the receipt of support from partners or spouses, family, significant person, friend or relative to perform various behaviors that relate to smoking cessation. The PIQ-20 has two subscales, one for positive and one for negative behavior. Each subscale consists of 10 items. The examples of positive behaviors were "Compliment you on not smoking", "Congratulate you for your decision to quit smoking", and "Participate in an activity with you that keeps you

from smoking (e.g., going for a walk instead of smoking)". The examples of negative behaviors were "Asked you to quit smoking", "Comment that smoking is a dirty habit", and "Talk you out of smoking a cigarette". The response format was a five-point scale as follow:

0 point means never

1 point means almost never

2 points means sometimes

3 points means fairly often

4 points means very often

The total score was obtained by summing all items, with possible scores ranging from 0-80 points. Higher score reflect greater level of social support.

Content Validity

The PIQ was tested for content validity using the same processes for the SEQ-Thai version. The content validity index of the PIQ-Thai version was .80 for the scale-content validity index (S-CVI) and .80-1.00 for the item-content validity index (I-CVI).

Reliability

Reliability of the PIQ-Thai version was determined by considering internal consistency analysis using Cronbach's alpha coefficient. The results showed that the PIQ had a Cronbach's alpha of .75 in pilot testing and .95 in 161 ACS patient smokers. A summary of the measure is presented in Table 2.

3. The Fagerstrom Test for Nicotine Dependence (FTND) (Appendix D)

The Fagerstrom Test for Nicotine Dependence (FTND) was developed by Heatherton et al. (1991). It is a revision of the Fagerstrom Tolerance Questionnaire (FTQ), which was originally developed to measure the degree of the physiological aspects of nicotine dependence such as cardiovascular reactions after smoking cessation (Fagerstrom, 1978). The FTND is a 6- item self-report measure of nicotine dependence level. One example of FTND is: "How soon after you wake in the morning do you smoke your first cigarette?" Response options within 5 minutes (3 points) / within 6-30 minutes (2 points) / within 31-60 minutes (1 point) / greater than 60 minutes (0 points). Two other examples "How many cigarettes do you smoke in a day?" Response options are: 10 or less cigarettes (0 points) /11 to 20 cigarettes (1 point) /21-30 cigarettes (2 points) / 31 or greater cigarettes (3 points), and "Do you smoke more in the morning than the rest of the day?" Response options are: Yes (1 point) /No (0 points).

The total score of The FTND score was computed by summing the scores obtained from each item. Scores range from 0 to 10 with higher scores reflecting a greater nicotine dependence level.

Content Validity

The FTND was tested for content validity using same processes as for the SEQ-Thai version. The content validity of FTND-Thai version was 1.00 in both S-CVI and I-CVI.

Reliability

Reliability of the FTND was determined by considering internal consistency analysis using Cronbach's alpha coefficient. The results showed that the FTND had Cronbach's alpha .77 in pilot testing and .82 in 161 ACS patient smokers. The summary of the measure is presented in Table 2.

5. The Center of Epidemiology Scale of Depression (CES-D)

(Appendix D)

The Center of Epidemiology Scale of Depression (CES-D) was developed by Radloff (1977). It was develop to measures self-reported experience of depressive symptoms during the past week. It includes 20 items comprised of six scales reflecting major dimension: depressed mood, feeling of guilt and worthlessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance. The example of questions in CES-D were "I felt that I could not shake off the blues, even with help from my family or friends", "I had trouble keeping my mind on what I was doing.", and "I was happy". Each item was rated on a 4-point scale as below:

0 point means rarely or none of the time (< 1 day)

1 point means some or a little of the time (1-2 days)

2 points means occasionally or a moderate amount of the time (3-4 days)

3 points means most or all of the time (5-7 days)

A total score is calculated by summing the responses after reversing the positive affect items. For questions 4, 8, 12, and 16, the scoring is exactly the same except that it is reversed: "Most or all of the time" is scored 0 points, "Rarely or none

of the time" is scored 3 points, etc. Total scores can range from 0 to 60. Higher scores (both item and total scores) reflect greater levels of depressive symptom (Radloff, 1977).

Content Validity

The CES-D was tested for content validity using same processes as for the SEQ-Thai version. The content validity index of the CES-D-Thai version was 1.00 in both S-CVI and I-CVI.

Reliability

Reliability of the CES-D-Thai version was determined by considering internal consistency analysis using Cronbach's alpha coefficient. The results showed that the CES-D had a Cronbach's alpha of .89 in pilot testing and .93 in 161 ACS patient smokers. A summary of the measure is presented in Table 2.

6. Intensity of smoking cessation intervention questionnaire (ISCIQ) (Appendix D)

The intensity of smoking cessation intervention questionnaire (ISCIQ) was developed by the researcher based on the literature review. This questionnaire consisted of eight items and was used to indicate the degree of smoking cessation intervention that ACS patients received from their health care providers before current admission, during hospitalization, or after hospital discharge. The ISCIQ consists of five components: counseling, paper-based material, technology based material, cardiac rehabilitation program, follow up. An initial pool of 8 items on a dichotomous (Yes=1, No=0) scale was written. Example of intensity of smoking cessation intervention included "Have you ever received any leaflet, pamphlets, manual book,

CD/DVD/Video about smoking cessation from any healthcare professionals (physicians, nurses, psychiatrist, and dentists)? ". Respondents who answered "No" had this item scored as 0. If respondents reflected "Yes", this item was scored as 1. Moreover, one question about participants received follow up from health care providers was asked along with smoking cessation question at three months following discharge. The total score was obtained by summing up all items. The possible score ranged from 0-8. A greater value indicated that the respondent received a more intensive smoking cessation intervention.

Content Validity

The ISCIQ was tested for content validity using the same processes as with the SEQ-Thai version. The content validity index of the ISCIQ was .80 for the scale-content validity index (S-CVI) and .80-1.00 for the item-content validity index (I-CVI).

Reliability

Reliability of the ISCIQ was determined by considering internal consistency analysis using Cronbach's alpha coefficient. The results showed that the ISCIQ had a Cronbach's alpha of .69. According to (George & Mallery, 2003), the value of a Cronbach's alpha is partially dependent upon the number of items in the scale, this instrument had 8 items. Therefore, a Cronbach's alpha coefficient of .69 in pilot testing and .76 in 161 ACS patient smokers, which was acceptable. A summary of the measure is presented in Table 2.

7. The Reasons for Quitting Questionnaire (RFQ) (Appendix D)

The RFQ was developed by Curry et al. (1990). It has 20 items, measuring the desire to stop smoking. This instrument consists of two dimension of intrinsic motivation (self-control and health concern) and two dimension of extrinsic motivation (immediate reinforcement and social influence). The RFQ contains 10 intrinsic items that define two 5-item subdimensions related to health concerns (e.g. "I am concerned about illness") and self-control (e.g. "I want to show myself or others I can quit") and 10 extrinsic items that define two 5-item subdimensions related to immediate reinforcement (e.g. "I will save money on cigarettes") and social pressure (e.g. "I want people to stop nagging me"). Each item is rated on a 4 point rating scale:

0 = not at all true

1 = a little true

2 = moderately true

3 = quite true

4 = extremely true

Scoring:

Dimensions	**Items**
Intrinsic, Health concerns	1,5,9,13,17
Intrinsic, Self-control	2,6,10,14,18
Extrinsic, Immediate reinforcement	3,7,11,15,19
Extrinsic, Social Pressure	4,8,12,16,20

The total score is obtained by summing up all items including intrinsic motivation and extrinsic motivation. Higher scores indicate greater motivation to quit smoking.

Content Validity

The RFQ was tested for content validity using the same processes as for the SEQ-Thai version. The content validity index of the RFQ-Thai version was .95 for the scale-content validity index (S-CVI) and .80-1.00 for the item-content validity index (I-CVI).

Reliability

Reliability of the RFQ-Thai version was determined by considering internal consistency analysis using a Cronbach's alpha coefficient. The results showed that the RFQ had a Cronbach's alpha coefficient of .83 in pilot testing and .92 in 161 ACS patient smokers. A summary of the measure is presented in Table 2.

8. Smoking Cessation Questionnaire (Appendix D)

The Smoking cessation questionnaire was developed by the researcher. The smoking cessation questionnaire uses subjects' self-reported smoking abstinence at three months following hospital discharge. It was a single item and was measured by the question: Have you continued to stop smoking for three months since hospital discharge? An answer of "yes" indicated that the participant has successfully quit smoking, and is scored as 1. An answer of "no" indicates that the participant has not quit smoking and is scored as 0.

Content Validity

The smoking cessation question was tested for content validity using the same processes as for the SEQ-Thai version. The content validity index of the smoking cessation question was 1.00 in both the S-CVI and I-CVI.

In summary, this study had 8 variables, but the variable, previous CAD was a single item and retrieved from the medical record. Therefore, there is no report about psychometric properties of this question. Only 7 questionnaires have reported psychometric properties. Reliability in a pilot study ranged from 0.69 to 1.00, and the scale-content validity index ranged from 0.80 to 1.00. Furthermore, reliability of this study was tested after data collection. Therefore, the reliability in this study ranged from .75 to .97 in 161 smokers with ACS, which is acceptable reliability. The summary of content validity and reliability are presented in table 2.

Table 2 Summary of Number of items, S-CVI, I-CVI and reliability of research instruments

Variables	Instruments	Number of item	S-CVI	I-CVI	Reliability (n=30)	Reliability (n=161)
Self-efficacy in smoking cessation	SEQ	12	.83	.80-1.00	α=.78	α=.97
Social support	PIQ	20	.80	.80-1.00	α=.75	α=.95
Nicotine dependence	FTND	6	1.00	1.00	α=.77	α=.82
Depressive symptoms	CES-D	20	1.00	1.00	α=.89	α=.93
Intensity of intervention	ISCIQ	8	.80	.80-1.00	α=.69	α=.76
Motivation to quit	RFQ	20	.95	.80-1.00	α=.83	α=.92
Smoking cessation	Smoking cessation question	1	1.00	1.00	-	-

Protection of the rights of human subjects

This study was approved by the Ethical Review Committee from seven participating hospitals including: Naresuan University hospital (COA No. 034/2014), Sunpasitthiprasong hospital (COA No.-), Prince of Songkla University hospital (COA No.-), Bhumiphol adulayadej hospital (COA No.-), King Chulalongkorn memorial hospital (IRB No. 528/56), Pramongkutklao hospital (IRB/RTA 0143/2557), Siriraj hospital (COA No. Si057/2014) (Appendix B).

After IRB approval and obtained permission from the director of each setting, ACS patient smokers who met the study criteria were invited to participate in this study. The participants were informed and explained of the purpose of the study, benefits, risks, the types of questionnaires and tasks to be completed, and the length of time to complete the questionnaires. The participants were informed that if they decided to participate in the study, during the participation, they can express doubt about some questions or refuse to answer any of the questions. In addition, the participants were told that they were able to withdraw from the study at any time if they wished and their decision would not affect the treatment or services they were receiving from healthcare providers at the hospital. Finally, the researcher explained that there was no harm to participants in this study and it took approximately 30 to 45 minutes to complete all the questionnaires.

Ethical considerations were maintained throughout the study including verbal and written informed consent from participants after explaining the purpose of the study and before the response to the questionnaires. Confidentiality of data collection was ensured both during data collection and after collection. The researcher and/or research assistant arranged a private room (recreation or living room) for the participants to complete the questionnaires. After completing the questionnaires, the packet of the questionnaires and the informed consent form were separately stored. They were put into an envelope and sealed, and were directly sent to the researcher to ensure confidentiality. The participants were assured that their names and addresses were kept strictly confidential and a code number was used and only the researcher and research assistant know the real identity of participants to guarantee

confidentiality. The results of the study were reported as a whole picture. All data were destroyed upon the completion of the study.

Throughout this study, no participant withdrew from the study. Emotional discomfort such as stress, anxiety, or exhaustion did not occur at any time for participants during their interviews.

Data collection procedure

Research assistant preparation

Before data were collected, the researcher trained the research assistants. The qualification of research assistants was registered nurses who had graduated in the field of cardiovascular nursing or as registered nurses who had at least five years of experience in taking care of cardiac patients. There were a total of five research assistants from five participating hospitals who met the qualifications. In the other two participating hospitals (Pramongkutklao hospital and Bhumiphol adulayadej hospital), the data was collected by the researcher. The research assistants were trained to use all instruments. The training started with the researcher explaining the objective of the study, confidentiality, data collection, sample criteria, the process of sampling, the definition and concept-base of each instrument and over all questionnaires. Their understanding of these issues was rechecked. After that, each research assistant did two sample interviews. After completing the interviewing, the researcher and research assistants discussed any problem during the interviewing.

Data were collected from January 2014 to August 2015. The data collection procedure was conducted as follows:

1. After this study was approved, the permission for collecting the data was obtained from the directors of each participating hospitals. The researcher contacted and made an appointment with the chief nurse and all head nurse in each participating hospital in order to inform them about the study objective, inclusion criteria for recruiting the participants, data collection procedures, and expected outcomes and benefits of the study.

2. The researcher/ research assistants screened the name of ACS patients who had the doctor's order to be discharged from hospital. All ACS patients were asked about smoking (had they smoked at least one cigarette per day within one month before admission). The participants who met the inclusion criteria were invited to participate in this study. The researcher /research assistants gave clear explanations about the study objectives, process of data collection, and the right to participate and refuse to participate in this study.

3. On discharged day, the researcher/ research assistants arranged a private room to explain the details of the study, including purpose, benefit, risk, and estimated time required for completion of questionnaires, and period of data collection to each ACS patient smoker. The researcher/research assistants gave patients an information sheet and asked them to sign a consented form to become participants who agree to participate in this study. Participants were asked to complete the packet of questionnaires including the demographic data questionnaires, the smoking self-efficacy questionnaires, the Fagerstrom Test for Nicotine Dependence, the partner interaction questionnaire**,** the Center of Epidemiology Scale of Depression, the intensity of smoking cessation intervention questionnaire, and the Reasons for Quitting Questionnaire (not including the smoking cessation questionnaire). The

packet of questionnaires consisted of 98 items and took approximately 30-45 minutes for participant to complete all questionnaires. The answering of questionnaires was received through self-report and interview. If participants could not read the questionnaires by themselves, the researcher/ research assistants read questions for them. Additionally, if participants face with emotional discomfort while answering the questions, they stopped and rested for a minute before returning to answer the questions.

4. After completing the questionnaires, the researcher/ research assistants checked the completeness of data. No missing data occurred. The questionnaires were put into an envelope and sealed for ensuring confidentiality. The packet of questionnaires and the informed consent were separately stored in envelops. Each participant was given a pill box for appreciation for their participation. The participants were asked about the telephone number of participant and family member or their relative for follow-up at 90 days after hospital discharge. The researcher/ research assistants made an appointment with the participants and their relatives for cooperation with a telephone follow-up after discharge.

5. At three months following hospital discharge, the researcher called to all participants to interview them about smoking cessation questions. In this period, the researcher could contact all participants. Therefore, a total of 161 smokers with ACS remained in the study. When completing interviews about smoking cessation questions, the researcher thanked each participant and terminated the study.

Data analysis

A total of 161 smokers with ACS participated in this study. After collecting data, the researcher prepared and recorded the data into a computer. The Statistical Package for Social Science (SPSS) program version 22.0 was used to analyze data and provide descriptive statistics, and Linear Structural Relationship (LISREL) version 8.80 was employed for the path analysis. The steps for data analysis were as follows:

1. Descriptive statistics using computer software were tested concerning missing data and outliers. No missing data occurred in this study.

2. Due to the criterion of outliers, the raw data that had an absolute of Z scores greater than 3 were identified as outlier data (Bamnett & Lewis, 1994). As a result, one subject had a Z scores greater than 3. Therefore, data of a total sample of 161 ACS patient smokers were analyzed in the study.

3. Descriptive statistics, including frequencies, means, and standard deviation were used to describe the demographic data and to examine the distribution of demographic and variables in the study. The results of descriptive statistics are presented in chapter 4.

4. The statistical assumptions underlying path analysis including normality of distribution, linearity of relationships, homoscedasticity, and multicollinearity were examined. Pearson's Product Moment correlations were used to test for bivariate relationships among pairs of variables and to assess multicollinearity among the independent variables. Multiple regression analyses were used to compute a variance inflation factor and tolerance to examine multicollinearity among the major variables. The results of statistical assumptions for path analysis are presented in chapter 4.

5. Path analysis was used to examine the direct, indirect mediated and total contribution of variables to smoking cessation. The level of any statistical tests was established at the .05 level. The overall model-fit-index was examined to determine how well the hypothesized model fit the existing data. The results of model and modification model are presented in chapter 4.

CHAPTER IV

RESULTS

This chapter presents the findings of the study. The findings included characteristics of the study participants, characteristics of the study variables, assumption testing, statistical analysis to test the predictors of smoking cessation, hypothesis testing, and direct and indirect effects of influencing factors on smoking cessation in ACS patients after hospital discharge.

Characteristics of the study participants

Demographic characteristics of the participants

A total of 161 Thai smokers with ACS participated in this study. After considering the criterion of outliers (absolute Z score > 3), no participant was excluded. In summary, data from 161 Thai ACS patient smokers were analyzed. The characteristics of the participants showed that 41.1 % were aged between 50-59 years and the mean age of the participant was 54.6 years (SD = 10.14, range = 27 - 78). The majority of the participants were male (95.7%). They were diagnosed with STEMI (51.6%), married (82.0 %), and completed primary education (44.1%). Moreover, findings show that one-third of the participants work as employees (30.4%) and close to half of the participants had a monthly income less than 10,000 baht (46.3%). In addition, approximately about three quarters of the participants (72.7%) lived with their husband or wife (Table 3).

Table 3 Number and percentage of demographic characteristics of the study participants

Characteristics	Number (n = 161)	Percentage
Age (years)		
20-29	2	1.2
30-39	9	5.5
40-49	31	19.3
50-59	66	41.1
60 and older	53	32.9
Gender		
Male	154	95.7
Female	7	4.3
Diagnosed		
STEMI	83	51.6
NSTEMI	77	47.8
UA	1	0.6
Marital status		
Marriage	132	82.0
Widowed//separated/divorced	21	13.0
Single	8	5.0
Education		
Primary education	71	44.1

Table 3 Number and percentage of demographic characteristics of the study participants (continued)

Characteristics	Number (n = 161)	Percentage
Education (cont)		
Secondary education	44	27.3
Diploma/certificate	16	9.9
Bachelor's degree or higher	30	18.6
Occupation		
Employee	49	30.4
Businessperson	38	23.6
Government official	33	20.5
Agriculturist	22	13.7
Unemployed	7	4.3
Pensioned government official	6	3.7
Monk/priest	6	3.7
Family income/month (Baht)		
Less than 10,000	75	46.3
10,001-20,000	41	25.5
20,001-30,000	20	12.4
30,000-40,000	12	7.5
40,001-50,000	7	4.6

Table 3 Number and percentage of demographic characteristics of the study participants (continued)

Characteristics	Number (n = 161)	Percentage
Living		
With husband/wife	117	72.7
With son/daughter	24	14.9
With friend	10	6.2
With parent	9	5.6
With relatives	1	.6

According to participants' medical histories, almost one-fourth of the participants had been previously diagnosed with CAD (24.8 %), or had experienced of a post cardiac event (29.2 %). Moreover, more than one-third of the participants reported co-morbidities (39.1%) such as diabetes, hypertension, dyslipidemia, and allergic rhinitis (Table 4).

Table 4 Number and percentage of medical history of the study participants

Medical history	Number (N=161)	Percentage
Previous CAD		
No	121	75.2
Yes	40	24.8
Post cardiac event		
No	114	70.8
Yes	47	29.2
Number of previous cardiac events (times)		
0	114	70.8
1	31	19.3
2	9	5.6
3	4	2.5
4	1	0.6
5	1	0.6
10	1	0.6
Co-morbidity		
No	98	60.9
Yes	63	39.1

Regarding smoking history, 31.6 % of the participants smoked, ranging from 21-30 years before admission ($\bar{x}$= 27.04, SD=14.11) while 31.1 % of the participants smoked 16-20 cigarettes per day ($\bar{x}$= 16.02, SD=9.05). Moreover, one hundred percent of sample had made at least one quit attempt (range 1-14) (Table 5).

Table 5 Number and percentage of smoking history of the study participants

Smoking history	Number (n = 161)	Percentage
Duration of smoking before admission (Years)		
1-10	32	19.9
11-20	28	17.3
21-30	51	31.6
31-40	28	16.3
41-50	17	10.5
51-60	2	1.2
61-70	3	1.8
Number of cigarettes smoked per day		
1-5	17	10.6
6-10	48	29.8
11-15	25	15.5
16-20	50	31.1
21-25	7	4.3
26-30	8	5.0
> 30	6	3.6

Table 5 Number and percentage of smoking history of the study participants (continued)

Smoking history	Number (n = 161)	Percentage
Number of quit attempt	**(Times)**	
1	81	37.9
2	26	16.1
3	20	12.4
4	6	3.7
5	11	6.8
6	1	0.6
7	5	3.1
10	10	6.2
14	1	0.6

Characteristics of the study variables

The eight major variables in the current study include self-efficacy in smoking cessation, social support, nicotine dependence, depressive symptoms, intensity of smoking cessation intervention, previous CAD, motivation to quit smoking, and smoking cessation. The details regarding characteristics of each of the study variable are presented as follows:

Self-efficacy in smoking cessation

The total scores of self-efficacy in smoking cessation ranged from 12 to 60 points with a mean of 44.13 (SD 14.78). The total scores of self-efficacy in smoking cessation scores were negatively skewed (-.72), thus indicating that most of participants had scores on self-efficacy in smoking cessation higher than the mean score. The kurtosis value of total scores of self-efficacy in smoking cessation was a negative value (-.53), thus suggesting that the total score of self-efficacy in smoking cessation was shaped like a flattened curve (Table 6).

Social support

The total scores of social support ranged from 1 to 79 points with a mean of 38.04 (SD = 8.38). The total scores on social support were a negatively skewed (-.38). The kurtosis value of total scores of social support was a positive value (.33) (Table 6).

Nicotine dependence

The total scores on nicotine dependence ranged from 0 to 9 points with a mean of 4.06 (SD=2.31). The total scores of nicotine dependence were negatively skewed (-.10). The kurtosis value of total scores of nicotine dependence was a negative value (-.97) (Table 6).

Depressive symptoms

The total scores of depressive symptoms ranged from 0 to 37 points with a mean of 15.53 (SD=7.54). Most of the participants had depressive symptoms scores lower than 15 (54.7%). The total scores of depressive symptoms were positively

skewed (.76). The kurtosis value of total scores of depressive symptoms was a positive value (.36) (Table 6).

Intensity of smoking cessation intervention

The total scores of intensity of smoking cessation intervention ranged from 0 to 6 points with a mean of 2.23 (SD=1.45). The highest score of intensity of smoking cessation intervention was 6, but the highest possible score was 8. The total scores of intensity of smoking cessation intervention were positively skewed (.83). The kurtosis value of total scores of intensity of smoking cessation intervention was a positive value (.58) (Table 6).

Previous CAD

The number of previous CAD ranged from 0 to 1 with mean of .25 (SD= .63). Most of the participants reported no previous CAD (75.2 %). The scores of previous CAD were positively skewed (1.18). The kurtosis value of the scores of previous CAD was a negative value (-.63) (Table 6).

Motivation to quit smoking

The total scores of motivation to quit smoking ranged from 6 to 80 points with a mean of 44.5 (SD=17.55). The total scores of motivation to quit were positively skewed (.07). The kurtosis value of total scores of motivation to quit was a negative value (-.78) (Table 6).

Smoking cessation

The score of smoking cessation ranged from 0 to 1 point with a mean of .69 (SD=.46). The scores of smoking cessation were negatively skewed (-.82). The kurtosis value of the score of smoking cessation was a negative value (-1.33) (Table 6).

Table 6 Summary of possible range, actual range, mean , standard deviation (SD), skewness, and kurtosis of study variables

Variables	Possible range	Actual range	$\bar{X}$	SD	Skewness (Z value)	Kurtosis (Z value)
Self-efficacy	12-60	12-60	44.13	14.78	-.72	-.53
Social support	0-80	16-60	38.04	8.38	-.38	.33
Nicotine dependence	0-10	0-9	4.06	2.31	-.10	-.97
Depressive symptom	0-60	0-37	15.53	7.54	.76	.37
Intensity of smoking cessation	0-8	0-6	2.23	1.45	.83	.58
Previous CAD	0-1	0-1	.25	.63	1.18	-.63
Motivation to quit	0-80	6-80	44.5	17.55	.07	-.78
Smoking cessation	0-1	0-1	.69	.46	-.82	-1.33
					(0.19)	(0.38)

Assumption testing

Before path analysis was conducted, normality, linearity, homoscedasticity, and multicollinearity were tested in order to ensure that there was no violation of the underlying assumption. The results of normality, linearity, homoscedasticity, and multicollinearity testing are presented below.

Normality testing

In the present study, descriptive statistics including mean, standard deviation, skewness and kurtosis were used to test normality of variables. The skewness of all variables ranged from -.82 to 1.84, and the kurtosis of variables ranged from -1.33 to 2.62. In fact, an absolute value of 2.0 for skewness is considered a departure from normality (Li et al., 1998), and a value of univariate skewness greater than ± 3.0 indicates extreme skewness (Vaux, 1988). According to Antonucci and Johnson (1994), the z value of skewness and kurtosis not exceeding ± 1.96 corresponds to a .05 level or ± 2.58 at the .01 probability level reflects a normal distribution. As for eight variables included the Z value of skewness was 0.19, and the Z value of kurtosis was 0.38, well within the normal curve.

Linearity Testing

Path analysis required a linear correlation between variables. Multiple regressions assume that there is a linear relationship between the independent variables and the dependent variable. The linearity testing can be checked by the residual plot which is a visual examination of the scatter plot graph between the standardized residual (y-axis) versus the predictive values (x-axis). Nonlinearity is indicated when most of the residuals are above the zero line on the plot for some

predicted values and below the zero line on other predicted values (Connell & D'Augelli, 1990). In other words, the assumption of linearity is met when the standardized residual values are randomly distributed around the horizontal line. In this current study, the scatter plot between independent and dependent variables shows such a linear relationship (appendix G).

Homoscedasticity testing

Homoscedasticity means the variance of error is the same across all levels of the independent variables (Hair, 2010). This assumption can be tested by a visual examination of the plot of the regression of the standardized predicted dependent variable against the regression standardized residual. Homoscedastisticity is indicated when the residual plots are randomly scattered around zero (in the horizontal line) (Hair, 2010). In this study, the scatter plot of residuals showed the results from homoscedastic data (appendix G).

Multicollinearity testing

Multicollineearity refers to the extent to which a variable can be explained by the other variables in the analysis. This common criterion can be used to examine multicollinearity using tolerance values and the variance inflation factor (VIF). It is worth noting that the values of VIF that are greater than 10 indicate a cause of concern (Yopp, 1988). In the present study, the results of the multiple regression analysis indicated that the tolerance ranged from .58 to .93 (not approaching 0) and VIF ranged from 1.07 to 1.72 (not greater than 10) (Table 7). Thus, these results confirm no violation for multicollinearity.

Table 7 Multicollinearity testing of variables

Variable	Collinearity Statistics	
	Tolerance	VIF
Self-efficacy in smoking cessation	.76	1.32
Partner support	.60	1.68
Nicotine dependence	.93	1.07
Depressive symptom	.84	1.19
Intensity of smoking cessation intervention	.90	1.11
Cardiac event	.87	1.13
Motivation to quit	.58	1.73

Note. Dependent variable: smoking cessation

Statistical analysis to test the predictors of smoking cessation in ACS patients after hospital discharge

To describe the predicting factors of smoking cessation on the part of Thai ACS patient smokers, the correlation between the variables and smoking cessation was tested using bivariate correlation. The magnitude of the relationships was determined by criteria of the correlation coefficient (r): r< .30= weak or low relationship, .30 ≤ r ≤.50= moderate relationship, and r > .50 = strong or high relationship (Burns & Grove, 2009).

The results showed that self-efficacy in smoking cessation had high positive correlation with smoking cessation (r = .63; P<.01). Social support had low positive correlation to smoking cessation (r = .23; P<.01). Nicotine dependence had low negative correlation to smoking cessation (r = -.25; P<.01). Depressive symptom had

low negative correlation to smoking cessation (r = -.17; P<.05). Previous CAD had a moderate negative correlation to smoking cessation (r = -.39; P<.01). Motivation to quit smoking had low positive correlation to smoking cessation (r = .16; P<.05). In contrast, the intensity of smoking cessation intervention had a non-significant correlation with smoking cessation (r=.00). The correlation matrix among variables is presented in Table 8.

According to the bivariate correlations, the six variables (self-efficacy in smoking cessation, social support, nicotine dependence, depressive symptom, previous CAD, and motivation to quit smoking) were significantly related to smoking cessation; only intensity of smoking cessation was non-significantly related to smoking cessation. The literature indicates that a non-significant variable in bivariate correlations is often eliminated (Shieh, 2006). However, some researchers have reported that bivariate results provide only partial information about the relationship between a predictor and an outcome variable, and are an improper method for selecting variables for multivariate analysis. The uncorrelated variable sometimes significantly improves the explained variance (Courville & Thompson, 2001; Shieh, 2006). Therefore, all possible nine predictors were retained for use in the path analysis.

Table 8 Correlation matrix among the independent variables (n=161)

Variables	SE	SS	ND	DS	ISCI	CAD	MO	SC
SE	1							
SS	.20*	1						
ND	-.19*	-.28**	1					
DS	-.27**	-.07	.14	1				
ISCI	-.08	-.16	.16*	.17*	1			
CAD	.32**	.09	.17*	.04	.07	1		
MO	.22**	.18	.00	.14	.08	-.12	1	
SC	.63**	.23**	-.25**	-.17*	-.00	-.39**	.16*	1

Note. * p < .05; ** p < .01; SE=self-efficacy in smoking cessation, SS=social support, ND=nicotine dependence, DS=depressive symptom, ISCI= intensity of smoking cessation intervention, CAD= Previous CAD, MO=motivation to quit smoking, SC=smoking cessation

Hypotheses testing

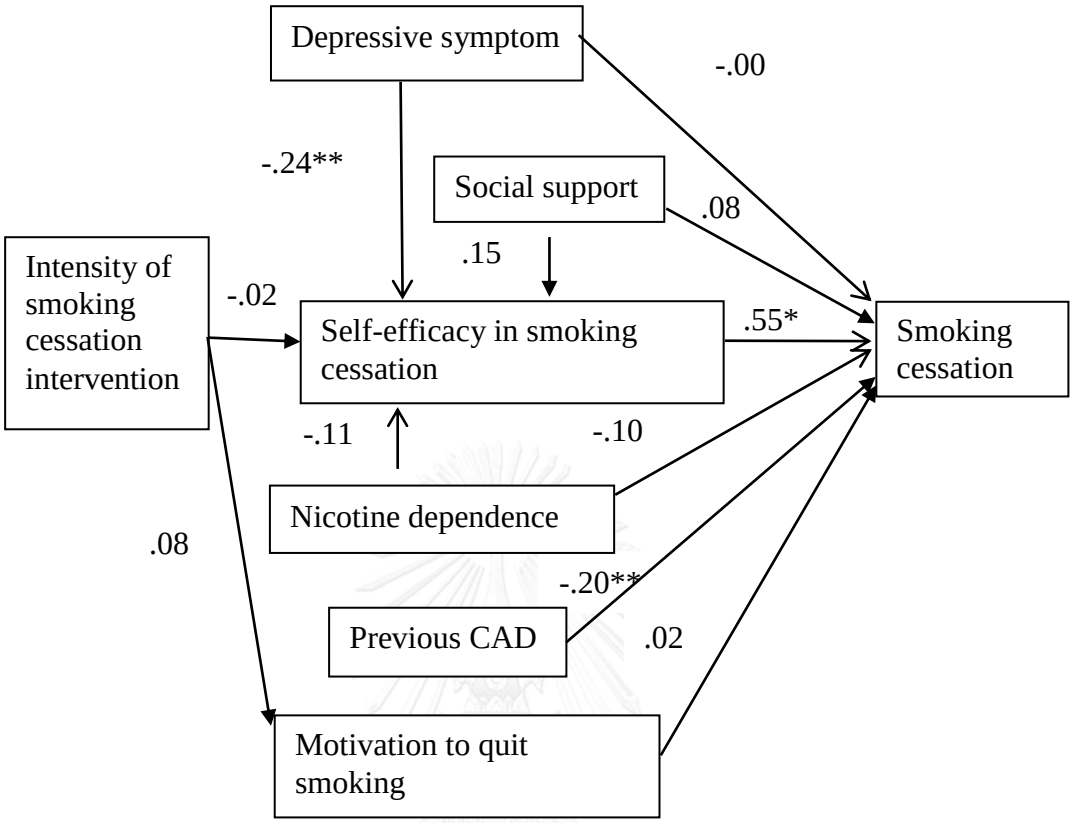
Model identification

In the present study, seven statements of hypotheses were tested. The researcher identified the hypothesized model by calculating the number of data points because the computer program will run when there is an over-identification model. The formula used is [p (p+1)]/2, where p equals number of observed variables. There

were eight observed variables. So, the number of data points was 36 [8(8+1)]/2. According to Hair (2010), over- identification is the model that has more data points that free parameters. This study contains 19 free parameters, and the numbers of data points are more than free parameter. Thus, there is an over-identification model, which means that it can be analyzed by path analysis.

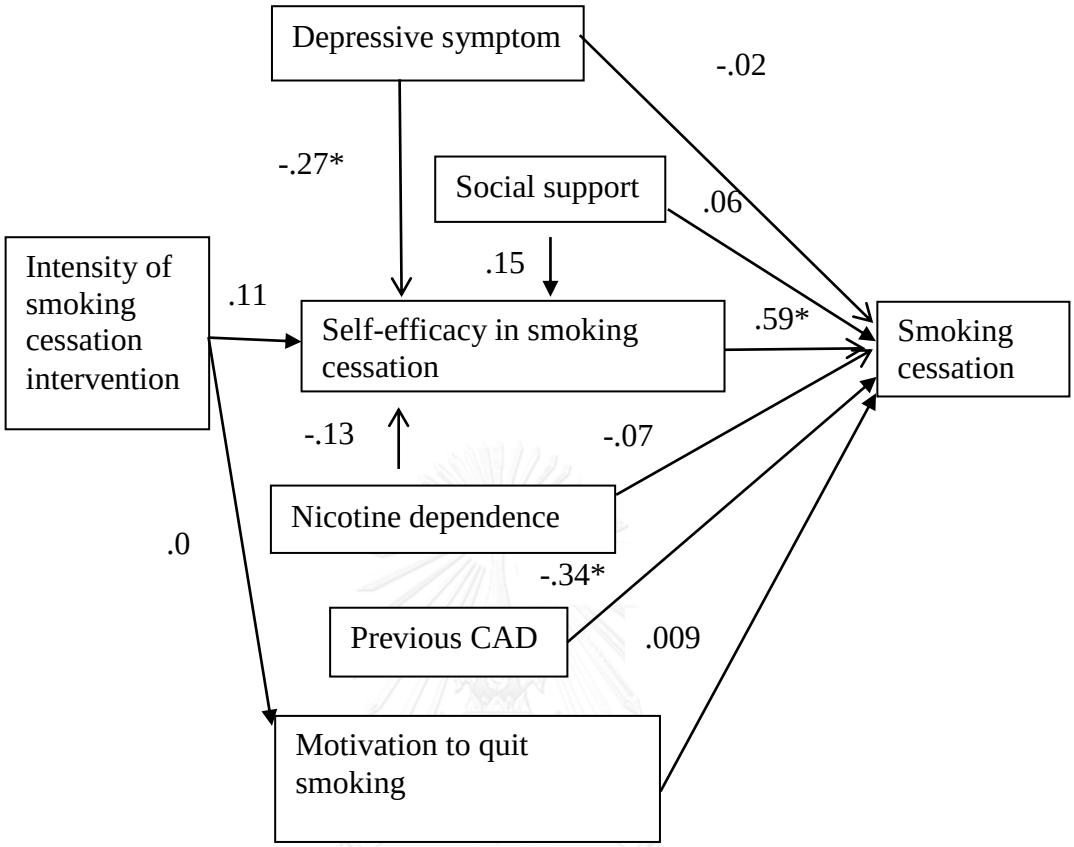
Model testing

The hypothesized path model of smoking cessation (Figure 3) was tested. In the initial path model, the results showed that the goodness-of-fit was rejected. The demonstrated result: X^2= 33.03, df = 7, X^2/df = 4.72, p value = 0.00, CFI= 0.86, GFI = 0.95, AGFI = 0.75, RMSEA = 0.15, R^2 = 0.42, as shown in Table 23. When the hypothesized model was rejected based on goodness-of-fit statistics, the researcher searches to find a modification index that indicates improvement of the model (Hooper et al., 2008). Therefore, the final model explained 53 % (R^2 = .53) of the variance of smoking cessation (Figure 4). The results showed that the model fit the empirical data. The demonstrated result: X^2= 2.75, df = 3, X^2/df = .92, p value = .43, CFI= 1.00, GFI = 0.99, AGFI = 0.95, RMSEA = 0.00, R^2 = 0.53. The fit index statistics were in the acceptable range more than in the initially hypothesized model (Table 9).



Note. *p<.05,**p<.01, X^2= 33.03, df = 7, X^2/df = 4.72, p value = 0.00, CFI= 0.86, GFI = 0.95, AGFI = 0.75, RMSEA = 0.15, R^2 = 0.42

Figure 3 The initial model of smoking cessation in ACS patients



Note. *p<.05,**p<.01, X^2= 2.75, df = 3, X^2/df = .92, p value = .43, CFI= 1.00, GFI = 0.99, AGFI = 0.95, RMSEA = 0.00, R^2 = 0.53

Figure 4 The final path model of smoking cessation in ACS patients

Table 9 Comparison of the goodness of fit statistics among the initially hypothesized model, and the final model of smoking cessation among ACS patients after hospital discharge

Relative fit index	Initial model	Final model	Goodness of fit statistics
χ^2 – test	33.03	2.75	($p < .05$)
	p=0.00	p=0.43	non significant
χ^2/ df	33.03/7=4.72	2.75/3=0.92	< 3.00
CFI	0.857	1.00	≥ 0.95
GFI	0.951	0.996	≥ 0.95
AGFI	0.748	0.949	≥ 0.95
RMSEA	0.155	0.00	< 0.05
SRMR	0.0785	0.0252	< 0.05
PGFI	0.185	0.0830	< 0.50
Largest s.	4.109	1.574	± 2.00
Smallest s.	-3.813	-1.621	± 2.00
R^2	0.423	0.528	> .50

Abbreviations: χ^2= Chi-square**;** df=degree of freedom**;** RMSEA=Root Mean Square Error of Approximation**;** SRMR= Standardized Root Mean Square Residual; CFI= Comparative Fit Index GFI= Goodness of Fit Index; AGFI**=** Adjust Goodness of Fit Index; PGFA= Parsimony Goodness of Fit Index

Evaluation of goodness of fit criteria

Results showed that the final model fit the empirical data and explained 53% (R^2 = .53) of the variance of smoking cessation in ACS patients after hospital discharge by self-efficacy in smoking cessation, social support, nicotine dependence, depressive symptom, intensity of smoking cessation intervention, previous CAD, and motivation to quit smoking. The results showed that the model fit with the empirical data. The demonstrated result: X^2= 2.75, df = 3, X^2/df = .92, p value = .43, CFI= 1.00, GFI = 0.99, AGFI = 0.95, RMSEA = 0.00, R^2 = 0.53. The goodness of fit statistics between the initial hypothesized model and final model of smoking cessation in ACS patients after hospital discharge is presented in Table 9.

The results found that some independent variables were significantly predictive of smoking cessation in ACS patients after hospital discharge. The path coefficients of self-efficacy in smoking cessation has the most impact on smoking cessation (β = .59), followed by previous CAD (β = -.34). Moreover, it was found that depressive symptoms had an impact on smoking cessation through self-efficacy in smoking cessation (β = -.27).

Direct and indirect effects of influencing factors on smoking cessation

The effects of the independent variables on smoking cessation in Thai ACS patient smokers after hospital discharge are presented and the findings are described below.

1. Effect of self-efficacy in smoking cessation on smoking cessation

Self-efficacy in smoking cessation had a significant positive direct effect (β=.59) on smoking cessation at the statistical significance level of .05.

2. Effect of social support on smoking cessation

Social support had a non-significant positive direct effect (β=.06, p>.05) on smoking cessation and it had a non-significant positive indirect effect on smoking cessation through self-efficacy in smoking cessation (β= .15, p>.05)

3. Effect of nicotine dependence on smoking cessation

Nicotine dependence had a non-significant negative direct effect (β= -.07, p>.05) on smoking cessation and it had a non-significant negative indirect effect on smoking cessation through self-efficacy in smoking cessation (β= -.13, p>.05).

4. Effect of depressive symptom on smoking cessation

Depressive symptom had a non-significant negative direct effect (β= -.02, p>.05) on smoking cessation and it had a significant negative indirect effect on smoking cessation through self-efficacy in smoking cessation (β= -.27) at the statistical significance level of .05.

5. Effect of intensity of smoking cessation intervention on smoking cessation

The intensity of smoking cessation intervention had a non-significant positive indirect effect on smoking cessation through self-efficacy in smoking cessation (β=.11, p>.05) and motivation to quit smoking (β=.08, p>.05).

6. Effect of previous CAD on smoking cessation

Previous CAD had a significant negative direct effect (β= -.34) on smoking cessation at the statistical significance level of .05.

7. Effect of motivation to quit smoking on smoking cessation

Motivation to quit smoking had a non-significant positive direct effect (β=00, p>.05) on smoking cessation.

The summary of the total, direct, and indirect effects of the influencing variables on the affected variables are shown in table 10.

Table 10 Summary of the total, direct, and indirect effects of the influencing variables on the affected variables (n=161)

Endogenous Variables	R^2	Influencing Variables	TE	IE	DE
smoking cessation	0.53	depressive symptom	-0.137	-0.158	-0.021
		social support	0.146	0.086	0.060
		self-efficacy in smoking cessation	0.593	-	0.593
		nicotine dependence	-0.146	-0.076	-0.070
		Previous CAD	-0.335	-	-0.335
		Motivation to quit smoking	0.009	-	0.009
Self-efficacy in smoking cessation	0.13	intensity of smoking cessation intervention	0.112	-	0.112
		depressive symptom	-0.266	-	-0.266
		social support	0.145	-	0.145
		nicotine dependence	-0.128	-	-0.128
Motivation to quit smoking	0.00	intensity of smoking cessation intervention	0.082	-	0.082

Note. TE= Total effect, IE= Indirect effect, DE= direct effect

Summary

The descriptive statistical characteristics of the variables investigated in this study have been explained. The assumptions of the path analysis were tested and the results were acceptable. The hypothesized path model of smoking cessation in ACS patients after hospital discharge was tested. The initial model was rejected, and the modified model was applied. The final path model explained 53% of the variance in smoking cessation among Thai smokers with ACS.

CHAPTER V

DISCUSSION

This chapter provides the discussion of the study findings. It includes conclusion, discussion, limitation, implications for nursing, and recommendations for future research.

Conclusion

This study employed prospective, correlational research design, aimed to examine the direct and indirect effects of the factors that predicted smoking cessation among ACS patients following hospital discharge. The research literature review was used as a conceptual framework in this study. Multi-stage sampling was used to recruit the participants. One hundred and sixty one ACS patient smokers who aged over 18 years old participated in this study. The study was conducted in seven tertiary care government hospitals in Thailand from January 2014 to August 2015.

The participants responded to a packet of questionnaires through self-report administration and interview. The research instruments include a demographic data questionnaire, the smoking self-efficacy questionnaire (SEQ), the partner interaction questionnaire (PIQ), the Fagerstrom test for nicotine dependence (FTND), the center of epidemiology scale of depression (CES-D), an intensity of smoking cessation intervention questionnaire (ISCIQ), the reasons for quitting questionnaire (RFQ), and the smoking cessation question. All instruments had satisfactory validity and reliability. This study was approved by the Ethical Review Committee from the seven participating hospitals. Descriptive statistics, bivariate correlation, and path analysis (Lisrel 8.80) were used to analyze the data.

The majority of the participants were male (95.7%). The mean age of the samples was 54.8 years (SD = 10.14, range = 27 - 78). They were diagnosed with STEMI (51.6%), and had completed primary education (44.1%). Almost all of the subjects were married (82.0 %) and lived with their husband or wife (72.7%). According to medical history, almost one-fourth of the participants had been previously diagnosed with CAD (24.8 %), and more than one-third of the participants had reported co -morbidities (39.1%).

Regarding smoking history, 31.6 % of the participants had smoked from 21-30 years before admission ($\bar{X}$= 27.04, SD=14.11) and 31.1 % of the participants smoked 16-20 cigarettes per day ($\bar{X}$= 16.02, SD=9.05).

The findings of the path analysis revealed that the final model fit the empirical data and explained 53% (R^2 = .53) of the variance of smoking cessation by self-efficacy in smoking cessation, social support, nicotine dependence, depressive symptoms, intensity of smoking cessation intervention, previous CAD, and motivation to quit smoking. The goodness of fit of the model was acceptable (X^2= 2.75, df = 3, X^2/df = .92, p value = .43, CFI= 1.00, GFI = 0.99, AGFI = 0.95, RMSEA = 0.00). Independent variables were significantly predictive of smoking cessation at a significance level of .05. Self-efficacy in smoking cessation had the most impact on smoking cessation (β = .59), followed by previous CAD (β = -.34). Moreover, the results showed that depressive symptoms had an impact on smoking cessation through self-efficacy in smoking cessation (β = -.27).

Discussions

The discussion part of this study was based on the objectives of the study as follow:

1. To identify the predictors of smoking cessation among Thai ACS patients after hospital discharge

After entering influencing factors of smoking cessation into path analysis, the results show that factors significantly predicting smoking cessation at a statistically significant level of .05 include self-efficacy in smoking cessation, previous CAD, and depressive symptoms. However, the results also showed that social support, nicotine dependence, intensity of smoking cessation intervention, and motivation to quit smoking are non-significant factors that can predict smoking cessation.

The variables that significantly predict smoking cessation were congruent with the findings of other previous studies which found that self-efficacy in smoking cessation (Quist-Paulsen et al., 2005; Wang et al., 2008), previous CAD (Attebring et al., 2004; Perez et al., 2008; Quist-Paulsen et al., 2005; Vogiatzis et al., 2010) and depressive symptoms significant (Attebring et al., 2004; Dawood et al., 2008; Holtrop et al., 2009; Perez et al., 2008).

2. To examine the direct and indirect relationship of influencing factors on smoking cessation among Thai ACS patients after hospital discharge

2.1 Self-efficacy in smoking cessation has a positive direct relationship with smoking cessation in ACS patients after hospital discharge

The findings support the hypothesis that self-efficacy in smoking cessation has a significant positive direct effect on smoking cessation in ACS patients after hospital discharge, indicating that ACS patient smokers with higher levels of self- efficacy in

smoking cessation had higher rates of smoking cessation at 3 months following hospital discharge. It is possible that ACS patients faces with serious illnesses, and they are more motivated to stop smoking and more receptive to smoking cessation interventions that enhance their self-efficacy in smoking cessation. Also, the level of self-efficacy in smoking cessation of participants in this study has high, with mean score of self-efficacy in smoking cessation of 44.13 (SD= 14.78). Thus, a higher level of self-efficacy in smoking cessation makes one more likely to be successful in making and maintaining a behavior change (Bandura, 1997).

This finding is consistent with findings of previous studies conducted in same population (Baldwin et al., 2006; Chouinard & Robichaud-Ekstrand, 2007; Reid et al., 2003), which indicates that self-efficacy in smoking cessation has a strong direct effect on smoking cessation. Higher baseline levels of self-efficacy in smoking cessation were significantly related to higher smoking cessation rate at 3 months (Reid et al., 2003). In contrast, low self-efficacy in smoking cessation also contributes to the failure of smoking cessation among smokers hospitalized for cardiac disease (Bolman et al., 2002; Chouinard & Robichaud-Ekstrand, 2007; Johnston et al., 2004; van Berkel et al., 2000; Wang et al., 2008; Wiggers et al., 2005).

2.2 Social support has a positive direct relationship with smoking cessation and it has a positive indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation.

The findings of this study show that social support has a non-significant positive direct effect on smoking cessation and it has a non-significant positive indirect effect on smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation. This finding did not support the proposed

hypothesis. Social support in this study refers to the perceptions of ACS patients' in their support received from a spouse or romantic partner, or other significant persons which is picked up or identified by ACS patients in their attempt to stop smoking, as measured by the Partner Interaction Questionnaire (PIQ). The mean score of social support was 38.04 (SD= 8.38). The social support score in this study is quite low; it is possible that social support from spouse or partner only might not be enough to increase the smoking cessation rate in this population. Moreover, social support is provided in different ways such as: instrumental support through the provision of tangible support and emotional support by family members, friends, and health care providers (Bamnett & Lewis, 1994). Tangible support refers to providing support in a physical way, for example, helping someone with daily tasks (International Council of Nursing, 2012b). In addition, Bamnett and Lewis (1994) documented that having specific types of people (e.g., spouses, parents, or friends) within a network appears less relevant than the personal attributes of the people who comprise the support system. Previous studies also suggest that most cardiac patients in conjunction with the support of partner and family still need the support of a health care provider such as a cardiologist. The result of this study is inconsistent with previous studies which found that social support from spouse or romantic partner had a positive relationship with smoking cessation among cardiac patients (Wang et al., 2008).

2.3 Nicotine dependence has a negative direct relationship with smoking cessation and it has a negative indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation

The findings showed that nicotine dependence had a non-significant negative direct effect on smoking cessation in ACS patients after hospital discharge, which is

contrary to the hypothesis. It is possible that the level of nicotine dependence in this study was low, with mean score of 4.06 (SD=2.31). Cardiac patients who fail to quit smoking after a cardiac event may be a particular group of highly nicotine dependent smokers (Pipe et al., 2011). The result is inconsistency with previous studies that reported patients with high nicotine dependence are more likely to continue smoking after hospitalization for a cardiac event (Holtrop et al., 2009; Japuntich et al., 2011). Moreover, a study by Vogiatzis et al. (2010) found that a high dependency on nicotine, as expressed by Fagerstrom score, was a significant predictive factor for smoking cessation. They reported that high nicotine dependence was negatively related to smoking cessation.

Additionally, nicotine dependence had a non-significant negative effect on smoking cessation through self-efficacy in smoking cessation, which also does not support the hypothesis. This result is congruent with a previous study that reported correlation between nicotine dependence and self-efficacy in smoking cessation in adult smoker (Scheiding, 2009). This finding from a study by Scheiding (2009) revealed that dependence on nicotine (shown through the FTND score) did not significantly correlate with self-efficacy in smoking cessation (shown through SEQ-12 score). The study indicated that level of confidence about smoking cessation was not significantly related to degree of addiction to nicotine (Scheiding, 2009).

2.4 Depressive symptoms have a negative direct relationship with smoking cessation and have a negative indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation

The result of this study showed that depressive symptoms did have a non-significant direct effect on smoking cessation in ACS patients after hospital discharge. Findings did not support the hypothesis, which means depressive symptoms did not have a direct effect on smoking cessation in ACS patient smokers at 3 months following hospital discharge. This is inconsistent with previous studies that reported patients with depressive symptoms during the ACS hospitalization were less likely to quit smoking (Attebring et al., 2004; Brummett et al., 2002; Dawood et al., 2008). This might be explained by the fact that most participants in this study (54.7 %) had depressive symptom scores lower that 15 (normal depressive symptoms). It is possible that normal level of depressive symptoms may not affect smoking cessation in this study. Findings showed that the level of depressive symptoms in this patient group was lower than the level found in previous studies (Nawaz et al., 2013; van Berkel et al., 2000). Moreover, depressive symptoms were measured by CES-D, which assessed self-reported the experience of depressive symptoms during the past week while participant's hospitalization, but smoking cessation was assessed at 3 months after hospital discharge. It is possible that participants reported only recent depressive symptom at hospitalization that is depressive symptom might not reflect smoking cessation behavior during the entire 3 months following their discharge from the hospital.

However, results did show that depressive symptoms had a significant indirect negative effect on smoking cessation in ACS patients after hospital discharge

through self-efficacy in smoking cessation. This result is congruent with the hypothesis. As expected, depressive symptoms had a negative direct effect on self-efficacy in smoking cessation. A study by Perez et al. (2008) showed that high levels of depressive symptoms in cardiac patients leads to lower self-efficacy in smoking cessation. This finding is consistent with previous studies which reported higher scores of depressive symptom were related to lower self-efficacy in smoking cessation in the general population (Brummett et al., 2005).

2.5 Intensity of smoking cessation intervention has a positive indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation and motivation to quit smoking

The result of this study revealed that intensity of smoking cessation intervention has a non-significant positive indirect relationship with smoking cessation in ACS patients after hospital discharge through self-efficacy in smoking cessation and motivation to quit smoking, which does not support the hypothesis. Therefore, intensity of smoking cessation intervention did not have a direct effect on self-efficacy in smoking cessation and motivation to quit smoking. It is possible that the mean score of intensity of smoking cessation intervention in this study was low ($\bar{X}$ = 2.23, SD=1.45), so it did not have an effect self-efficacy and motivation to quit smoking. Furthermore, most of the participant in this study were 50 years or older ($\bar{X}$ = 54.6, SD = 10.14). It is possible that patients did not effectively note or understand the advice given when smoking counseling was conducted. Additionally, most participants were male (95.7%), and this could have had an effect which would be congruent with a previous study, which showed that females did better with an

intensive behavioral smoking cessation intervention, while men did better with nicotine replacement therapy regarding an intensive behavioral smoking cessation intervention (Pyrgakis, 2009). Moreover, treatment or intervention for smoking cessation is designed to move smokers along a continuum of readiness to quit and to increase or maintain motivation to quit, or to actively encourage the change process of smoking cessation (Miller & Rollnick, 2002). However, this study used the intensity of smoking cessation intervention questionnaire to measure the degree of intensive smoking cessation intervention that participants received from health care providers, which did not measure the utilization of knowledge that they received from smoking cessation intervention.

2.6 Previous CAD has a negative direct relationship with smoking cessation in ACS patients after hospital discharge

The findings of the current study showed that previous CAD had a significant negative direct effect on smoking cessation. As expected, those ACS patient smokers who had a known previous CAD history had a lower rate of smoking cessation. On the contrary, ACS patient smokers who had cardiac events such as a heart attack or chest pain and were admitted in the hospital for the first time were more likely to stop smoking at 3 months following hospital discharge. This might be explained in that ACS patients represent people with an emergent, potentially life threatening cardiac condition (Anderson et al., 2007). Hospitalization can provide a unique, teachable moment in which to influence patients' perceptions of risk from smoking related illness, and to enhance their motivation to quit (Emmons & Goldstein, 1992). The current results also are consistent with prior findings in population samples indicating that patients with a history of a previous cardiac event were significantly more likely

to continue smoking compared with those where the diagnosis was new, a finding that is consistent with Attebring et al. (2004). A study of Quist-Paulsen et al. (2005) supported the finding that ACS patients who have had no previous coronary artery disease and who are newly admitted in the hospital were statistically significantly predicted to be more successful in smoking cessation. Furthermore, Perez et al. (2008) also found that among ACS smokers who do not stop smoking after their first MI, it is less likely that they will stop smoking after any other cardiac event. It might be expected that having no previous CAD and being admitted in the hospital for the first time due to a cardiac event, patients would show increased motivation to stop smoking. On the contrary, patients who have a known CAD history, might be in a particular group with high nicotine dependence (Attebring et al., 2004).

2.7 Motivation to quit smoking has a positive relationship with smoking cessation ACS patients after hospital discharge

The result of this study showed that motivation to quit smoking had a non-significant positive direct effect on smoking cessation in these patients group. This finding is inconsistent with previous studies (Attebring et al., 2004), which indicate that participants who had high levels of motivation to quit smoking were more likely to quit smoking. It is possible that hospitalization for an acute coronary event provides an important opportunity for quitting smoking. Smokers are often strongly motivated to quit because the risks of smoking are now personal. Furthermore, most hospitals are smoke-free, requiring smokers to stop smoking at least temporarily (Allen et al., 2008). However, intensity of smoking cessation intervention in this study was low

($\bar{X}$ = 2.23, SD=1.45), possibly resulting in little increase in motivation to quit. Therefore, motivation to quit did not affect smoking cessation in this study.

Limitations

This current study has some limitations as follows:

1. This current study did not used biochemically validated self-reporteded smoking cessation such as cotinine level or carbon monoxide measurement. However, it is generally found that self-reports of smoking cessation are accurate in research studies (Caraballo, Giovino, Pechacek, & Mowery, 2001).

2. The intensity of smoking cessation intervention questionnaires used in this study intended to measure the level smoking cessation intervention that ACS patient smokers received from their health care providers, such as advice or counseling. This instrument did not measure the quality of smoking cessation intervention, and ACS patients did not report the utilization of knowledge that they received from the smoking cessation intervention.

Implication for nursing practice

Smoking cessation in this study was related to perceived self-efficacy in smoking cessation, history of CAD, and level of depressive symptoms. Smoking cessation interventions in hospitals would have a beneficial effect on patients' smoking cessation behaviors. Smoking cessation interventions for ACS patients who smoke should pay particular attention to increasing self- efficacy in smoking cessation and decreasing level of depressive symptom. Furthermore, health care providers should be interested in disease history, especially CAD history. In order to promote smoking cessation among ACS patients, nurses should focus on early detection of

smoking behavior and early intervene to encourage ACS patient smokers to perform smoking cessation. The effectiveness of smoking cessation is likely to increase through intervention as soon as possible. Cardiac nurses should work together with other health care professionals to provide effective smoking cessation interventions.

Recommendations for future research

The current study focused on ACS patient smoker and smoking cessation. This study examined the relationship of self-efficacy in smoking cessation, social support, motivation to quit smoking, nicotine dependence, depressive symptoms, previous CAD, and intensity of smoking cessation intervention on smoking cessation in ACS patient smokers after hospital discharge. The findings of the present study will serve as a reference point for further interventions to increase smoking cessation rates in these patients. Based on the findings of the present study, the following recommendations for future research are made follow:

1. Studies should be conducted to replicate the present study in diverse settings and with a larger sample size recruited by means of random sampling to increase generalizability of the findings.

2. A longitudinal study should be conducted to assess the change of smoking cessation over time at 6 and 12 months in this patient group.

3. All predictors of smoking cessation among ACS patients had low relationships (Path coefficient < .60). Therefore, future research should investigate these variables further.

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APPENDICES

Appendix A
Approval of dissertation proposal

ประกาศ

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

เรื่อง การอนุมัติหัวข้อดุษฎีนิพนธ์นิพนธ์ ครั้งที่ 3/2554 ประจำปีการศึกษา 2554

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

รหัสนิสิต	5277973036
ชื่อ-นามสกุล	เรืออากาศโทหญิง จิรภิญญา คำรัตน์
สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์
อาจารย์ที่ปรึกษาร่วม	ผู้ช่วยศาสตราจารย์ ดร. สุนิดา ปรีชาวงษ์
ประธานกรรมการสอบฯ	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
กรรมการสอบฯ	รองศาสตราจารย์ ดร. วราภรณ์ ชัยวัฒน์
กรรมการสอบฯ	รองศาสตราจารย์ ดร. สิริพันธุ์ สุวรรณมรรคา
กรรมการสอบฯ	Dr Stephen Hamann
ชื่อหัวข้อดุษฎีนิพนธ์	ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล PREDICITING FACTORS OF SMOKING CESSATION IN ACUTE CORONARY SYNDROME PATIENTS AFTER HOSPITAL DISCHARGE
ครั้งที่อนุมัติ	3/2554
ระดับ	ปริญญาเอก

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

รหัสนิสิต	5277978136
ชื่อ-นามสกุล	Mrs. Lely Lusmilasari
สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ดร. วราภรณ์ ชัยวัฒน์
อาจารย์ที่ปรึกษาร่วม	ผู้ช่วยศาสตราจารย์ ดร. ประนอม รอดคำดี
ประธานกรรมการสอบฯ	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
กรรมการสอบฯ	รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์
กรรมการสอบฯ	ศาสตราจารย์ ดร. ศิริชัย กาญจนวาสี
กรรมการสอบฯ	ผู้ช่วยศาสตราจารย์ ดร. ทัศนีย์ ประสบกิตติคุณ
ชื่อหัวข้อดุษฎีนิพนธ์	การพัฒนาแบบสอบถามพฤติกรรมการให้อาหารเด็กวัยเตาะแตะของบิดามารดาอินโดนีเซีย THE DEVELOPMENT OF THE PARENTAL FEEDING BEHAVIOR QUESTIONNAIRE (PFBQ) FOR INDONESIAN PARENTS WITH TODDLERS
ครั้งที่อนุมัติ	3/2554
ระดับ	ปริญญาเอก

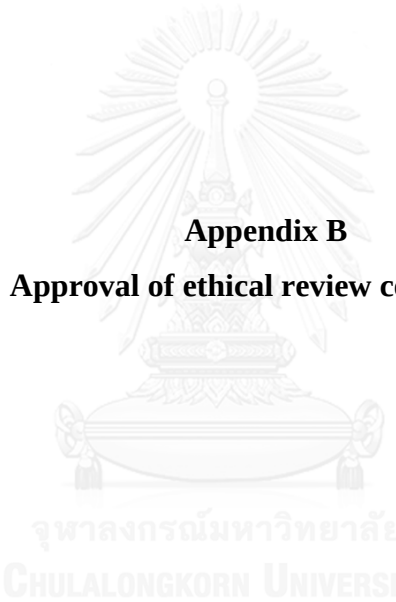
นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

รหัสนิสิต	5277980336
ชื่อ-นามสกุล	Miss Ardhini Dwi Utari
สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
อาจารย์ที่ปรึกษาร่วม	รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์
ประธานกรรมการสอบฯ	รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์
กรรมการสอบฯ	ผู้ช่วยศาสตราจารย์ ดร. สุนิดา ปรีชาวงษ์
กรรมการสอบฯ	รองศาสตราจารย์ ดร. สิริพันธุ์ สุวรรณมรรคา
กรรมการสอบฯ	รองศาสตราจารย์ ดร. อรสา พันธ์ภักดี
ชื่อหัวข้อดุษฎีนิพนธ์	ผลของโปรแกรมการพัฒนาสมรรถนะแห่งตนด้านเบาหวานต่อการควบคุมระดับน้ำตาลของผู้ป่วยเบาหวานชนิดที่สอง THE EFFECT OF DIABETES SELF-EFFICACY PROGRAM ON GLYCEMIC CONTROL OF TYPE 2 DIABETES PATIENTS
ครั้งที่อนุมัติ	3/2554
ระดับ	ปริญญาเอก

จากมติคณะกรรมการบริหารคณะพยาบาลศาสตร์ ครั้งที่ 13/2555 วันที่ 15 พฤษภาคม 2555

ประกาศ ณ วันที่ 25 พฤษภาคม พ.ศ. 2555

(รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์)
คณบดีคณะพยาบาลศาสตร์



Appendix B

Approval of ethical review committee

COA No. 753/2013

IRB No. 528/56

INSTITUTIONAL REVIEW BOARD

Faculty of Medicine, Chulalongkorn University

1873 Rama 4 Road, Patumwan, Bangkok 10330, Thailand, Tel 662-256-4493 ext 14, 15

Certificate of Approval

The Institutional Review Board of the Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, has approved the following study which is to be carried out in compliance with the International guidelines for human research protection as Declaration of Helsinki, The Belmont Report, CIOMS Guideline and International Conference on Harmonization in Good Clinical Practice (ICH-GCP)

Study Title	: Predicting factors of smoking cessation in acute coronary syndrome patients after hospital discharge.
Study Code	: -
Principal Investigator	: Flight Lieutenant Jirapinya Khamrath.
Affiliation of PI	: Faculty of Nursing, Chulalongkorn University.
Review Method	: Expedited
Continuing Report	: At least once annually or submit the final report if finished.
Document Reviewed	:

1. Protocol Version 2.0/28 Nov 2013
2. Protocol Synopsis Version 2.0/28 Nov 2013
3. Information sheet for research participant Version 2.0 Dated 28 Nov 2013
4. Informed Consent Form Version 2.0 Dated 28 Nov 2013
5. Questionnaire for use in research Version 1.0 Dated 10 Nov 2013
6. CURRICULUM VITAE
7. Budget

Signature:..... Signature:.....

(Emeritus Professor Tada Sueblinvong MD) (Associate Professor Onanong Kulaputana MD, PhD)

Chairperson — The Institutional Review Board

Member and Assistant Secretary, Acting Secretary The Institutional Review Board

Date of Approval : December 12, 2013

Approval Expire Date : December 11, 2014

Approval granted is subject to the following conditions: (see back of this Certificate)

All approved investigators must comply with the following conditions:

1. Strictly conduct the research as required by the protocol;
2. Use only the information sheet, consent form (and recruitment materials, if any), interview outlines and/or questionnaires bearing the Institutional Review Board's seal of approval ; and return one copy of such documents of the first subject recruited to the Institutional Review Board (IRB) for the record;
3. Report to the Institutional Review Board any serious adverse event or any changes in the research activity within five working days;
4. Provide reports to the Institutional Review Board concerning the progress of the research upon the specified period of time or when requested;
5. If the study cannot be finished within the expire date of the approval certificate, the investigator is obliged to reapply for approval at least one month before the date of expiration.
6. If the research project is completed, the researcher must be form the Faculty of Medicine, Chulalongkorn University.

* A list of the Institutional Review Board members (names and positions) present at the meeting of Institutional Review Board on the date of approval of this study has been attached. All approved documents will be forwarded to the principal investigator.

COA No. 034/2014
IRB No. 095/57

คณะกรรมการจริยธรรมการวิจัยในมนุษย์
มหาวิทยาลัยนเรศวร
99 หมู่ 9 ตำบลท่าโพธิ์ อำเภอเมือง จังหวัดพิษณุโลก 65000 เบอร์โทรศัพท์ 05596 8642

เอกสารรับรองโครงการวิจัย

คณะกรรมการจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยนเรศวร ดำเนินการให้การรับรองโครงการวิจัยตามแนวทางหลักจริยธรรมการวิจัยในคนที่เป็นมาตรฐานสากล ได้แก่ Declaration of Helsinki, The Belmont Report, CIOMS Guideline และ International Conference on Harmonization in Good Clinical Practice หรือ ICH-GCP

ชื่อโครงการ : ปัจจัยที่ส่งผลต่อการตัดสินใจเลือกซื้อรถจักรยานยนต์ของประชากรภายในเขตอำเภอเมือง จังหวัดพิษณุโลก

ผู้วิจัยหลัก : เรืออากาศเอกหญิงจิรภิญญา คำรัตน์

สังกัดหน่วยงาน : คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

วิธีทบทวน : แบบเร่งรัด

รายงานความก้าวหน้า : ส่งรายงานความก้าวหน้าอย่างน้อย 1 ครั้ง/ปี หรือ ส่งรายงานฉบับสมบูรณ์หากดำเนินโครงการเสร็จสิ้นก่อน 1 ปี

เอกสารรับรอง

1. AF 01-10 เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
2. AF 02-10 เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
3. AF 03-10 เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
4. AF 04-10 เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
5. AF 05-10 เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
6. สรุปโครงการวิจัยฉบับย่อ เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
7. โครงการวิจัย เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
8. ประวัติผู้วิจัย เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
9. งบประมาณที่ได้รับโดยย่อ เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556
10. แบบสอบถามสำหรับใช้ในการวิจัย เวอร์ชั่น 1.0 วันที่ 12 พฤศจิกายน 2556

ลงนาม

(นายแพทย์สมบูรณ์ ตันสุภสวัสดิกุล)
ประธานคณะกรรมการจริยธรรมการวิจัยในมนุษย์
มหาวิทยาลัยนเรศวร

วันที่รับรอง : 12 กุมภาพันธ์ 2557
วันหมดอายุ : 12 กุมภาพันธ์ 2558

ทั้งนี้ การรับรองนี้มีเงื่อนไขดังที่ระบุไว้ด้านหลังทุกข้อ (ดูด้านหลังของเอกสารรับรองโครงการวิจัย)

เอกสารรับรองโครงการวิจัย

โดย

คณะกรรมการจริยธรรมการวิจัย โรงพยาบาลภูมิพลอดุลยเดช

กรมแพทย์ทหารอากาศ

ขอรับรองว่า

โครงการ ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล

โดย เรืออากาศเอกหญิงจิรภิญญา คำรัตน์

สังกัด นิสิตปริญญาเอก
คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

เอกสารที่พิจารณา: ๑. โครงร่างงานวิจัย
๒. เอกสารข้อมูลสำหรับผู้ป่วย และ เอกสารแสดงความยินยอมเข้าร่วมการวิจัย ฉบับภาษาไทย

คณะกรรมการจริยธรรม โรงพยาบาลภูมิพลอดุลยเดช กรมแพทย์ทหารอากาศ ได้พิจารณารายละเอียดโครงร่างงานวิจัย เอกสารข้อมูลสำหรับผู้ป่วย เอกสารแสดงความยินยอมเข้าร่วมการวิจัยภาษาไทยแล้วเห็นว่าไม่ขัดต่อสวัสดิภาพหรือก่อให้เกิดภยันตรายแก่ผู้ถูกวิจัยแต่ประการใด

จึงเห็นสมควรให้ดำเนินการวิจัยในขอบข่ายของโครงการที่เสนอได้ ณ วันที่ ๒๔ มกราคม ๒๕๕๗

นาวาอากาศเอก
(สันติ ศรีเสริมโภค)
ประธานคณะกรรมการจริยธรรมการวิจัย

พลอากาศตรี
(สุชิน บุญมา)
ผู้อำนวยการโรงพยาบาลภูมิพลอดุลยเดช
กรมแพทย์ทหารอากาศ

เอกสารรับรองของคณะกรรมการจริยธรรมการวิจัยในมนุษย์
คณะแพทยศาสตร์ มหาวิทยาลัยสงขลานครินทร์

เอกสารเพื่อแสดงว่าคณะกรรมการจริยธรรมการวิจัยในมนุษย์ ได้พิจารณาและรับรองเอกสารที่เกี่ยวข้องกับโครงการวิจัยนี้ ดังนี้

รหัสโครงการ	:	56-489-19-6
ชื่อโครงการ (ภาษาไทย)	:	ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังจากออกจากโรงพยาบาล
ชื่อโครงการ (ภาษาอังกฤษ)	:	Predicting Factors of Smoking Cessation in Acute Coronary Syndrome Patients After Hospital Discharge.
หัวหน้าโครงการวิจัย	:	เรืออากาศเอกหญิงจิรภิญญา คำรัตน์
หน่วยงานที่สังกัด	:	คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

เอกสารที่รับรอง :

1. แบบเสนอโครงการวิจัย (Exempt Review)
2. เอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย
3. หนังสือแสดงเจตนายินยอมเข้าร่วมการวิจัย
4. ข้อปฏิบัติเพื่อพิทักษ์สิทธิ์ผู้ป่วยของโรงพยาบาลสงขลานครินทร์ คณะแพทยศาสตร์
5. แบบบันทึกข้อมูล
6. ประวัติผู้วิจัย

คณะกรรมการจริยธรรมการวิจัยในมนุษย์ คณะแพทยศาสตร์ มหาวิทยาลัยสงขลานครินทร์ ดำเนินการให้การรับรองโครงการวิจัยตามแนวทางหลักจริยธรรมการวิจัยในมนุษย์ที่เป็นสากล ได้แก่ Declaration of Helsinki, The Belmont Report, CIOMS Guidelines และ The international Conference on Harmonization in Good Clinical Practice (ICH-GCP)

.....

(รองศาสตราจารย์นายแพทย์บุญสิน ตั้งตระกูลวนิช)
รองประธานคณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์

วันที่รับรอง : 25 พฤศจิกายน 2556
วันที่หมดอายุ : 24 พฤศจิกายน 2557

2 WAN LANG Rd. BANGKOKNOI
BANGKOK 10700

Tel. +66 2419 2667-72
Fax. +66 2411 0162

Siriraj Institutional Review Board

Certificate of Approval

COA no. Si 057/2014

Protocol Title : Predicting factors of smoking cessation in acute coronary syndrome patients after hospital discharge

Protocol number : 804/2556(EC1)

Principal Investigator/Affiliation : Flight Lieutenant Jirapinya Khamrath / Faculty of Nursing, Chulalongkorn University

Research site : Faculty of Medicine Siriraj Hospital

Approval includes :

1. SIRB submission form
2. Participant Information Sheet
3. Informed Consent Form
4. Telephone script
5. Questionnaire
6. Case Record Form
7. Principle Investigator's curriculum vitae

Approval date : January 30, 2014

Expired date : January 29, 2015

This is to certify that Siriraj Institutional Review Board is in full Compliance with international guidelines for human research protection such as the Declaration of Helsinki, the Belmont Report, CIOMS Guidelines and the International Conference on Harmonization in Good Clinical Practice (ICH-GCP).

(Prof. Jarupim Soongswang, M.D.)
Chairperson

7 FEB 2014
date

(Clin. Prof. Udom Kachintorn, M.D.)
Dean of Faculty of Medicine Siriraj Hospital

10 FEB 2014
date

All Siriraj Institutional Review Board Approved Investigators must comply with the Following :

1. Conduct the research as required by the Protocol ;
2. Use only the Consent Form bearing the Siriraj Institutional Review Board "APPROVED" stamp ;
3. Report to Siriraj Institutional Review Board all of serious illness of any study subject ;
4. Promptly report to Siriraj Institutional Review Board any new information that may adversely affect the safety of the subjects or the conduct of the trial ;
5. Provide reports to Siriraj Institutional Review Board concerning the progress of the research, when requested ;
6. Conduct the informed consent process without coercion or undue influence, and provide the potential subject sufficient opportunity to consider whether or not to participate.

รหัสเอกสารรับรอง 041/2556

เอกสารรับรองจริยธรรมโครงการวิจัยในมนุษย์

คณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสรรพสิทธิประสงค์ อุบลราชธานี

ชื่อโครงการ ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเฉียบพลันหลังจากออกจากโรงพยาบาล

Predicting factors of smoking cessation in acute coronary syndrome patients after hospital discharge

ผู้วิจัยหลัก เรืออากาศเอกหญิง จิรภิญญา ค่ารัตน์ และคณะ

หน่วยงาน/สถาบัน คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสรรพสิทธิประสงค์ อุบลราชธานี ได้พิจารณารายละเอียดของโครงร่างการวิจัย เอกสารข้อมูลสำหรับอาสาสมัคร เอกสารแสดงความยินยอมเข้าร่วมการวิจัยภาษาไทยแล้ว มีมติสมควรให้ดำเนินการวิจัยในขอบเขตของโครงการที่เสนอได้

.....
(นายแพทย์จิรวัฒน์ มูลศาสตร์)
ประธานคณะกรรมการการวิจัยในมนุษย์

.....
(นายแพทย์ชลิต ทองประยูร)
ผู้อำนวยการโรงพยาบาลสรรพสิทธิประสงค์

วันที่รับรอง : - 2 ส.ค. 2557 **วันหมดอายุของการรับรอง:** 1- 1 ส.ค. 2558

เอกสารที่รับรองรวมถึง
1. โครงร่างการวิจัย
2. ใบยินยอมและเอกสารชี้แจงอาสาสมัคร
3. ผู้วิจัย/คณะผู้วิจัย
4. แบบสอบถาม/แบบบันทึกข้อมูล

ผู้วิจัยที่ได้รับการรับรองต้องยอมตามเงื่อนไขดังต่อไปนี้

1.ผู้วิจัยรับทราบว่าเป็นการผิดจริยธรรมที่จะรวบรวมข้อมูลที่ศึกษาก่อนโครงการได้รับการรับรองโดยคณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสรรพสิทธิประสงค์ อุบลราชธานี

2.กิจกรรมของโครงการวิจัยต้องจบลงภายในวันหมดอายุของการรับรอง ถ้าต้องการขยายเวลา ต้องยื่นแสดงความจำนงก่อนวันหมดอายุ 30 วัน

3.ผู้วิจัยต้องทำการศึกษาตรงตามที่ระบุไว้ในโครงร่างงานวิจัยอย่างเคร่งครัด

4.ใช้เพียงแบบฟอร์มที่คณะกรรมการจริยธรรมฯได้รับรอง (ใบยินยอมและเอกสารชี้แจงอาสาสมัคร, แผ่นประชาสัมพันธ์ เป็นต้น) และ คณะกรรมการจริยธรรมฯมีสิทธิตรวจสอบเอกสารดังกล่าวได้ทุกครั้งเมื่อต้องการ

5.ในกรณีที่เกิดเหตุการณ์ข้างเคียงร้ายแรง ต้องรายงานคณะกรรมการจริยธรรมฯภายใน 5 วันทำการ

6.ในกรณีที่มีการเปลี่ยนแปลงกิจกรรมไปจากเดิมที่รับรองไว้ ต้องรายงานคณะกรรมการจริยธรรมฯ ก่อนที่จะเริ่มทำกิจกรรมนั้นๆ

7.ส่งรายงานการวิจัยฉบับสมบูรณ์หลังโครงการวิจัยเสร็จสิ้นลงแล้ว จำนวน 1 ฉบับ

RL 01_2555

ที่ IRB/RTA 0143/2557

คณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก

317 ถนนราชวิถี เขต ราชเทวี กรุงเทพฯ 10400

รหัสโครงการ: Q029q/56_Exp

ชื่อโครงการวิจัย : ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล
[Predicting factors of smoking cessation in acute coronary syndrome patients after hospital discharge.]

เลขที่โครงการวิจัย : -

ชื่อผู้วิจัยหลัก: เรืออากาศเอกหญิงจิรภิญญา คำรัตน์

สังกัดหน่วยงาน : นิสิตหลักสูตรพยาบาลศาสตร์ดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สถานที่ทำการวิจัย: โรงพยาบาลระดับตติยภูมิ จำนวน 7 โรงพยาบาลทั่วประเทศไทย

เอกสารรับรอง :

(1) โครงร่างการวิจัยฉบับภาษาไทย Version 2 วันที่ 9 มกราคม 2557
(2) แบบบันทึกข้อมูล Version 2 วันที่ วันที่ 9 มกราคม 2557
(3) เอกสารชี้แจงและหนังสือแสดงความยินยอมเข้าร่วมโครงการวิจัย Version 2 วันที่ วันที่ 9 มกราคม 2557
(4) แบบสอบถามในการวิจัย Version 2 วันที่ วันที่ 9 มกราคม 2557
(5) ประวัติผู้วิจัย Version 1 วันที่ วันที่ 28 พฤศจิกายน 2556

ขอรับรองว่าโครงการดังกล่าวข้างต้นได้ผ่านการพิจารณารับรองจากคณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก ว่าสอดคล้องกับปฏิญญาเฮลซิงกิ และแนวปฏิบัติ ICH GCP

วันที่รับรองด้านจริยธรรมของโครงร่างการวิจัย: 17 มกราคม 2557
วันสิ้นสุดการรับรอง: 16 กรกฎาคม 2557
ความถี่ของการส่งรายงานความก้าวหน้าของการวิจัย: รายงานความก้าวหน้าทุก 6 เดือน

พันเอกหญิง.....
(เยาวนา ธนะพัฒน์)
ประธานคณะอนุกรรมการพิจารณาโครงการวิจัย พบ.

พันเอก.....
(สหพล อนันต์นำเจริญ)
เลขานุการและอนุกรรมการพิจารณาโครงการวิจัย พบ.

Appendix C

List of the experts

List of the experts

1. Assistant Professor Suthus Rungruanghiranya

   Faculty of Medicine, Srinakharinwirot University

2. Associate Professor Dr. Orasa Panpakdee

   Faculty of Nursing, Mahidol University

3. Assistant Professor Dr. Lukana Termsirikulchai

   Faculty of Public Health, Mahidol University

4. Assistant Professor Dr. Rungnapa Panitrat

   Faculty of Nursing, Mahidol University

5. Assistant Professor Dr. Weeraphol Saengpanya

   Faculty of Education, Chulalongkorn University

Appendix D
Research Instruments

วันที่ตอบแบบสอบถาม..... **รหัสผู้ให้ข้อมูล.....**

แบบสอบถามสำหรับใช้ในการวิจัย
“ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล”

ของ

เรืออากาศเอกหญิง จิรภิญญา คำรัตน์
นิสิตหลักสูตรดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คำชี้แจง

แบบสอบถามฉบับนี้จัดทำขึ้นเพื่อใช้ในการเก็บรวบรวมข้อมูลเกี่ยวกับพฤติกรรมการเลิกสูบบุหรี่และปัจจัยที่เกี่ยวข้องกับการเลิกสูบบุหรี่ของผู้ป่วยโรคกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล แบบสอบถามมีทั้งหมด 7 ชุดคำถาม ประกอบด้วย

แบบสอบถามข้อมูลส่วนบุคคล	จำนวน 12 ข้อ
แบบสอบถามแรงสนับสนุนทางสังคมในการเลิกบุหรี่	จำนวน 20 ข้อ
แบบประเมินภาวะติดนิโคติน	จำนวน 6 ข้อ
แบบประเมินภาวะซึมเศร้า	จำนวน 20 ข้อ
แบบสอบถามการได้รับบริการช่วยเลิกสูบบุหรี่	จำนวน 8 ข้อ
แบบสอบถามแรงจูงใจในการเลิกบุหรี่	จำนวน 20 ข้อ
แบบสอบถามสมรรถนะแห่งตนในการเลิกสูบบุหรี่	จำนวน 12 ข้อ

แบบสอบถามข้อมูลส่วนบุคคล

<u>คำชี้แจง</u> แบบสอบถามต่อไปนี้ เป็นแบบสอบถามข้อมูลส่วนบุคคล ต้องการทราบถึงข้อมูลทั่วไปของท่าน กรุณาทำเครื่องหมาย √ ลงใน หน้าข้อความที่ตรงกับความเป็นจริงมาก ( ) ที่สุด

เพศ ( ) ชาย ( ) หญิง

อายุ.....ปี

ระดับการศึกษา

( ) ประถมศึกษา ( ) มัธยมศึกษา ( ) อนุปริญญา

( ) ปริญญาตรี ( ) สูงกว่าปริญญาตรี ( ) อื่นๆ โปรดระบุ.....

สถานภาพสมรส

( ) โสด ( ) คู่/ แต่งงานและอาศัยอยู่ด้วยกัน

( ) คู่/ แต่งงานแต่แยกกันอยู่ ( ) หย่าร้าง/ หม้าย

( ) อื่นๆ (โปรดระบุ).....

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แบบสอบถามแรงสนับสนุนทางสังคมในการเลิกบุหรี่

<u>คำชี้แจง</u> ข้อความต่อไปนี้ เป็นการได้รับการสนับสนุนทางสังคมในการเลิกสูบบุหรี่ของท่าน กรุณาทำเครื่องหมาย √ ลงในช่องตารางที่ตรงกับความเป็นจริงมากที่สุด

คุณจะเลิกสูบบุหรี่เมื่อคู่ครองหรือคนใกล้ชิด	**ไม่เคยเลย**	**เกือบจะไม่เคย**	**บางครั้ง**	**ค่อนข้างบ่อย**	**บ่อยมาก**
1. ขอให้คุณเลิกสูบบุหรี่					
2. ให้ความเห็นว่าการสูบบุหรี่เป็นพฤติกรรมที่ไม่ดี					
3. พูดให้คุณเลิกสูบบุหรี่					
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19. แสดงความพอใจในความพยายามของคุณที่จะเลิก					
20. เข้าร่วมกิจกรรมกับคุณที่จะทำให้คุณไม่กลับไปสูบบุหรี่อีก (เช่น ไปเดินเล่นแทนการสูบบุหรี่)					

แบบประเมินภาวะการติดนิโคติน

<u>คำชี้แจง</u> กรุณาทำเครื่องหมาย √ ลงในช่อง ( ) ที่ตรงกับความเป็นจริงมากที่สุด

1.โดยปกติท่านสูบบุหรี่กี่มวนต่อวัน

( ) 10 มวนหรือน้อยกว่า ( ) 11-20 มวน ( ) 21-30 มวน ( ) 31 มวนขึ้นไป

2. ท่านสูบบุหรี่มวนแรกหลังตื่นนอนตอนเช้าแล้วนานแค่ไหน

( ) ภายใน 5 นาที ( ) 6-30 นาที ( ) 31-60 นาที ( ) มากกว่า 60 นาทีขึ้นไป

3.ท่านสูบบุหรี่ในช่วงชั่วโมงแรกหลังตื่นนอนมากกว่าช่วงอื่นๆของวัน

( ) ใช่ ( ) ไม่ใช่

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แบบประเมินภาวะซึมเศร้า

<u>คำชี้แจง</u> ข้อความต่อไปนี้ เป็นข้อความแสดงถึงความรู้สึกของท่านในระยะเวลา 1 สัปดาห์ที่ผ่านมา กรุณาทำเครื่องหมาย √ ลงในช่องตารางที่ตรงกับความเป็นจริงมากที่สุด

ความรู้สึกของท่านใน 1 สัปดาห์ที่ผ่านมา	ไม่เลย < 1 วัน ต่อ สัปดาห์	นานๆครั้ง 1-2 วันต่อ สัปดาห์	ค่อนข้าง บ่อย 3-4 วันต่อ สัปดาห์	บ่อยครั้ง 5-7 วัน ต่อ สัปดาห์
1. ฉันรู้สึกหงุดหงิดง่าย				
2. ฉันรู้สึกเบื่ออาหาร				
3. ฉันรู้สึกว่า ฉันไม่สามารถขจัดความหม่นหมองออกไป แม้ว่าจะมีคนในครอบครัวหรือเพื่อนคอยช่วยเหลือ				
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18.ฉันรู้สึกไม่มีความสุข				
19.ฉันรู้สึกว่าผู้คนรอบข้างไม่ชอบฉัน				
20.ฉันรู้สึกท้อถอยในชีวิต				

แบบสอบถามการได้รับบริการช่วยเลิกบุหรี่

<u>คำชี้แจง</u> ข้อความต่อไปนี้ เป็นข้อคำถามเกี่ยวกับการได้รับบริการช่วยเลิกสูบบุหรี่ซึ่งมีอยู่ 3 ประเภท ได้แก่ คำแนะนำ หมายถึง การบอกหรือกระตุ้นให้เลิกบุหรี่ พร้อมวิธีการเลิกบุหรี่โดยสังเขป ใช้เวลา 3- 10 นาที

คำปรึกษา หมายถึง การกระตุ้นให้เลิกบุหรี่ แนะนำวิธีการเลิกบุหรี่ พร้อมบอกถึงวิธีการแก้ปัญหาต่างๆ ใช้เวลา 20-40 นาที

การได้รับข้อมูลจากสื่อ หมายถึง การได้รับข้อมูลเกี่ยวกับพิษภัยบุหรี่หรือวิธีการเลิกบุหรี่

กรุณาทำเครื่องหมาย √ ลงในช่อง ( ) ที่ตรงกับความเป็นจริงมากที่สุด

1. ท่านเคยได้รับคำแนะนำ จากบุคลากรด้านสุขภาพ เช่น แพทย์ พยาบาล เภสัชกร นักจิตวิทยา หรือไม่

( ) ไม่เคย ( ) เคย

2. ท่านเคยได้รับคำปรึกษา จากบุคลากรด้านสุขภาพ เช่น แพทย์ พยาบาล เภสัชกร นักจิตวิทยา หรือไม่

( ) ไม่เคย ( ) เคย

3. ท่านเคยโทรศัพท์ไปขอรับคำปรึกษาจากศูนย์บริการเลิกบุหรี่ทางโทรศัพท์แห่งชาติ (1600) หรือไม่

( ) ไม่เคย ( ) เคย

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แบบสอบถามแรงจูงใจในการเลิกบุหรี่

<u>คำชี้แจง</u> ข้อความต่อไปนี้ เป็นเหตุผลที่ทำให้ท่านอยากเลิกบุหรี่ กรุณาอ่านข้อความและตัดสินใจว่า แต่ละข้อเป็นเหตุผลที่ทำให้ท่านอยากเลิกบุหรี่มากน้อยเพียงใด กรุณาทำเครื่องหมาย √ ลงในช่องที่ตรงกับความเป็นจริงมากที่สุด

เหตุผลที่ทำให้อยากเลิกบุหรี่	ไม่จริงเลย	จริงเล็กน้อย	จริงปานกลาง	ค่อนข้างจริง	จริงมากที่สุด
1. เพราะฉันเป็นห่วงว่าจะทุกข์ทรมานจากโรคร้ายแรงถ้าฉันไม่เลิกสูบบุหรี่					
2.เพื่อแสดงให้เห็นว่าฉันสามารถเลิกสูบบุหรี่ได้ถ้าฉันต้องการจะทำจริง ๆ					
3. เพื่อที่ว่าเส้นผมและเสื้อผ้าของฉันจะได้					
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19. เพื่อที่ฉันจะได้ไม่ต้องทำความสะอาดบ้านหรือรถบ่อย ๆ					
20. เพราะว่าฉันจะได้รับเงินรางวัลสำหรับการเลิก (เงินจากเพื่อนหรือสมาชิกครอบครัว เงินโบนัสจากที่ทำงาน เป็นต้น)					

แบบสอบถามสมรรถนะแห่งตนในการเลิกสูบบุหรี่

<u>คำชี้แจง</u> ข้อความต่อไปนี้ เป็นระดับความมั่นใจในการเลิกบุหรี่ของท่าน เมื่ออยู่ในสถานการณ์ต่างๆ กรุณาทำเครื่องหมาย √ ลงในช่องตารางที่ตรงกับความเป็นจริงมากที่สุด

ฉันจะไม่สูบบุหรี่ในสถานการณ์ต่อไปนี้	***<u>ไม่</u>***มั่นใจมากที่สุด	***<u>ไม่</u>***มั่นใจมาก	มั่นใจปานกลาง	มั่นใจมาก	มั่นใจมากที่สุด
1. เมื่อฉันรู้สึกกังวลใจ					
2. เมื่อฉันรู้สึกซึมเศร้า					
3. เมื่อฉันรู้สึกโกรธ					
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11. หลังมื้ออาหาร					
12. ขณะดื่มกาแฟหรือชา					

********ขอขอบพระคุณที่กรุณาให้ความร่วมมือในการตอบแบบสอบถาม********

สำหรับผู้วิจัย

( )STEMI ( ) NSTEM ( ) UA ( ) อื่นๆ.....

แบบสัมภาษณ์พฤติกรรมการเลิกบุหรี่

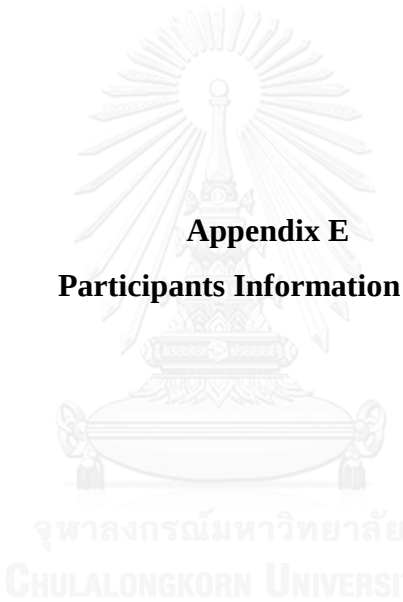
หมายเหตุ แบบสัมภาษณ์นี้ผู้วิจัยจะเป็นผู้โทรศัพท์ไปสัมภาษณ์ผู้มีส่วนร่วมในการวิจัยหรืออาสาสมัครด้วยตนเองในเดือนที่ 3 หลังจำหน่ายออกจากโรงพยาบาล

<u>คำชี้แจง</u> แบบสัมภาษณ์นี้ต้องการทราบถึงข้อมูลเกี่ยวกับการเลิกบุหรี่ของท่านหลังออกจากโรงพยาบาล กรุณาตอบคำถามความเป็นจริง

หลังออกจากโรงพยาบาลจนถึงปัจจุบันท่านเลิกสูบบุหรี่ได้ต่อเนื่องกัน 90 วัน ใช่หรือไม่

( ) ใช่

( ) ไม่ใช่ ปัจจุบันสูบบุหรี่วันละ.....มวน



Appendix E

Participants Information sheet

ข้อมูลสำหรับผู้มีส่วนร่วมในการวิจัย

ชื่อโครงการวิจัย **ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล**

ผู้สนับสนุนการวิจัย: อยู่ระหว่างขอทุนวิทยานิพนธ์จากศูนย์วิจัยและจัดการความรู้เพื่อการควบคุมยาสูบ

ผู้ทำวิจัย

ชื่อ เรืออากาศเอกหญิงจิรภิญญา คำรัตน์

ที่อยู่ คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย อาคารบรมราชชนนีศรีศตพรรษ ชั้น 11 ถนนพระราม 1 เขตปทุมวัน กรุงเทพฯ 10330 เบอร์โทรศัพท์ 087-9200499

เรียน ผู้เข้าร่วมโครงการวิจัยทุกท่าน

ท่านได้รับเชิญให้เข้าร่วมในโครงการวิจัยนี้เนื่องจากท่านเป็นผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันที่มารับการรักษาตัวในโรงพยาบาลและสูบบุหรี่ ก่อนที่ท่านจะตัดสินใจเข้าร่วมในการศึกษาวิจัยดังกล่าว ขอให้ท่านอ่านเอกสารฉบับนี้อย่างถี่ถ้วน เพื่อให้ท่านได้ทราบถึงเหตุผลและรายละเอียดของการศึกษาวิจัยในครั้งนี้ หากท่านมีข้อสงสัยใดๆ เพิ่มเติม กรุณาซักถามจากทีมงานของผู้ทำวิจัยหรือผู้ร่วมทำวิจัยซึ่งจะเป็นผู้สามารถตอบคำถามและให้ความกระจ่างแก่ท่านได้

ท่านสามารถขอคำแนะนำในการเข้าร่วมโครงการวิจัยนี้จากครอบครัว เพื่อน หรือแพทย์ประจำตัวของท่านได้ ท่านมีเวลาอย่างเพียงพอในการตัดสินใจโดยอิสระ ถ้าท่านตัดสินใจแล้วว่าจะเข้าร่วมในโครงการวิจัยนี้ ขอให้ท่านลงนามในเอกสารแสดงความยินยอมของโครงการวิจัยนี้

เหตุผลความเป็นมา

การสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันมีความเสี่ยงที่ภาวะแทรกซ้อนหลายประการ เช่น เกิดภาวะหัวใจขาดเลือดเฉียบพลันซ้ำ ต้องกลับมารักษาตัวในโรงพยาบาลหรือเสียชีวิตเฉียบพลันจากโรคหัวใจ จากการศึกษาที่ผ่านมาพบว่าผู้ป่วยจะหยุดสูบบุหรี่ขณะที่มาพักรักษาตัวในโรงพยาบาล หากผู้ป่วยเหล่านี้สามารถเลิกบุหรี่ได้ต่อไปหลังจากออกจากโรงพยาบาลช่วยลด

ภาวะแทรกซ้อน อัตราการตายและทุพพลภาพลงได้ แต่กลับพบว่าผู้ป่วยส่วนใหญ่ไม่สามารถที่จะเลิกสูบบุหรี่ได้และกลับมาสูบบุหรี่อีกครั้งหลังจากออกจากโรงพยาบาล จึงมีความจำเป็นอย่างยิ่งที่จะต้องมีการศึกษาปัจจัยที่มีอิทธิพลต่อการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดหลังจากออกจากโรงพยาบาล การศึกษาวิจัยครั้งนี้จะช่วยทำให้พยาบาลและบุคลากรในทีมสุขภาพที่ทำหน้าที่ดูแลผู้ป่วยโรคหลอดเลือดหัวใจ มีความเข้าใจในความซับซ้อนของการเลิกสูบบุหรี่ในผู้ป่วยโรคหลอดเลือดหัวใจมากขึ้นและสามารถนำความรู้ ความเข้าใจที่ได้จากผลลัพธ์งานวิจัย ไปพัฒนาและสร้างสรรค์โปรแกรมทางการพยาบาลเพื่อการช่วยเลิกสูบบุหรี่ที่เฉพาะสำหรับผู้ป่วยกลุ่มนี้ได้อย่างเหมาะสม อีกทั้งส่งผลให้ผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันมีสุขภาวะที่ดี ทั้งด้านร่างกาย จิตใจ และสังคม รวมถึงเป็นการลดค่าใช้จ่ายทางด้านการรักษาพยาบาลของรัฐร่วมด้วย

<u>วัตถุประสงค์ของการศึกษา</u>

เพื่อศึกษาปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล

จำนวนผู้เข้าร่วมในโครงการวิจัย คือ 161 คน จาก 7 โรงพยาบาลทั่วประเทศ ได้แก่ โรงพยาบาลศิริราช โรงพยาบาลจุฬาลงกรณ์ สภากาชาดไทย โรงพยาบาลภูมิพลอดุลยเดช สถาบันโรคทรวงอก โรงพยาบาลมหาวิทยาลัยนเรศวร โรงพยาบาลสงขลานครินทร์ และโรงพยาบาลสรรพสิทธิประสงค์ โดยเป็นผู้เข้าร่วมในโครงการวิจัยจากโรงพยาบาลจุฬาลงกรณ์ สภากาชาดไทย จำนวน 23 คน

<u>วิธีการที่เกี่ยวข้องกับการวิจัย</u>

หลังจากท่านให้ความยินยอมที่จะเข้าร่วมในโครงการวิจัยนี้ ผู้วิจัยจะขอให้ผู้เข้าร่วมโครงการวิจัยตอบแบบสอบถามตามความเป็นจริง จำนวน 3 ครั้ง ครั้งแรกขณะที่รักษาตัวในโรงพยาบาล แบบสอบถามมีทั้งหมด 7 ชุดคำถาม ประกอบไปด้วย แบบสอบถามข้อมูลส่วนบุคคล จำนวน 12 ข้อ, แบบสอบถามสมรรถนะแห่งตนในการเลิกสูบบุหรี่ จำนวน 12 ข้อ, แบบสอบถามแรงสนับสนุนทางสังคมในการเลิกบุหรี่จำนวน 20 ข้อ, แบบประเมินภาวะติดนิโคตินจำนวน 6 ข้อ, แบบทดสอบภาวะซึมเศร้าจำนวน 20 ข้อ, แบบสอบถามเกี่ยวกับการได้รับการบริการช่วยเลิกสูบบุหรี่จำนวน 8 ข้อ, และ แบบสอบถามแรงจูงใจในการเลิกบุหรี่จำนวน 20 ข้อ รวมทั้งหมด 98 ข้อ ใช้เวลาประมาณ 30-45 นาที ครั้งที่ 2 และครั้งที่ 3 หลังออกจากโรงพยาบาลเป็นเวลา 1 เดือน และ 3 เดือนตามลำดับ โดยผู้วิจัยจะทำการ

ติดต่อท่านทางโทรศัพท์เพื่อสัมภาษณ์เกี่ยวกับการเลิกบุหรี่ โดยใช้แบบสัมภาษณ์พฤติกรรมการเลิกบุหรี่จำนวน 3 ข้อ ใช้เวลาสัมภาษณ์ครั้งละประมาณ 5-10 นาที รวมระยะเวลาที่ผู้ร่วมโครงการวิจัยอยู่ในโครงการทั้งหมดประมาณ 60 นาที โดยผู้ร่วมโครงการวิจัยมีสิทธิ์ที่จะไม่ตอบคำถามข้อใดๆที่ไม่ต้องการตอบ

ความรับผิดชอบของอาสาสมัครผู้เข้าร่วมในโครงการวิจัย

เพื่อให้งานวิจัยนี้ประสบความสำเร็จ ผู้ทำวิจัยใคร่ขอความความร่วมมือจากท่าน ในการตอบแบบสอบถามตามความเป็นจริง หากมีข้อสงสัยในข้อคำถาม ท่านสามารถซักถามจากทีมผู้วิจัยได้

ความเสี่ยงที่อาจได้รับ

การวิจัยนี้ไม่มีการจัดกระทำใดๆโดยตรงต่อผู้ป่วย การเก็บข้อมูลใช้การตอบแบบสอบถามซึ่งไม่มีการบันทึกชื่อหรือข้อมูลใดๆที่จะระบุถึงตัวของกลุ่มตัวอย่าง ข้อมูลทุกอย่างจะถูกเก็บเป็นความลับและเสนอผลการศึกษาในภาพรวมเท่านั้น จึงมีความเสี่ยงต่ำที่ไม่มากไปกว่าความเสี่ยงในชีวิตประจำวัน เช่น เสียเวลาในการตอบแบบสอบถาม ซึ่งอาจทำให้รู้สึกไม่สะดวกสบายบ้าง

ประโยชน์ที่อาจได้รับ

ผู้ร่วมวิจัยอาจจะไม่ได้รับประโยชน์ใดๆโดยตรงจากการเข้าร่วมวิจัยในครั้ง แต่ผลการศึกษาที่ได้จะนำไปวิเคราะห์ถึงปัจจัยที่มีอิทธิพลต่อการเลิกบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลัน เพื่อใช้เป็นแนวทางในการส่งเสริมและพัฒนาแนวทางการช่วยเลิกบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันต่อไปในอนาคต

ข้อปฏิบัติของท่านขณะที่ร่วมในโครงการวิจัย

ขอให้ท่านปฏิบัติดังนี้

ขอให้ท่านให้ข้อมูลทางการแพทย์ของท่านทั้งในอดีต และปัจจุบัน แก่ผู้ทำวิจัยด้วยความสัตย์จริง

ขอให้ท่านแจ้งให้ผู้ทำวิจัยทราบความผิดปกติที่เกิดขึ้นระหว่างที่ท่านร่วมในโครงการวิจัย

ค่าตอบแทนสำหรับผู้เข้าร่วมวิจัย

ท่านจะไม่ได้รับเงินค่าตอบแทนจากการเข้าร่วมในการวิจัย แต่ท่านจะได้รับของที่ระลึกในการเข้าร่วมโครงการวิจัยได้แก่ ปากกาและกล่องยา อย่างละ 1 ชิ้น

ค่าใช้จ่ายของท่านในการเข้าร่วมการวิจัย: ไม่มีค่าใช้จ่ายใดๆทั้งสิ้น

การเข้าร่วมและการสิ้นสุดการเข้าร่วมโครงการวิจัย

การเข้าร่วมในโครงการวิจัยครั้งนี้เป็นไปโดยความสมัครใจ หากท่านไม่สมัครใจจะเข้าร่วมการศึกษาแล้ว ท่านสามารถถอนตัวได้ตลอดเวลา การขอถอนตัวออกจากโครงการวิจัยจะไม่มีผลต่อการดูแลรักษาโรคของท่านแต่อย่างใด

ผู้ทำวิจัยอาจถอนท่านออกจากการเข้าร่วมการวิจัย เพื่อเหตุผลด้านความปลอดภัยของท่าน หรือ เมื่อท่านไม่สามารถปฏิบัติตามคำแนะนำของผู้ทำวิจัยได้

การปกป้องรักษาข้อมูลความลับของอาสาสมัคร

ข้อมูลที่อาจนำไปสู่การเปิดเผยตัวท่าน จะได้รับการปกปิดและจะไม่เปิดเผยแก่สาธารณชน ในกรณีที่ผลการวิจัยได้รับการตีพิมพ์ ชื่อและที่อยู่ของท่านจะต้องได้รับการปกปิดอยู่เสมอ หากท่านต้องการยกเลิกการให้สิทธิ์ดังกล่าว ท่านสามารถแจ้ง หรือเขียนบันทึกขอยกเลิกการให้คำยินยอม โดยส่งไปที่ **เรืออากาศเอกหญิงจิรภิญญา คำรัตน์ ที่อยู่คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย อาคารบรมราชชนนีศรีศตพรรษ ชั้น 11 ถนนพระราม 1 เขตปทุมวัน กรุงเทพฯ 10330**

หากท่านขอยกเลิกการให้คำยินยอมหลังจากที่ท่านได้เข้าร่วมโครงการวิจัยแล้ว ข้อมูลส่วนตัวของท่านจะไม่ถูกบันทึกเพิ่มเติม อย่างไรก็ตามข้อมูลอื่น ๆ ของท่านอาจถูกนำมาใช้เพื่อประเมินผลการวิจัย และท่านจะไม่สามารถกลับมาเข้าร่วมในโครงการนี้ได้อีก ทั้งนี้เนื่องจากข้อมูลของท่านที่จำเป็นสำหรับใช้เพื่อการวิจัยไม่ได้ถูกบันทึก

จากการลงนามยินยอมของท่าน ผู้ทำวิจัยสามารถบอกรายละเอียดของท่านที่เกี่ยวกับการเข้าร่วมโครงการวิจัยนี้ให้แก่แพทย์ผู้รักษาท่านได้

<u>สิทธิ์ของผู้เข้าร่วมในโครงการวิจัย</u>

ในฐานะที่ท่านเป็นผู้เข้าร่วมในโครงการวิจัย ท่านจะมีสิทธิ์ดังต่อไปนี้

ท่านจะได้รับทราบถึงลักษณะและวัตถุประสงค์ของการวิจัยในครั้งนี้

ท่านจะได้รับการอธิบายเกี่ยวกับระเบียบวิธีการของการวิจัย

ท่านจะได้รับการอธิบายถึงความเสี่ยงและความไม่สบายที่จะได้รับจากการวิจัย

ท่านจะได้รับการอธิบายถึงประโยชน์ที่ท่านอาจจะได้รับจากการวิจัย

ท่านจะมีโอกาสได้ซักถามเกี่ยวกับงานวิจัยหรือขั้นตอนที่เกี่ยวข้องกับงานวิจัย

ท่านจะได้รับทราบว่าการยินยอมเข้าร่วมในโครงการวิจัยนี้ ท่านสามารถขอถอนตัวจากโครงการเมื่อไรก็ได้ โดยผู้เข้าร่วมในโครงการวิจัยสามารถขอถอนตัวจากโครงการโดยไม่ได้รับผลกระทบใด ๆ ทั้งสิ้น

ท่านจะได้รับเอกสารข้อมูลคำอธิบายสำหรับผู้เข้าร่วมในโครงการวิจัยและสำเนาเอกสารใบยินยอมที่มีทั้งลายเซ็นและวันที่

ท่านมีสิทธิ์ในการตัดสินใจว่าจะเข้าร่วมในโครงการวิจัยหรือไม่ก็ได้ โดยปราศจากการใช้อิทธิพลบังคับ ข่มขู่ หรือการหลอกลวง

หากท่านไม่ได้รับการปฏิบัติตามที่ปรากฏในเอกสารข้อมูลคำอธิบายสำหรับผู้เข้าร่วมในการวิจัย ท่านสามารถร้องเรียนได้ที่ คณะกรรมการจริยธรรมการวิจัย คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ตึกอานันทมหิดลชั้น 3 โรงพยาบาลจุฬาลงกรณ์ ถนนพระราม 4 ปทุมวัน กรุงเทพฯ 10330 โทร 0-2256-4493 ต่อ 14, 15 ในเวลาราชการ

ขอขอบคุณในการร่วมมือของท่านมา ณ ที่นี้

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Appendix F

Consented form

ใบยินยอมสำหรับอาสาสมัคร

การวิจัยเรื่อง ปัจจัยทำนายการเลิกสูบบุหรี่ในผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันหลังออกจากโรงพยาบาล

วันให้คำยินยอม วันที่.....เดือน.....พ.ศ.....

ข้าพเจ้า นาย/นาง/นางสาว.....

ทีอยู่.....

โทรศัพท์.....ได้อ่านรายละเอียดจากเอกสารข้อมูลสำหรับผู้เข้าร่วมโครงการวิจัยวิจัยที่แนบมาฉบับวันที่..... และข้าพเจ้ายินยอมเข้าร่วมโครงการวิจัยโดยสมัครใจ

ข้าพเจ้าได้รับสำเนาเอกสารแสดงความยินยอมเข้าร่วมในโครงการวิจัยที่ข้าพเจ้าได้ลงนามและ วันที่ พร้อมด้วยเอกสารข้อมูลสำหรับผู้เข้าร่วมโครงการวิจัย ทั้งนี้ก่อนที่จะลงนามในใบยินยอมให้ทำการวิจัยนี้ ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึงวัตถุประสงค์ของการวิจัย ระยะเวลาของการทำวิจัย วิธีการวิจัย อันตราย หรืออาการที่อาจเกิดขึ้นจากการวิจัย และประโยชน์ที่จะเกิดขึ้นจากการวิจัย ข้าพเจ้ามีเวลาและโอกาสเพียงพอในการซักถามข้อสงสัยจนมีความเข้าใจอย่างดีแล้ว โดยผู้วิจัยได้ตอบคำถามต่าง ๆ ด้วยความเต็มใจไม่ปิดบังซ่อนเร้นจนข้าพเจ้าพอใจ

ข้าพเจ้ามีสิทธิที่จะบอกเลิกเข้าร่วมในโครงการวิจัยเมื่อใดก็ได้ โดยไม่จำเป็นต้องแจ้งเหตุผลและการบอกเลิกการเข้าร่วมการวิจัยนี้ จะไม่มีผลต่อการรักษาโรคหรือสิทธิอื่น ๆ ที่ข้าพเจ้าจะพึงได้รับต่อไป

ผู้วิจัยรับรองว่าจะเก็บข้อมูลส่วนตัวของข้าพเจ้าเป็นความลับ และจะเปิดเผยได้เฉพาะเมื่อได้รับการยินยอมจากข้าพเจ้าเท่านั้น คณะกรรมการพิจารณาจริยธรรมการวิจัยในคนอาจได้รับอนุญาตให้เข้ามาตรวจและประมวลข้อมูลของข้าพเจ้า ทั้งนี้จะต้องกระทำไปเพื่อวัตถุประสงค์เพื่อตรวจสอบความถูกต้องของข้อมูลเท่านั้น โดยการตกลงที่จะเข้าร่วมการศึกษานี้ข้าพเจ้าได้ให้คำยินยอมที่จะให้มีการตรวจสอบข้อมูลประวัติทางการแพทย์ของข้าพเจ้าได้

ผู้วิจัยรับรองว่าจะไม่มีการเก็บข้อมูลใด ๆ เพิ่มเติม หลังจากที่ข้าพเจ้าขอยกเลิกการเข้าร่วมโครงการวิจัยและต้องการให้ทำลายเอกสารทั้งหมดที่สามารถสืบค้นถึงตัวข้าพเจ้าได้

ข้าพเจ้าเข้าใจว่า ข้าพเจ้ามีสิทธิ์ที่จะตรวจสอบหรือแก้ไขข้อมูลส่วนตัวของข้าพเจ้าและสามารถยกเลิกการให้สิทธิในการใช้ข้อมูลส่วนตัวของข้าพเจ้าได้ โดยต้องแจ้งให้ผู้วิจัยรับทราบ

ข้าพเจ้าได้ตระหนักว่าข้อมูลในการวิจัยรวมถึงข้อมูลทางการแพทย์ของข้าพเจ้าที่ไม่มีการเปิดเผยชื่อ จะผ่านกระบวนการต่าง ๆ เช่น การเก็บข้อมูล การบันทึกข้อมูลในแบบบันทึกและในคอมพิวเตอร์ การตรวจสอบ การวิเคราะห์ และการรายงานข้อมูลเพื่อวัตถุประสงค์ทางวิชาการ รวมทั้งการใช้ข้อมูลทางการแพทย์ในอนาคตเท่านั้น

ข้าพเจ้าได้อ่านข้อความข้างต้นและมีความเข้าใจดีทุกประการแล้ว ยินดีเข้าร่วมในการวิจัยด้วยความเต็มใจ จึงได้ลงนามในเอกสารแสดงความยินยอมนี้

.....ลงนามผู้ให้ความยินยอม

(.....) ชื่อผู้ยินยอมตัวบรรจง

วันที่ .....เดือน.....พ.ศ.....

.....ลงนามผู้ทำวิจัย

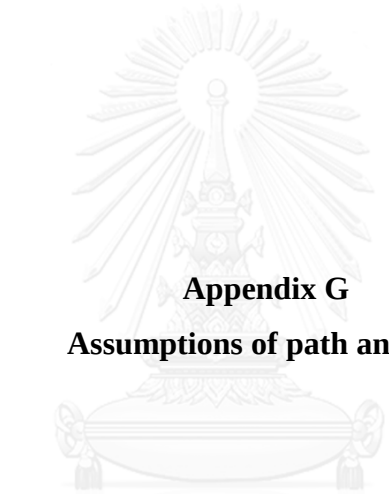
(.....) ชื่อผู้ทำวิจัย ตัวบรรจง

วันที่ .....เดือน.....พ.ศ.....

.....ลงนามพยาน

(.....) ชื่อพยาน ตัวบรรจง

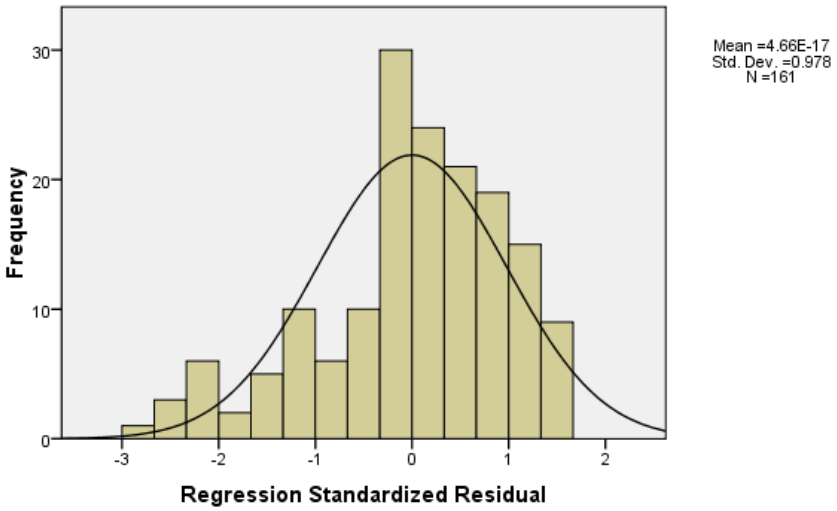
วันที่ .....เดือน.....พ.ศ.....



Appendix G
Assumptions of path analysis

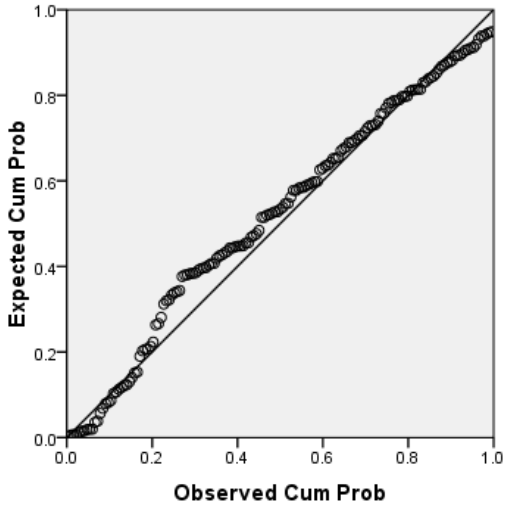
Histogram

Dependent Variable: Smoking cessation at 90 days



Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Smoking cessation at 90 days



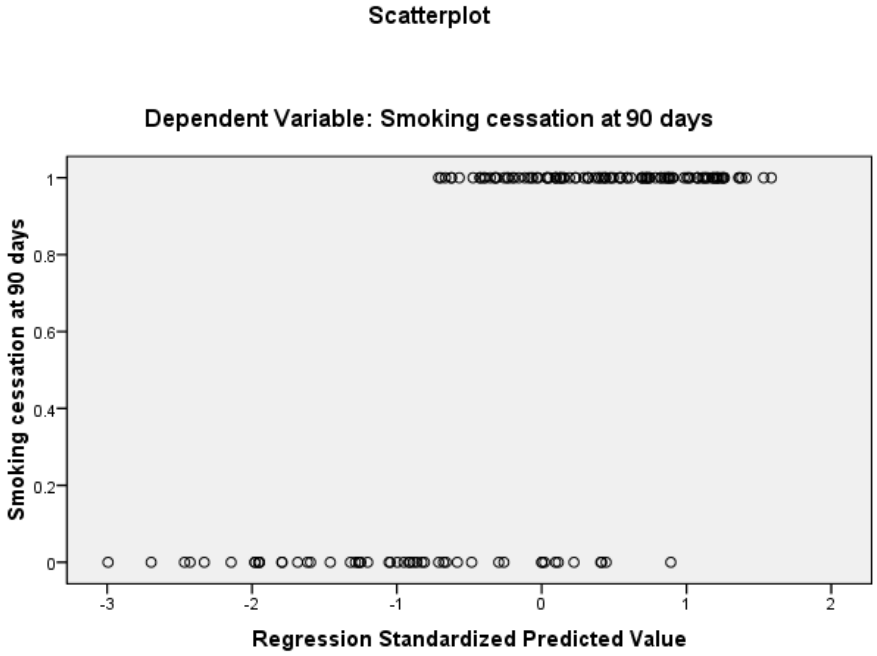
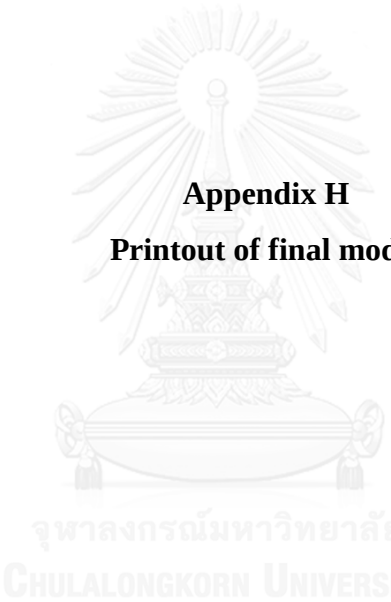


Figure 5 Assumption of normality, linearity, and homoscedasticity



Appendix H

Printout of final model

Final Model

```
TI Smoking Path
DA NI=8 NO=161 MA=CM
RA FI='C:\Users\Admin\Desktop\N_Mar2\Smoking Path.psf'
SE
 1 5 6 2 3 4 7 8 /
MO NX=5 NY=3 BE=FU GA=FI PS=SY TY=FI TX=FI AL=FI KA=FI
FR BE(1,2) BE(1,3) GA(1,2) GA(1,3) GA(1,4) GA(1,5) GA(2,1) GA(2,2) GA(2,3)
FR GA(2,5) GA(3,1) AL(1) AL(2) AL(3) KA(1) KA(2) KA(3) KA(4)
FR KA(5)
FR PS(3,2)
FR TH(1,2) TH(4,2) TH(3,3)
PD
OU PC RS EF SS ND=3
```

DATE: 7/24/2016
TIME: 22:13

LISREL 8.80 (STUDENT EDITION)

BY

Karl G. J”reskog & Dag S”rbom

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Phone: (800)247-6113, (847)675-0720, Fax: (847)675-2140

The following lines were read from file C:\Users\Admin\Desktop\N_Mar2\Smoking Path.LPJ:

TI Smoking Path
DA NI=8 NO=161 MA=CM
RA FI='C:\Users\Admin\Desktop\N_Mar2\Smoking Path.psf'
SE
1 5 6 2 3 4 7 8 /
MO NX=5 NY=3 BE=FU GA=FI PS=SY TY=FI TX=FI AL=FI KA=FI
FR BE(1,2) BE(1,3) GA(1,2) GA(1,3) GA(1,4) GA(1,5) GA(2,1) GA(2,2) GA(2,3)
FR GA(2,5) GA(3,1) AL(1) AL(2) AL(3) KA(1) KA(2) KA(3) KA(4)
FR KA(5)
FR PS(3,2)
FR TH(1,2) TH(4,2) TH(3,3)
PD
OU PC RS EF SS ND=3

TI Smoking Path

Number of Input Variables 8
Number of Y - Variables 3
Number of X - Variables 5
Number of ETA - Variables 3
Number of KSI - Variables 5
Number of Observations 161

TI Smoking Path

Covariance Matrix

	SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
SC3	0.215					
SUMSE	4.353	218.564				
SUMMOV	1.324	57.235	308.089			
SUMIV	-0.003	-1.605	2.073	2.091		
SUMNIC	-0.272	-6.421	0.122	0.540	5.364	
SUMDEP	-0.596	-30.058	18.495	1.883	2.395	56.913
CADHX	-0.079	-2.070	-0.943	0.043	0.177	0.141
SUMSS	0.887	24.876	2.675	-0.177	-5.378	-4.483

Covariance Matrix

	CADHX	SUMSS
CADHX	0.188	
SUMSS	-0.341	70.199

Means

SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
0.689	44.130	44.497	2.230	4.068	15.534

Means

CADHX	SUMSS
0.248	38.037

TI Smoking Path

Parameter Specifications

BETA

	SC3	SUMSE	SUMMOV
SC3	0	1	2
SUMSE	0	0	0
SUMMOV	0	0	0

GAMMA

SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS

	SC3	SUMSE	SUMMOV
SC3	0	3	4
SUMSE	7	8	9
SUMMOV	11	0	0

	0	5	6	10
SUMSE	0	0	0	0
SUMMOV	0	0	0	0

PHI

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SUMIV	12				
SUMNIC	13	14			
SUMDEP	15	16	17		
CADHX	18	19	20	21	
SUMSS	22	23	24	25	26

PSI

	SC3	SUMSE	SUMMOV
SC3	27		
SUMSE	0	28	
SUMMOV	0	29	30

ALPHA

SC3	SUMSE	SUMMOV
34	35	36

TI Smoking Path

Number of Iterations = 12

LISREL Estimates (Maximum Likelihood)

BETA

	SC3	SUMSE	SUMMOV
SC3	- -	0.019	0.000
		(0.002)	(0.002)
		8.975	0.143
SUMSE	- -	- -	- -
SUMMOV	- -	- -	- -

GAMMA

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	- -	-0.014	0.001	-0.356	0.003
		(0.013)	(0.004)	(0.076)	(0.004)
		-1.069	0.328	-4.690	0.931
SUMSE	1.140	-0.811	-0.518	- -	0.254
	(1.241)	(0.504)	(0.154)		(0.135)
	0.919	-1.609	-3.368		1.885

SUMMOV 0.991 - - - - - - - -
(0.972)
1.020

Covariance Matrix of Y and X

	SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
SC3	0.213					
SUMSE	4.260	215.396				
SUMMOV	0.932	47.323	308.089			
SUMIV	-0.003	0.926	2.073	2.091		
SUMNIC	-0.271	-6.355	0.536	0.540	5.364	
SUMDEP	-0.616	-30.503	1.867	1.883	2.418	56.996
CADHX	-0.076	-0.284	0.042	0.043	0.177	0.197
SUMSS	0.878	24.421	-0.176	-0.177	-5.378	-4.644

Covariance Matrix of Y and X

	CADHX	SUMSS
CADHX	0.188	
SUMSS	-0.341	70.199

Mean Vector of Eta-Variables

SC3	SUMSE	SUMMOV
0.689	44.130	44.497

PHI

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SUMIV	2.091				
	(0.237)				
	8.803				
SUMNIC	0.540	5.364			
	(0.272)	(0.609)			
	1.984	8.803			
SUMDEP	1.883	2.418	56.996		
	(0.890)	(1.406)	(6.473)		
	2.116	1.720	8.806		
CADHX	0.043	0.177	0.197	0.188	
	(0.050)	(0.082)	(0.261)	(0.021)	
	0.843	2.158	0.756	8.803	
SUMSS	-0.177	-5.378	-4.644	-0.341	70.199
	(0.973)	(1.617)	(5.050)	(0.293)	(7.974)
	-0.182	-3.325	-0.920	-1.162	8.803

PSI

	SC3	SUMSE	SUMMOV
SC3	0.101		
	(0.015)		
	6.691		

SUMSE	- -	187.181	
	(22.198)		
	8.432		
SUMMOV	- -	46.406	306.034
	(19.877)	(34.763)	
	2.335	8.803	

Squared Multiple Correlations for Structural Equations

SC3	SUMSE	SUMMOV
0.528	0.131	0.007

Squared Multiple Correlations for Reduced Form

SC3	SUMSE	SUMMOV
0.221	0.131	0.007

Reduced Form

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	0.021	-0.029	-0.008	-0.356	0.008
	(0.023)	(0.015)	(0.004)	(0.076)	(0.004)
	0.925	-1.946	-1.890	-4.690	1.997
SUMSE	1.140	-0.811	-0.518	- -	0.254
	(1.241)	(0.504)	(0.154)		(0.135)
	0.919	-1.609	-3.368		1.885
SUMMOV	0.991	- -	- -	- -	- -
	(0.972)				
	1.020				

ALPHA

SC3	SUMSE	SUMMOV
-0.144	43.255	42.286
(0.198)	(6.646)	(2.583)
-0.724	6.509	16.373

Goodness of Fit Statistics

Degrees of Freedom = 3
Minimum Fit Function Chi-Square = 2.778 (P = 0.427)
Normal Theory Weighted Least Squares Chi-Square = 2.754 (P = 0.431)
Estimated Non-centrality Parameter (NCP) = 0.0
90 Percent Confidence Interval for NCP = (0.0 ; 7.999)

Minimum Fit Function Value = 0.0174
Population Discrepancy Function Value (F0) = 0.0
90 Percent Confidence Interval for F0 = (0.0 ; 0.0516)
Root Mean Square Error of Approximation (RMSEA) = 0.0
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.131)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.587

Expected Cross-Validation Index (ECVI) = 0.497
90 Percent Confidence Interval for ECVI = (0.497 ; 0.548)
ECVI for Saturated Model = 0.465
ECVI for Independence Model = 1.423

Chi-Square for Independence Model with 28 Degrees of Freedom = 204.512
Independence AIC = 220.512
Model AIC = 84.754
Saturated AIC = 72.000
Independence CAIC = 253.164
Model CAIC = 252.091
Saturated CAIC = 218.931

Normed Fit Index (NFI) = 0.986
Non-Normed Fit Index (NNFI) = 1.012
Parsimony Normed Fit Index (PNFI) = 0.106
Comparative Fit Index (CFI) = 1.000
Incremental Fit Index (IFI) = 1.001
Relative Fit Index (RFI) = 0.873

Critical N (CN) = 654.595

Root Mean Square Residual (RMR) = 1.816
Standardized RMR = 0.0252
Goodness of Fit Index (GFI) = 0.996
Adjusted Goodness of Fit Index (AGFI) = 0.949
Parsimony Goodness of Fit Index (PGFI) = 0.0830

TI Smoking Path

Fitted Covariance Matrix

	SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
SC3	0.213					
SUMSE	4.260	215.396				
SUMMOV	0.932	47.323	308.089			
SUMIV	-0.003	-1.605	2.073	2.091		
SUMNIC	-0.271	-6.355	0.536	0.540	5.364	
SUMDEP	-0.616	-30.503	19.229	1.883	2.418	56.996
CADHX	-0.076	-1.913	0.042	0.043	0.177	0.197
SUMSS	0.878	24.421	-0.176	-0.177	-5.378	-4.644

Fitted Covariance Matrix

	CADHX	SUMSS
CADHX	0.188	
SUMSS	-0.341	70.199

Fitted Means

SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
0.689	44.130	44.497	2.230	4.068	15.534

Fitted Means

CADHX	SUMSS
0.248	38.037

Fitted Residuals

	SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
SC3	0.002					
SUMSE	0.093	3.168				
SUMMOV	0.392	9.911	0.000			
SUMIV	0.000	0.000	0.000	0.000		
SUMNIC	-0.001	-0.066	-0.414	0.000	0.000	
SUMDEP	0.020	0.445	-0.733	0.000	-0.023	-0.083
CADHX	-0.003	-0.157	-0.985	0.000	0.000	-0.056
SUMSS	0.009	0.456	2.851	0.000	0.000	0.162

Fitted Residuals

	CADHX	SUMSS
CADHX	0.000	
SUMSS	0.000	0.000

Fitted Residuals for Means

SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
0.000	0.000	0.000	- -	- -	- -

Fitted Residuals for Means

CADHX	SUMSS
0.000	- -

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -0.985
Median Fitted Residual = 0.000
Largest Fitted Residual = 9.911

Stemleaf Plot

```
- 0|074211100000000000000000000
  0|12445
  2|92
  4|
  6|
  8|9
```

Standardized Residuals

SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP

SC3	1.344					
SUMSE	1.351	1.363				
SUMMOV	1.344	1.363	- -			
SUMIV	- -	- -	- -	- -		
SUMNIC	-0.129	-0.129	-0.129	- -	- -	
SUMDEP	1.479	1.574	-0.564	- -	-0.129	-0.564
CADHX	-1.621	-1.621	-1.621	- -	- -	-1.621
SUMSS	0.242	0.242	0.242	- -	- -	0.242

Standardized Residuals

	CADHX	SUMSS
CADHX	- -	
SUMSS	- -	- -

Summary Statistics for Standardized Residuals

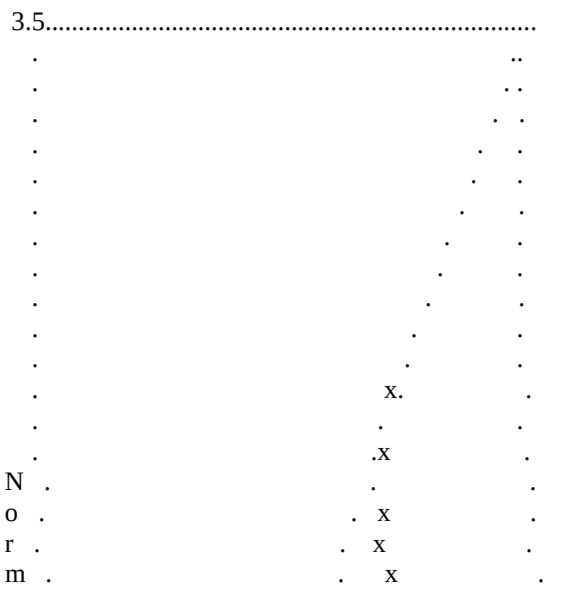
Smallest Standardized Residual = -1.621
Median Standardized Residual = 0.000
Largest Standardized Residual = 1.574

Stemleaf Plot

```
- 1|6666
- 1|
- 0|66
- 0|1111000000000000000
  0|2222
  0|
  1|33444
  1|56
```

TI Smoking Path

Qplot of Standardized Residuals



Covariance Matrix of Parameter Estimates

	BE 1_2	BE 1_3	GA 1_2	GA 1_3	GA 1_4	GA 1_5
BE 1_2	0.000					
BE 1_3	0.000	0.000				
GA 1_2	0.000	0.000	0.000			
GA 1_3	0.000	0.000	0.000	0.000		
GA 1_4	0.000	0.000	0.000	0.000	0.006	
GA 1_5	0.000	0.000	0.000	0.000	0.000	0.000
GA 2_1	0.000	0.000	0.000	0.000	-0.001	0.000
GA 2_2	0.000	0.000	-0.001	0.000	0.000	0.000
GA 2_3	0.000	0.000	0.000	0.000	0.000	0.000
GA 2_5	0.000	0.000	0.000	0.000	0.000	0.000
GA 3_1	0.000	0.000	0.000	0.000	0.000	0.000
PH 1_1	0.000	0.000	0.000	0.000	0.000	0.000
PH 2_1	0.000	0.000	0.000	0.000	0.000	0.000
PH 2_2	0.000	0.000	0.000	0.000	0.000	0.000
PH 3_1	0.000	0.000	0.000	0.000	0.000	0.000
PH 3_2	0.000	0.000	0.000	0.000	0.000	0.000
PH 3_3	0.000	0.000	0.000	0.000	0.000	0.000
PH 4_1	0.000	0.000	0.000	0.000	0.000	0.000
PH 4_2	0.000	0.000	0.000	0.000	0.000	0.000
PH 4_3	0.000	0.000	0.000	0.000	0.000	0.000
PH 4_4	0.000	0.000	0.000	0.000	0.000	0.000
PH 5_1	0.000	0.000	0.000	0.000	0.000	0.000
PH 5_2	0.000	0.000	0.000	0.000	0.000	0.000
PH 5_3	0.000	0.000	0.000	0.000	0.000	0.000

PH 5_4	0.000	0.000	0.000	0.000	0.000	0.000
PH 5_5	0.000	0.000	0.000	0.000	0.000	0.000
PS 1_1	0.000	0.000	0.000	0.000	0.000	0.000
PS 2_2	0.000	-0.001	0.009	0.001	-0.313	-0.001
PS 3_2	0.000	-0.002	0.001	-0.001	0.000	0.000
PS 3_3	0.000	-0.001	0.000	0.000	-0.002	0.000
TH 1_2	0.000	0.000	0.000	0.000	0.001	0.000
TH 3_3	0.000	0.000	0.000	0.000	-0.004	0.000
TH 4_2	0.000	0.000	-0.001	0.000	0.018	0.000
AL 1	0.000	0.000	-0.001	0.000	0.001	0.000
AL 2	0.000	0.000	0.005	0.001	0.000	0.003
AL 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Covariance Matrix of Parameter Estimates

	GA 2_1	GA 2_2	GA 2_3	GA 2_5	GA 3_1	PH 1_1
GA 2_1	1.539					
GA 2_2	-0.142	0.254				
GA 2_3	-0.046	-0.005	0.024			
GA 2_5	-0.010	0.019	0.001	0.018		
GA 3_1	0.159	0.003	-0.002	0.000	0.944	
PH 1_1	0.000	-0.003	-0.001	0.000	0.000	0.056
PH 2_1	0.000	-0.016	0.000	0.000	0.000	0.015
PH 2_2	0.000	0.000	0.000	0.000	0.000	0.004
PH 3_1	-0.002	0.000	-0.016	0.000	0.112	0.051
PH 3_2	0.005	-0.021	0.000	0.000	0.029	0.013
PH 3_3	-0.001	-0.014	0.000	0.002	0.202	0.046
PH 4_1	0.000	-0.001	0.000	0.000	0.000	0.001
PH 4_2	0.000	-0.011	0.000	0.000	0.000	0.000
PH 4_3	0.000	-0.001	-0.010	0.000	0.002	0.001
PH 4_4	0.000	-0.001	0.000	0.000	0.000	0.000
PH 5_1	0.000	0.000	0.000	-0.016	0.000	-0.005
PH 5_2	0.000	0.000	0.000	0.000	0.000	-0.001
PH 5_3	-0.002	0.000	0.000	-0.021	-0.010	-0.004
PH 5_4	0.000	0.000	0.000	-0.011	0.000	0.000
PH 5_5	0.000	0.000	0.000	0.000	0.000	0.000
PS 1_1	0.002	0.000	0.000	0.000	0.000	0.000
PS 2_2	-7.010	0.647	0.199	0.045	-0.808	-0.064
PS 3_2	-2.424	0.109	0.245	0.020	-2.348	-0.064
PS 3_3	-0.158	-0.082	0.237	0.009	0.000	0.000
TH 1_2	-2.048	0.193	0.061	0.014	0.042	-0.064
TH 3_3	-0.304	-0.125	0.379	0.015	0.000	0.000
TH 4_2	-0.022	0.002	0.001	0.000	0.001	-0.001
AL 1	0.005	0.005	0.001	0.003	-0.007	-0.001
AL 2	-1.767	-1.356	-0.285	-0.763	-0.340	0.036
AL 3	-0.355	-0.006	0.004	0.000	-2.106	0.000
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Covariance Matrix of Parameter Estimates

	PH 2_1	PH 2_2	PH 3_1	PH 3_2	PH 3_3	PH 4_1
PH 2_1	0.074					
PH 2_2	0.037	0.371				
PH 3_1	0.039	0.017	0.792			
PH 3_2	0.074	0.167	0.228	1.977		
PH 3_3	0.059	0.075	1.385	1.754	41.895	
PH 4_1	0.003	0.001	0.003	0.003	0.005	0.003
PH 4_2	0.002	0.012	0.001	0.010	0.006	0.001
PH 4_3	0.003	0.006	0.018	0.067	0.143	0.002
PH 4_4	0.000	0.000	0.000	0.000	0.001	0.000
PH 5_1	-0.073	-0.038	-0.065	-0.082	-0.113	-0.005
PH 5_2	-0.025	-0.372	-0.019	-0.245	-0.145	-0.001
PH 5_3	-0.068	-0.168	-0.122	-2.016	-3.359	-0.004
PH 5_4	-0.002	-0.012	-0.002	-0.012	-0.012	0.000
PH 5_5	0.012	0.373	0.011	0.322	0.278	0.001
PS 1_1	0.000	0.000	0.000	0.000	0.000	0.000
PS 2_2	0.000	0.000	0.009	-0.025	0.068	0.006
PS 3_2	0.000	0.000	-0.280	-0.072	-6.176	-0.021
PS 3_3	0.000	0.000	0.000	0.000	3.890	0.000
TH 1_2	0.000	0.000	0.004	0.001	0.008	-0.021
TH 3_3	0.000	0.000	0.000	0.000	12.197	0.000
TH 4_2	0.000	0.000	0.000	0.000	-0.004	-0.003
AL 1	-0.001	0.000	-0.005	0.000	-0.002	0.000
AL 2	0.066	0.000	0.256	0.076	-0.011	0.013
AL 3	0.000	0.000	-0.250	-0.065	-0.450	0.000
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Covariance Matrix of Parameter Estimates

	PH 4_2	PH 4_3	PH 4_4	PH 5_1	PH 5_2	PH 5_3
PH 4_2	0.007					
PH 4_3	0.003	0.068				
PH 4_4	0.000	0.000	0.000			
PH 5_1	-0.003	-0.005	0.000	0.947		
PH 5_2	-0.018	-0.011	-0.001	0.251	2.616	
PH 5_3	-0.012	-0.129	-0.001	0.858	1.256	25.506
PH 5_4	-0.007	-0.006	-0.001	0.020	0.092	0.100
PH 5_5	0.024	0.020	0.001	-0.161	-4.871	-4.207
PS 1_1	0.000	0.000	0.000	0.000	0.000	0.000
PS 2_2	0.000	0.066	0.034	0.000	0.000	0.008
PS 3_2	0.000	-0.006	0.000	0.000	0.000	0.024
PS 3_3	0.000	0.000	0.000	0.000	0.000	0.000
TH 1_2	0.000	0.000	0.000	0.000	0.000	0.000
TH 3_3	0.000	0.000	0.000	0.000	0.000	0.000
TH 4_2	0.000	-0.004	-0.004	0.000	0.000	0.000
AL 1	-0.001	-0.003	0.000	-0.012	0.000	0.000
AL 2	0.043	0.161	0.001	0.621	0.000	0.810
AL 3	0.000	-0.005	0.000	0.000	0.000	0.021

KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Covariance Matrix of Parameter Estimates

	PH 5_4	PH 5_5	PS 1_1	PS 2_2	PS 3_2	PS 3_3
PH 5_4	0.086					
PH 5_5	-0.308	63.585				
PS 1_1	0.000	0.000	0.000			
PS 2_2	0.000	0.000	-0.052	492.736		
PS 3_2	0.000	0.000	-0.003	140.237	395.084	
PS 3_3	0.000	0.000	0.000	43.103	193.087	1208.477
TH 1_2	0.000	0.000	-0.003	8.796	4.109	-0.069
TH 3_3	0.000	0.000	0.000	2.120	-44.532	68.561
TH 4_2	0.000	0.000	0.003	-3.608	0.051	-0.023
AL 1	-0.007	0.000	0.000	0.073	0.113	0.028
AL 2	0.400	0.000	-0.002	8.186	0.420	-3.339
AL 3	0.000	0.000	0.000	1.801	5.236	0.000
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Covariance Matrix of Parameter Estimates

	TH 1_2	TH 3_3	TH 4_2	AL 1	AL 2	AL 3
TH 1_2	4.573					
TH 3_3	-0.007	109.438				
TH 4_2	0.074	-0.035	0.230			
AL 1	-0.020	0.000	0.005	0.039		
AL 2	2.319	-5.258	0.017	-0.148	44.166	
AL 3	-0.095	0.000	-0.002	0.015	1.131	6.670
KA 1	0.000	0.000	0.000	0.000	-0.016	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.112
KA 4	0.000	0.000	0.000	0.000	-0.011	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Covariance Matrix of Parameter Estimates

	KA 1	KA 2	KA 3	KA 4	KA 5
KA 1	0.013				
KA 2	0.003	0.035			
KA 3	0.012	0.016	0.368		
KA 4	0.000	0.001	0.001	0.001	
KA 5	-0.001	-0.035	-0.030	-0.002	0.453

TI Smoking Path

Correlation Matrix of Parameter Estimates

	BE 1_2	BE 1_3	GA 1_2	GA 1_3	GA 1_4	GA 1_5
BE 1_2	1.000					
BE 1_3	-0.171	1.000				
GA 1_2	0.175	-0.057	1.000			
GA 1_3	0.251	0.070	-0.065	1.000		
GA 1_4	-0.342	0.064	-0.210	-0.133	1.000	
GA 1_5	-0.172	0.031	0.220	-0.011	0.105	1.000
GA 2_1	-0.032	-0.003	-0.002	-0.015	-0.006	0.004
GA 2_2	0.008	0.005	-0.125	0.019	0.001	-0.035
GA 2_3	0.006	-0.004	0.014	-0.117	0.006	-0.005
GA 2_5	0.002	0.001	-0.035	-0.004	0.001	-0.130
GA 3_1	0.003	0.092	-0.004	0.010	0.000	-0.001
PH 1_1	-0.001	0.011	0.018	0.019	0.000	0.005
PH 2_1	0.000	0.000	0.085	0.000	0.000	0.000
PH 2_2	0.000	0.000	0.000	0.000	0.000	0.000
PH 3_1	-0.002	0.013	-0.001	0.087	0.000	0.000
PH 3_2	0.000	0.002	0.000	0.000	0.000	0.000
PH 3_3	0.000	0.004	0.000	0.000	-0.001	0.000
PH 4_1	0.028	0.010	0.045	0.040	0.000	-0.001
PH 4_2	0.000	0.000	0.183	0.000	0.000	0.000
PH 4_3	0.008	-0.001	0.005	0.193	-0.020	-0.002
PH 4_4	0.090	-0.018	0.052	0.033	0.000	-0.026
PH 5_1	0.000	0.000	0.000	0.000	0.000	0.088
PH 5_2	0.000	0.000	0.000	0.000	0.000	0.000
PH 5_3	0.000	0.000	0.000	0.000	0.000	0.000
PH 5_4	0.000	0.000	0.000	0.000	0.000	0.189
PH 5_5	0.000	0.000	0.000	0.000	0.000	0.000
PS 1_1	-0.238	0.043	-0.098	-0.083	0.414	0.058
PS 2_2	0.005	-0.020	0.032	0.013	-0.186	-0.010
PS 3_2	-0.001	-0.075	0.002	-0.007	0.000	0.000
PS 3_3	0.000	-0.011	0.000	0.000	-0.001	0.000
TH 1_2	0.094	0.001	0.008	0.031	0.007	-0.014
TH 3_3	0.000	0.004	0.001	-0.002	-0.004	0.000
TH 4_2	-0.222	0.044	-0.109	-0.083	0.490	0.059
AL 1	-0.375	-0.310	-0.439	-0.407	0.066	-0.678
AL 2	0.007	0.001	0.061	0.045	0.000	0.111
AL 3	-0.003	-0.077	0.003	-0.008	0.000	0.001
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Correlation Matrix of Parameter Estimates

	GA 2_1	GA 2_2	GA 2_3	GA 2_5	GA 3_1	PH 1_1
GA 2_1	1.000					
GA 2_2	-0.226	1.000				
GA 2_3	-0.239	-0.065	1.000			
GA 2_5	-0.060	0.276	0.051	1.000		
GA 3_1	0.132	0.006	-0.012	0.000	1.000	
PH 1_1	-0.001	-0.026	-0.026	-0.007	0.000	1.000
PH 2_1	0.000	-0.119	0.000	0.000	0.000	0.225
PH 2_2	0.000	0.000	0.000	0.000	0.000	0.026

PH 3_1	-0.002	0.000	-0.119	0.000	0.130	0.240
PH 3_2	0.003	-0.030	0.000	0.000	0.021	0.039
PH 3_3	0.000	-0.004	0.000	0.002	0.032	0.030
PH 4_1	-0.004	-0.057	-0.043	-0.004	0.000	0.096
PH 4_2	0.000	-0.255	0.000	0.000	0.000	0.015
PH 4_3	0.001	-0.005	-0.258	0.002	0.009	0.017
PH 4_4	-0.008	-0.056	-0.011	0.018	0.000	0.005
PH 5_1	0.000	0.000	0.000	-0.124	0.000	-0.021
PH 5_2	0.000	0.000	0.000	0.000	0.000	-0.003
PH 5_3	0.000	0.000	0.000	-0.031	-0.002	-0.004
PH 5_4	0.000	0.000	0.000	-0.266	0.000	-0.001
PH 5_5	0.000	0.000	0.000	0.000	0.000	0.000
PS 1_1	0.088	-0.021	-0.018	-0.005	-0.001	0.005
PS 2_2	-0.255	0.058	0.058	0.015	-0.037	-0.012
PS 3_2	-0.098	0.011	0.080	0.007	-0.122	-0.014
PS 3_3	-0.004	-0.005	0.044	0.002	0.000	0.000
TH 1_2	-0.772	0.179	0.184	0.047	0.020	-0.127
TH 3_3	-0.023	-0.024	0.236	0.010	0.000	0.000
TH 4_2	-0.036	0.008	0.015	0.002	0.002	-0.006
AL 1	0.019	0.046	0.033	0.098	-0.036	-0.017
AL 2	-0.214	-0.404	-0.279	-0.851	-0.053	0.023
AL 3	-0.111	-0.005	0.010	0.000	-0.839	0.000
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Correlation Matrix of Parameter Estimates

	PH 2_1	PH 2_2	PH 3_1	PH 3_2	PH 3_3	PH 4_1
PH 2_1	1.000					
PH 2_2	0.225	1.000				
PH 3_1	0.162	0.031	1.000			
PH 3_2	0.192	0.195	0.182	1.000		
PH 3_3	0.033	0.019	0.240	0.193	1.000	
PH 4_1	0.184	0.040	0.071	0.040	0.015	1.000
PH 4_2	0.094	0.245	0.019	0.083	0.012	0.170
PH 4_3	0.040	0.035	0.078	0.183	0.085	0.177
PH 4_4	0.017	0.031	0.006	0.015	0.004	0.096
PH 5_1	-0.276	-0.063	-0.075	-0.060	-0.018	-0.095
PH 5_2	-0.056	-0.378	-0.013	-0.108	-0.014	-0.017
PH 5_3	-0.049	-0.055	-0.027	-0.284	-0.103	-0.017
PH 5_4	-0.021	-0.069	-0.006	-0.029	-0.006	-0.021
PH 5_5	0.006	0.077	0.001	0.029	0.005	0.002
PS 1_1	0.000	0.000	0.000	0.000	-0.001	-0.032
PS 2_2	0.000	0.000	0.000	-0.001	0.000	0.005
PS 3_2	0.000	0.000	-0.016	-0.003	-0.048	-0.021
PS 3_3	0.000	0.000	0.000	0.000	0.017	0.000
TH 1_2	0.000	0.000	0.002	0.000	0.001	-0.193
TH 3_3	0.000	0.000	0.000	0.000	0.180	0.000
TH 4_2	0.000	0.000	0.000	0.000	-0.001	-0.132
AL 1	-0.023	0.000	-0.030	-0.001	-0.001	-0.040
AL 2	0.037	0.000	0.043	0.008	0.000	0.038
AL 3	0.000	0.000	-0.109	-0.018	-0.027	0.000
KA 1	0.000	0.000	0.000	0.000	0.000	0.000

KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Correlation Matrix of Parameter Estimates

	PH 4_2	PH 4_3	PH 4_4	PH 5_1	PH 5_2	PH 5_3
PH 4_2	1.000					
PH 4_3	0.148	1.000				
PH 4_4	0.245	0.086	1.000			
PH 5_1	-0.033	-0.021	-0.009	1.000		
PH 5_2	-0.135	-0.025	-0.022	0.159	1.000	
PH 5_3	-0.029	-0.098	-0.008	0.175	0.154	1.000
PH 5_4	-0.288	-0.079	-0.132	0.069	0.194	0.067
PH 5_5	0.036	0.010	0.009	-0.021	-0.378	-0.104
PS 1_1	0.000	-0.013	-0.121	0.000	0.000	0.000
PS 2_2	0.000	0.011	0.072	0.000	0.000	0.000
PS 3_2	0.000	-0.001	0.000	0.000	0.000	0.000
PS 3_3	0.000	0.000	0.000	0.000	0.000	0.000
TH 1_2	0.000	0.000	-0.001	0.000	0.000	0.000
TH 3_3	0.000	0.000	0.000	0.000	0.000	0.000
TH 4_2	0.000	-0.031	-0.372	0.000	0.000	0.000
AL 1	-0.049	-0.060	-0.041	-0.060	0.000	0.000
AL 2	0.079	0.093	0.010	0.096	0.000	0.024
AL 3	0.000	-0.008	0.000	0.000	0.000	0.002
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Correlation Matrix of Parameter Estimates

	PH 5_4	PH 5_5	PS 1_1	PS 2_2	PS 3_2	PS 3_3
PH 5_4	1.000					
PH 5_5	-0.132	1.000				
PS 1_1	0.000	0.000	1.000			
PS 2_2	0.000	0.000	-0.157	1.000		
PS 3_2	0.000	0.000	-0.011	0.318	1.000	
PS 3_3	0.000	0.000	-0.001	0.056	0.279	1.000
TH 1_2	0.000	0.000	-0.100	0.185	0.097	-0.001
TH 3_3	0.000	0.000	-0.003	0.009	-0.214	0.189
TH 4_2	0.000	0.000	0.385	-0.339	0.005	-0.001
AL 1	-0.128	0.000	0.067	0.017	0.029	0.004
AL 2	0.205	0.000	-0.020	0.055	0.003	-0.014
AL 3	0.000	0.000	0.001	0.031	0.102	0.000
KA 1	0.000	0.000	0.000	0.000	0.000	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.000
KA 4	0.000	0.000	0.000	0.000	0.000	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Correlation Matrix of Parameter Estimates

	TH 1_2	TH 3_3	TH 4_2	AL 1	AL 2	AL 3
TH 1_2	1.000					
TH 3_3	0.000	1.000				
TH 4_2	0.072	-0.007	1.000			
AL 1	-0.047	0.000	0.054	1.000		
AL 2	0.163	-0.076	0.005	-0.113	1.000	
AL 3	-0.017	0.000	-0.001	0.029	0.066	1.000
KA 1	0.000	0.000	0.000	0.013	-0.021	0.000
KA 2	0.000	0.000	0.000	0.000	0.000	0.000
KA 3	0.000	0.000	0.000	0.000	0.000	0.072
KA 4	0.000	0.000	0.000	0.028	-0.045	0.000
KA 5	0.000	0.000	0.000	0.000	0.000	0.000

Correlation Matrix of Parameter Estimates

	KA 1	KA 2	KA 3	KA 4	KA 5
KA 1	1.000				
KA 2	0.161	1.000			
KA 3	0.172	0.138	1.000		
KA 4	0.068	0.176	0.060	1.000	
KA 5	-0.015	-0.277	-0.073	-0.094	1.000

TI Smoking Path

Standardized Solution

BETA

	SC3	SUMSE	SUMMOV
SC3	- -	0.593	0.009
SUMSE	- -	- -	- -
SUMMOV	- -	- -	- -

GAMMA

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	- -	-0.070	0.021	-0.335	0.060
SUMSE	0.112	-0.128	-0.266	- -	0.145
SUMMOV	0.082	- -	- -	- -	- -

Correlation Matrix of Y and X

	SC3	SUMSE	SUMMOV	SUMIV	SUMNIC	SUMDEP
SC3	1.000					
SUMSE	0.629	1.000				
SUMMOV	0.115	0.184	1.000			
SUMIV	-0.005	0.044	0.082	1.000		
SUMNIC	-0.254	-0.187	0.013	0.161	1.000	
SUMDEP	-0.177	-0.275	0.014	0.172	0.138	1.000
CADHX	-0.378	-0.045	0.006	0.068	0.176	0.060
SUMSS	0.227	0.199	-0.001	-0.015	-0.277	-0.073

Correlation Matrix of Y and X

	CADHX	SUMSS
CADHX	1.000	
SUMSS	-0.094	1.000

PSI

	SC3	SUMSE	SUMMOV
SC3	0.472		
SUMSE	- -	0.869	
SUMMOV	- -	0.180	0.993

Regression Matrix Y on X (Standardized)

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	0.067	-0.146	-0.137	-0.335	0.146
SUMSE	0.112	-0.128	-0.266	- -	0.145
SUMMOV	0.082	- -	- -	- -	- -

TI Smoking Path

Total and Indirect Effects

Total Effects of X on Y

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	0.021	-0.029	-0.008	-0.356	0.008
	(0.023)	(0.015)	(0.004)	(0.076)	(0.004)
	0.925	-1.946	-1.890	-4.690	1.997
SUMSE	1.140	-0.811	-0.518	- -	0.254
	(1.241)	(0.504)	(0.154)		(0.135)
	0.919	-1.609	-3.368		1.885
SUMMOV	0.991	- -	- -	- -	- -
	(0.972)				
	1.020				

Indirect Effects of X on Y

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	0.021	-0.015	-0.010	- -	0.005
	(0.023)	(0.010)	(0.003)		(0.003)
	0.925	-1.586	-3.160		1.844
SUMSE	- -	- -	- -	- -	- -
SUMMOV	- -	- -	- -	- -	- -

Total Effects of Y on Y

	SC3	SUMSE	SUMMOV
SC3	- -	0.019	0.000
		(0.002)	(0.002)

	8.975	0.143	
SUMSE	- -	- -	- -
SUMMOV	- -	- -	- -

Largest Eigenvalue of B*B' (Stability Index) is 0.000

TI Smoking Path

Standardized Total and Indirect Effects

Standardized Total Effects of X on Y

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	--	-0.146	-0.137	-0.335	0.146
SUMSE	0.112	-0.128	-0.266	- -	0.145
SUMMOV	0.082	- -	- -	- -	- -

Standardized Indirect Effects of X on Y

	SUMIV	SUMNIC	SUMDEP	CADHX	SUMSS
SC3	- -	-0.076	-0.158	- -	0.086
SUMSE	- -	- -	- -	- -	- -
SUMMOV	- -	- -	- -	- -	- -

Standardized Total Effects of Y on Y

	SC3	SUMSE	SUMMOV
SC3	- -	0.593	0.009
SUMSE	- -	- -	- -
SUMMOV	- -	- -	- -

Time used: 0.031 Seconds

VITA

Flight Lieutenant Jirapinya Khamrath was born on December 19, 1984 at Nan province, northern part of Thailand. She finished her bachelor's degree in Nursing Science from Royal Thai Air Force Nursing College in 2007. She worked as a registered nurse at Bhumibol Adulayadaj hospital from 2008-2009. She worked as nursing instructor of Royal Thai Air Force Nursing College from 2010-present.