

# **Factors Influencing Smoking Cessation Behavior among Thai Male Smokers with Hypertension**

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**Abstract:** Since the coexistence of smoking and hypertension can increase cardiovascular and mortality risks, smoking cessation in smokers with hypertension is necessary to reduce those risks. While several factors have been shown to be associated with smoking cessation, no research reports regarding factors influencing smoking cessation in smokers with hypertension have been found. This study aimed to determine factors of age, education, nicotine dependence, concern about the harm of smoking, perceived benefits of smoking cessation, perceived barriers to smoking cessation, perceived self-efficacy in smoking cessation, and social support for smoking cessation that predict smoking cessation among Thai male smokers with hypertension. Two hundred and sixty-six Thai men with hypertension who smoked cigarettes participated in this study. Face-to-face structured interviews were conducted to complete the Personal Information Questionnaire, the Fagerstrom Test for Nicotine Dependence, the Perceived Risks and Benefits Questionnaire, the Self-Efficacy Inventory, and the Partner Interaction Questionnaire.

The results of multiple logistic regression analysis revealed two significant predictors of smoking cessation among Thai male smokers with hypertension. These included perceived self-efficacy in smoking cessation and concern about the harm of smoking, with overall correctly predicting 97.7%. These two significant factors accounted for 68% of the variance in smoking cessation among the participants.

Smoking cessation programs for Thai male smokers with hypertension should include measures to enhance self-efficacy and emphasize the harmful effects of smoking and nurses can be involved in the design and implementation of these.

*Pacific Rim Int J Nurs Res 2014; 18(2) 100-110*

**Key Words:** Smoking cessation; Hypertension; Self-efficacy; Tobacco; Males

## **Introduction**

Smoking and hypertension are two important risk factors of cardiovascular disease (CVD) and are associated with all-cause mortality and cardiovascular mortality worldwide.<sup>1,2</sup> The World Health Organization (WHO) reported that more than five million deaths are attributable to smoking and approximately seven

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million to high blood pressure.<sup>1</sup> The existing evidence reported that the effects of some compounds in tobacco, such as nicotine and cadmium, were related to a rise in blood pressure.<sup>3</sup> Interestingly, the coexistence of smoking and hypertension contributes to an increase of cardiovascular risk by more than four times.<sup>3</sup> In addition, the all-cause mortality for comorbidity smoking and hypertension is four times higher (RR = 4.25) compared to the individual risk for smoking (RR = 1.97) or for hypertension (RR = 2.16) alone.<sup>4</sup> An estimated 13 million adults are currently smokers in Thailand with a higher prevalence in men (44.6%) compared to women (2.6%).<sup>5</sup> The prevalence of hypertension in Thai adults was 21.4%, similar between men and women, but men had higher blood pressure values than women.<sup>6</sup> In addition, 31.5% of Thai men with hypertension continue to smoke.<sup>6</sup> As the aforementioned risks when smoking and hypertension are related, smoking cessation in the smokers with hypertension is necessary to reduce mortality and morbidity.

Smoking cessation has health benefits in decreasing cardiac risks and mortality for CVD. Only one year after smoking cessation, the risk for coronary heart disease (CHD) was reduced to half of that for those who continued smoking, and it continued to fall to the same rate as nonsmokers with longer duration.<sup>7</sup> Among smokers with hypertension, data from the 36-year follow-up in the Framingham Study reported that quitting smoking could reduce the risk of coronary heart disease by 35–40%.<sup>8</sup> Although most smokers would like to quit smoking and attempt to do so, not all are successful. According to data from the International Tobacco Control Southeast Asia Survey, 71% of Thai adult smokers made an attempt to quit, but only 18% of those were able to remain abstentious from smoking.<sup>9</sup>

There are many factors that influence smoking cessation. Personal factors, psychosocial factors, and smoking-related factors were found to be associated with smoking cessation since initial quitting till maintain quitting. For example, age and education tends to be positively related to successful smoking cessation,<sup>12,15</sup>

whereas the level of nicotine dependence was found to be negatively associated with smoking cessation outcome.<sup>13</sup> Few studies were found that examined factors associated with smoking cessation in specific population, such as the smoker with coronary heart disease,<sup>10</sup> or smokers with asthma.<sup>11</sup> No study among smokers with hypertension was found to determine factors associated with smoking cessation.

Health care providers, especially nurses, have an opportunity to help smokers with hypertension who received regularly health care service for treating their hypertension. Nurses are ideal candidates for providing cessation interventions as they can relate the patients' smoking to their medical condition and work with physicians to obtain cessation medications. However, it is important to understand factors influencing smoking cessation among smokers with hypertension in order for nurses to provide interventions that can best influence and assist them.

Therefore, the purpose of this study was to determine the predictive factors of smoking cessation including age, education, nicotine dependence, concern about the harm of smoking, perceived benefits of smoking cessation, perceived barriers to smoking cessation, perceived self-efficacy in smoking cessation, and social support for smoking cessation among Thai male smokers with hypertension.

## **Conceptual Framework and Review of Literature**

Various factors associated with smoking cessation have been examined in several studies. Older age smokers were more likely to successful cessation and maintenance.<sup>9,12,13</sup> Smokers with higher education level were more likely to successfully quit.<sup>14,15</sup> Smokers with lower levels of nicotine dependence or smoked fewer cigarettes per day were more likely to successful cessation.<sup>9,13,16</sup> Smokers with higher concern about the harm of smoking were more likely

to be motivated to quit<sup>14</sup> and have successful smoking cessation.<sup>17</sup>

Smokers with higher self-efficacy were more likely to quit smoking and maintain smoking cessation.<sup>9,10,18</sup> Whereas perceived benefits were found to be positively associated with intention to quit, perceived barriers were found to be negatively associated with intention to quit and smoking cessation.<sup>19</sup> In addition, smokers who had greater perceived social support and fewer negative support from spouses, partners and others in the social network were more likely to quit smoking and maintain smoking cessation.<sup>10,20-22</sup>

Most studies on factors influencing smoking cessation have been conducted in Western countries,<sup>12-20</sup> while few studies were conducted in Asian countries.<sup>9,10</sup> In addition, many previous studies were found to use 3-month abstinence, 6-month abstinence, or less as criteria for successful smoking cessation.<sup>13-18</sup> Few studies were found to focus on smoking cessation outcomes at least 1-year post-abstinence.<sup>9,12</sup> According to the five stages of change regarding smoking cessation, the maintenance stage was defined as the smoker has stopped smoking for more than 6 months and continued quitting.<sup>23</sup> Relapse can occur when individuals revert to an earlier stage of change. Relapse to smoking was found greatest in the first few weeks and decreased rapidly over time.<sup>24</sup> A meta-analysis study reported that the annual incidence of relapse after one year was about 10%<sup>25</sup> and decreased to less than 5% after three year.<sup>7</sup> Therefore, at least 1-year abstinence was used as proxy measure of being successful smoking cessation in this study.

The conceptual framework of this study was derived from the revised Pender's Health Promotion Model (HPM) in 1996<sup>26</sup> and review of the literature. The revised HPM consists of three major constructs including 1) individual characteristics and experiences include prior related behavior and personal factors, 2) behavior-specific cognitions and affect include perceived benefits, perceived barriers, perceived

self-efficacy, activity-related affect, interpersonal influences, and situational influences, commitment to a plan of action, and immediate competing demands and preferences, and 3) behavioral outcome or health-promoting behavior. Factors in the model that are relevant to smoking cessation based on the results of previous empirical research were selected to explain and predict the behavioral outcome.

Individual characteristics included age, education, level of nicotine dependence, and concern about the harm of smoking. Behavior-specific cognitions and affect included perceived benefits of smoking cessation, perceived barriers to smoking cessation, perceived self-efficacy in smoking cessation, and social support for smoking cessation. In summary, eight selected factors from the HPM were proposed to predict the smoking cessation behavior among Thai males with hypertension including age, education, level of nicotine dependence, concern about the harm of smoking, perceived benefits of smoking cessation, perceived barriers to smoking cessation, perceived self-efficacy in smoking cessation, and social support.

## **Methods**

**Design:** A cross-sectional, predictive design was used to determine the predictive factors of smoking cessation among Thai male smokers with hypertension.

**Ethical Considerations:** The study was approved by the Institutional Review Board of the primary investigator's (PI) academic institution. Each potential participant was informed about the study's details, and assured their confidentiality and anonymity. They had the right to withdraw at any time without repercussion. Those who met the inclusion criteria and were willing to participate in the study were asked to sign a consent form.

**Sample and Setting:** Potential participants were approached at the Family Medicine outpatient clinic and the Medicine clinic of a university hospital

in Bangkok, the capital city of Thailand, from August–October 2011. This setting served a large number of patients from every region of Thailand.

The inclusion criteria were male adults aged 18 years and older who 1) experienced smoking at least 100 cigarettes in a lifetime, and 2) had a systolic blood pressure level of  $\geq 140$  mmHg, or a diastolic blood pressure level of  $\geq 90$  mmHg, or diagnosed with hypertension, or taking hypertension medications during the previous 2 weeks. Exclusion criteria included 1) subjects who were mentally or physically too unstable to participate, and 2) those who later refuse to participate in the study.

Sample size was calculated by estimating a population proportion of Lwanga and Lemeshow as cited in Viwatwongkasem.<sup>27</sup> Since a previous study found that the successful smoking cessation rate among male smokers was approximately 20%<sup>6</sup> ( $\pi = 0.2$ ,  $1-\pi = 0.8$ ), and given 5% of the precision of estimation ( $d = .05$ ) and confidence levels of 95%,  $\alpha = .05$  ( $Z_{\alpha/2} = 1.96$ ), the minimum sample size of 246 would be required. To ensure an adequate sample size, oversampling was conducted; therefore 280 participants were recruited in this study.

**Instruments:** Five instruments were used to collect the data and these are described below:

*The Personal Information Questionnaire*, developed by the PI from a literature review, sought participant demographic information including age, education, hypertension history and health conditions, their level of concern about the harm of smoking, smoking and quitting history, and smoking cessation behavior.

*Age and education* were measured by participants' self-report of age in years at the time of interview and total years of education.

*Concern about the harm of smoking* was measured by a self-rated question which participants were asked, "How concerned are you about the harm of smoking on your health?" with a 10-rating scale, from 0 (not at all) to 10 (A great deal). A higher score indicates a higher level of concern about the harm of smoking.

*Smoking cessation behavior* was measured by self-report of participants. Participants who reported smoking at the time of interview were considered current smokers. Those who reported not smoking a puff of a cigarette for at least 1 year prior to the interview were considered former smokers.

*The Fagerstrom Test for Nicotine Dependence* (FTND) was used to assess the level of nicotine dependence developed by Heatherton et al.<sup>28</sup> in the USA. The FTND had acceptable levels of internal consistency, and was found to be closely related to biochemical indices of heaviness of smoking (e.g. salivary cotinine), and was recommended to use in issues of smoking cessation.<sup>28</sup> The FTND is available in the public domain for research purposes. It had been translated into the Thai language and was used widely. The FTND consists of six items with four categories scoring (0–3) for two items and two scoring (0–1) for four items. An example of a four category scoring item was: "How soon after you wake up do you smoke your first cigarette?" Possible responses to this item included 0 = after 60 mins; 1 = 31–60 mins; 2 = 6–30 mins, and 3 = within 5 mins. An example of a two category scoring item was: "Do you smoke if you are so ill that you are in bed most of the day?" Possible responses to this item were 0 = No and 1 = Yes. The total nicotine dependence score was calculated by summing the scores across items. Possible scores ranged from 0–10, with higher scores indicating a higher level of nicotine dependence. A previous study among American smokers provided support for the construct validity of the FTND and test-retest reliability which Cronbach's alpha was .64.<sup>29</sup> In this study, the Cronbach's alpha was .42 for the scale.

*The Perceived Risks and Benefits Questionnaire* (PRBQ) was used to measure perceived barriers to smoking cessation and perceived benefits of smoking cessation developed by McKee and colleagues<sup>19</sup> in the USA. The PRBQ consists of 39 items which are grouped into the Perceived Risks Scale and the Perceived Benefits Scale.

The Perceived Risks Scale of the PRBQ has 18 items including six subscales: weight gain, increased in negative affect, reduced ability to attend or concentrate, social ostracism, loss of enjoyment, and craving (Items number 1–18). An example of a weight gain item was: “How likely would be if you were to stop smoking...You will eat more.” Each item was rated on a 7-point Likert scale ranging from 1 (no chance) to 7 (certain to happen). The total score is obtained by summing the numerical value of the responses across items. Possible total scores range from 18–126. The higher perceived risk scores indicate higher perceived barriers to smoking cessation.

The Perceived Benefits Scale of the PRBQ has 21 items including six subscales: health, well-being, finances, self-esteem, social approval, and physical attraction (Items number 19–39). An example of a well-being item was: “How likely would it be if you were to stop smoking...You will breathe easier.” Each item was rated on a 7-point Likert scale ranging from 1 (no chance) to 7 (certain to happen). The total score is obtained by summing the numerical value of the responses across items. Possible total scores range from 21–147. The higher perceived benefit scores indicate greater perceived benefits of smoking cessation. A prior study produced an internal consistency reliability of .90 for the Perceived Risks Scale and .93 for the Perceived Benefits Scale.<sup>19</sup> In this study, the Cronbach’s alpha was .87 for the Perceived Risks Scale and .93 for the Perceived Benefits Scale.

*The Self-Efficacy Inventory for Smoking Cessation* (SEISC) was used to measure perceived self-efficacy in smoking cessation developed by Velicer and colleagues<sup>30</sup> in the USA. The SEISC is available in the public domain for research purposes and is used to assess the level of confidence in that an individual could avoid smoking in the 20 situations which consists of three subscales: positive affect/social situations, negative affect situations, and habitual/craving situations. An example of a negative affect

situation item was: “How confident are you that you can avoid smoking when you see someone smoking and enjoying it?” Each item was rated on a 5-point Likert scale, from 1 (not at all) to 5 (extremely confident). The total score is obtained by summing the numerical value of the responses across items. Possible total scores range from 20–100. A higher score indicates a higher level of perceived self-efficacy in smoking cessation. A prior study produced an internal consistency reliability of .86 for positive affect/social situations, .95 for negative affect situations, and .80 for habitual/craving situations; with highly correlated for three subscales ( $r = .80–.83$ ).<sup>30</sup> In this study, the Cronbach’s alpha was .98 for the scale.

The Partner Interaction Questionnaire (PIQ-20) was used to measure social support for smoking cessation developed by Cohen and Lichtenstein<sup>22</sup> in the USA. The PIQ-20 measures the support for quitting provided by smokers’ spouse or living partner, friends or relatives, who would follow their progress in quitting most closely. The PIQ-20 consisted of 20 items that a partner might perform including 10 items for positive behaviors and 10 items for negative behaviors. An example of a positive behavior item was: “How often your spouse or closed person congratulated you for your decision to quit smoking?” An example of a negative behavior item was: “How often has your spouse or closed person commented that smoking is a dirty habit?” Each item was rated on a 5-point Likert scale, from 0 (never) to 4 (very often). The total score for social support was calculated by dividing the sum of positive behavior scores by the sum of negative behavior scores. In case the sum score of negative behaviors was 0, it was assigned to be 1 so that the positive/negative ratio score could be calculated. Cohen and Lichtenstein<sup>22</sup> stated that using the ratio of positive/negative behaviors was a better predictor of abstinence than using positive or negative behavior alone. Possible total scores range from 0–40. The more positive/negative ratio score indicates the greater social support of smoking cessation. Prior studies

produced an internal consistency reliability of .87-.89 for the positive subscale and .85-.92 for the negative subscale.<sup>10,22</sup> In the present study, the Cronbach's alpha was .83 for the positive subscale and .84 for the negative subscale.

Three instruments including the PRBQ, the SEISC, and the PIQ-20 were translated from English into Thai. Then the three Thai versions of these instruments were back-translated into the English by another bilingual person who never saw the original version. The versions of back translation were compared to the original versions by a native American professor for achieving an equivalent meaning. The content validity of all instruments were reviewed by a panel of five specialists in smoking cessation behaviors to confirm the clarity and appropriateness of the domain.

A pilot study was performed to test the study feasibility and to examine reliability and validity of instruments using 30 hypertensive smokers who met the inclusion criteria, but not included in the actual study. The pilot study verified the instruments' validity and reliability. The pilot study also suggested administering the questionnaires in face-to-face interviews rather than self-administering them due to potential problems of visual acuity in this age-group.

**Data Collection:** Potential participants were approached and informed about the study while they were waiting for their scheduled appointments. Those willing to participate were asked to sign the informed consent. The PI conducted a face-to-face, structured interview with each participant in a separated area nearby the waiting room of each clinic. Each interview included administration of five instruments, and took  $\approx$ 30-40 mins to complete. All participants were assured that their interviews would not interfere with their scheduled appointments.

**Data Analysis:** Data were analyzed using descriptive statistics and logistic regression. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to describe the personal information of the participants. Smoking cessation behavior was dichotomized into current smokers and former smokers. Logistic regression analysis was used to estimate the

probability of successful cessation among Thai male smokers with hypertension. Univariate logistic regression analysis was used to examine the associations between eight potential predictors and smoking cessation behavior. Multiple logistic regression analysis was used to determine the predictors of smoking cessation behavior after controlling for the effect of other variables. Prior to logistic regression analysis, Spearman Rho correlation was done to examine the relationship among eight independent variables for checking the evidence of multicollinearity. The findings showed the statistically significant correlation coefficients among the independent variables ranged from 0.13 to 0.46, indicating a moderate correlation which was not problematic in the study.<sup>31</sup>

## Results

Initially, 280 potential participants were approached to join in the study of which 90 were current smokers, and 190 were former smokers. Of the former, 176 participants quit smoking for one year or more, and 14 participants quit smoking for less than one year. Since one year abstinence was used as proxy measure of being successful smoking cessation in this study, the 14 participants who quit smoking less than one year were excluded from the study. Therefore, the final sample consisted of 266 participants which consisted of 90 (33.8%) current smokers and 176 (66.2%) former smokers.

Ages ranged from 32 to 67 years, with a mean of 56.2 years ( $SD = 6.7$ ). Most participants were married (91%) and employed (78.2%). The mean length of education was about 11 years ( $SD = 4.6$ ). More than half of the participants had been diagnosed with hypertension for 5 years or less (56.8%) with the mean number of years since diagnosis of 5.9 years ( $SD = 5.4$ ). Besides hypertension, the majority of the participants had other co-morbid conditions (90.2%), the major one being dyslipidemia (72.5%).

Regarding smoking and quitting history, the mean age at the beginning of smoking for all participants was about 18 years old. Almost all of the participants smoked manufactured cigarettes (98.1%). The

majority smoked 11–20 cigarettes per day (38%), with a mean of 20.6 (SD = 15). Most participants had made an attempt to quit at least once, but approximately 10% had never made an attempt to quit smoking. Most participants stopped smoking by their own (97.5%) including going ‘cold turkey’ (83.2%), gradually quitting (14.3%), followed by nicotine replacement therapy (1.3%), counselling (0.8%), and alternatives method such as herbs (0.4%).

Descriptive statistics of the independent variables are presented in **Table 1**. Former smokers were older than current smokers. Former smokers had the mean years of education similar to current smokers. Former smokers reported higher concern about the harm of smoking, higher nicotine dependence, higher perceived benefits, lower perceived barriers, higher perceived self-efficacy, and higher perceived social support than current smokers.

**Table 1** Descriptive Statistics of the Predictive Variables

Variable	Possible Range	Actual Range	Mean (SD)		
			Current smokers (n = 90)	Former smokers (n = 176)	Total (n = 266)
Age (year)	–	32– 67	54.7(7.8)	57.0(5.9)	56.2(6.7)
Education (year)	–	0–18	10.3(4.6)	10.9(4.7)	10.7(4.6)
Concern about the harm of smoking	0–10	0–10	7.9(2.8)	9.2(1.9)	8.8(2.3)
Nicotine dependence	0–10	0–8	2.6(2.0)	3.8 (2.2)	3.4(2.2)
Perceived benefits	21–147	21–147	121.9(30.2)	131.9(20.8)	128.5(24.8)
Perceived barriers	18–126	18–120	59.1(27.3)	43.6(19.8)	48.8(23.8)
Perceived self-efficacy	20–100	20–100	45.3(21.6)	99.8(1.8)	81.3(28.7)
Social support (positive/negative ratio)	0–40	0–20	0.38(1.0)	1.8(3.1)	1.3(2.7)

Univariable logistic regression analysis revealed that seven out of eight important factors were significantly associated with smoking cessation, as shown in **Table 2**. Education was not associated with smoking cessation and was therefore omitted from the multivariate analysis.

Multivariate analyses using the seven remaining factors revealed that perceived self-efficacy in smoking cessation and concern about the harm of smoking were found to be significant, as shown in **Table 3**.

**Table 2** Univariate Logistic Regression Analysis of Each Variable between Two Categories of Smoking Cessation Behavior.

Variable	b	S.E.	Wald	p	Odds ratio	95% CI
Age	.05	.02	6.95	< .01	1.05	1.01–1.09
Education	.03	.03	0.85	.357	1.03	0.97–1.08
Concern about the harm of smoking	.24	.06	15.54	< .001	1.27	1.13–1.43
Nicotine dependence	.25	.06	15.34	< .001	1.28	1.13–1.45
Perceived benefits of smoking cessation	.02	.01	8.76	< .01	1.02	1.01–1.03
Perceived barriers to smoking cessation	-.03	.01	23.26	< .001	0.97	0.96–0.98
Perceived self-efficacy in smoking cessation	.37	.10	14.68	< .001	1.44	1.20–1.74
Social support for smoking cessation	.94	.22	18.86	< .001	2.55	1.67–3.90

**Table 3** Multiple Logistic Regression of Selected Model Variables on Smoking Cessation

Variable	Coefficients (B)	S.E.	Wald	p-value	Adjusted Odds ratio	95% CI
Perceived self-efficacy in smoking cessation	0.54	0.15	12.89	< .001	1.71	1.28–2.29
Concern about the harm of smoking	-2.04	0.89	5.21	.02	0.13	0.02–0.75
Constant	-29.12	7.27				

-2LL = 34.04, Cox and Snell R<sup>2</sup> = 68%

The results also indicated that after controlling for the effect of other variables, the odds of cessation for perceived self-efficacy in smoking cessation was 1.71 (OR = 1.71, 95% CI = 1.28–2.29). For every one-unit of increased perceived self-efficacy, the odds of cessation increased 1.71 times or the odds of cessation increased by 71%. For concern about the harm of smoking, the odds of cessation was 0.13 (OR = 0.13, 95% CI = 0.02–0.75). For every one-unit of increased concern about the harm of smoking, the odds of cessation decreased 0.13 times or the odds of cessation decreased by 87%. These two significant factors in the model accounted for 68% of the variance in smoking cessation among Thai male smokers with hypertension. The overall rate of correct classification was 97.7%, with 95.6% of current smokers (specificity) and 98.9% of former smokers (sensitivity) being correctly classified.

## Discussion

Perceived self-efficacy in smoking cessation was found to be the strongest predictor of smoking cessation in this study. Participants who reported higher self-efficacy in smoking cessation were more likely to quit. This finding was consistent with previous studies that self-efficacy was an important factor of smoking cessation; smokers with a higher level of self-efficacy were more likely to quit and staying abstinent.<sup>9,10,18</sup> The result also supported the Health Promotion Model (HPM), which proposed that perceived

self-efficacy motivates individuals to engage in the target behavior and maintain that behavior.<sup>26</sup> According to Bandura,<sup>32</sup> perceived self-efficacy is concerned with the judgment of what one can do in the specific situation, as well as affects the efforts and persistence, even in the face of obstacles and aversive experience. Smokers who have high perceived self-efficacy can achieve and maintain smoking cessation. Therefore, this study's finding supported that perceived self-efficacy in smoking cessation was a very important factor contributing smoking cessation among Thai male smokers with hypertension.

Concern about the harm of smoking was found to be a predictor of smoking cessation. Participants with higher concern about the harm of smoking were less likely to quit. The direction of relationship was found to be incongruent with previous studies.<sup>9,13,14,17</sup> Those previous findings indicated that the more concerned about health effects of smoking, the more likely to be successful in smoking cessation. In this study, participants who had more concern about the harm of smoking might not really be aware of damage from smoking until the damage directly impacted them. Therefore, despite having more concern about the harm of smoking, it did not influence quit rates. Moreover, the measurement of concern about the harm of smoking in this study was a single-item scale, which may not have captured the dimensions of the variable.<sup>33</sup> Multiple-item scales should be considered for using in future studies.

Unlike other studies,<sup>9,12,13,15,16,19</sup> age did not significantly predict smoking cessation in this study. Anecdotally we noted that some participants reported that it was too late to quit smoking at their age. Education was also not significantly associated with smoking cessation in the present study perhaps because the mean years of education was similar in both groups, thus there was not enough variation to discriminate the smoking cessation behavior. Nicotine dependence did not significantly predict smoking cessation behavior in this study perhaps because overall nicotine dependence was low although about half of the participants were found to smoke within 5 minutes after wake up. That the FTND had low levels of reliability in this study may be due to its multidimensional structure and a few number of items; however, it had the advantage in that it had a good correlation with biochemical measures.<sup>29</sup> Perceived benefits of smoking cessation and perceived barriers to smoking cessation did not significantly predict smoking cessation in the present study. Although, the participants had high levels of perceived benefits and low levels of perceived barriers, some factors may have made more contribution in smoking cessation over those factors. While social support has been found to influence quitting smoking in other studies,<sup>10,22</sup> this did not predict quitting in this study perhaps because social support was low in both groups.

### **Limitations**

This was a cross-sectional study and therefore causality cannot be assumed. The study used a non-probability sample because of limitation in randomly perform in collecting data at the outpatient clinics, so the generalizability may be limited. Some instruments including the PRBQ, the SEISC and the PIQ-20 were developed from western culture and translated to the Thai language, thus cross cultural issues may arise.

### **Conclusions and Implications for Nursing Practice**

Both perceived self-efficacy and concern about the harm of smoking were strong predictors of successful smoking cessation among Thai male smokers with hypertension. In further studies, smoking cessation interventions for Thai male smokers with hypertension should emphasize strategies that enhance self-efficacy in smoking cessation such as a support group in which former smokers acting as role models can offer skills helpful to current smokers. Once the smokers quit smoking, they may gain in confidence from their experiences in smoking cessation, which in turn, enables the maintenance of smoking cessation. In clinical practice, nurses should enhance smokers' awareness of the harms of smoking by providing education that emphasizes the cardiovascular risks of continued smoking in the smokers with hypertension.

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## ปัจจัยที่มีอิทธิพลต่อพฤติกรรมการเลิกสูบบุหรี่ในชายไทยที่มีโรคความดันโลหิตสูง

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**บทคัดย่อ:** ผู้ที่มีภาวะความดันโลหิตสูงร่วมกับมีพฤติกรรมการสูบบุหรี่พบว่ามีความเสี่ยงในการเกิดโรคหลอดเลือดหัวใจและการเสียชีวิตเพิ่มขึ้น ดังนั้นการช่วยให้ผู้ที่มีความดันโลหิตสูงเลิกสูบบุหรี่ได้สำเร็จ จึงมีความสำคัญอย่างยิ่ง การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่มีผลต่อการเลิกบุหรี่ในผู้สูบบุหรี่ชายไทยที่มีโรคความดันโลหิตสูง ซึ่งได้แก่ อายุ การศึกษา การติดนิโคติน การคำนึงถึงอันตรายจากการสูบบุหรี่ การรับรู้ประโยชน์ของการเลิกบุหรี่ การรับรู้อุปสรรคในการเลิกบุหรี่ การรับรู้ความสามารถของตนเองในการเลิกบุหรี่ และการสนับสนุนทางสังคมในการเลิกบุหรี่ กรอบแนวคิดในการศึกษานี้พัฒนามาจากทฤษฎีการส่งเสริมสุขภาพของเพนเดอร์และวรรณกรรมที่เกี่ยวข้องกับการเลิกบุหรี่

กลุ่มตัวอย่างเป็นชายไทยที่มีโรคความดันโลหิตสูงและมีประวัติสูบบุหรี่ จำนวน 266 รายโดยมีคุณสมบัติตามเกณฑ์ที่กำหนด กลุ่มตัวอย่างได้รับการสัมภาษณ์ด้วยแบบสอบถาม วิเคราะห์ข้อมูลโดยใช้การวิเคราะห์การผลโดยโลจิสติกเชิงพหุผลการศึกษาพบว่าปัจจัยที่มีผลต่อการเลิกบุหรี่ที่มีนัยสำคัญทางสถิติ มี 2 ปัจจัยคือ การรับรู้ความสามารถของตนเองในการเลิกบุหรี่ และการคำนึงถึงอันตรายจากการสูบบุหรี่โดยปัจจัยทั้งสองนี้ร่วมกันอธิบายโอกาสเลิกบุหรี่ได้ร้อยละ 68 และสมการสามารถพยากรณ์การเลิกบุหรี่ได้ถูกต้องร้อยละ 97.7

ผลการศึกษาครั้งนี้ชี้ให้เห็นว่า การรับรู้ความสามารถของตนเองในการเลิกบุหรี่ และการคำนึงถึงอันตรายจากการสูบบุหรี่เป็นปัจจัยที่สำคัญในการเลิกบุหรี่ของผู้สูบบุหรี่ที่มีโรคความดันโลหิตสูง ดังนั้น ควรพัฒนาโปรแกรมการเลิกบุหรี่ที่ส่งเสริมการรับรู้ความสามารถของตนเองในการเลิกบุหรี่ และให้ความรู้เกี่ยวกับอันตรายของบุหรี่ เพื่อให้สามารถเลิกบุหรี่ได้สำเร็จในระยะยาว รวมทั้งควรมีการศึกษาวิจัยเชิงทดลองเกี่ยวกับประสิทธิผลของโปรแกรมดังกล่าวต่อไป

*Pacific Rim Int J Nurs Res 2014; 18(2) 100-110*

**คำสำคัญ:** การเลิกบุหรี่ ความดันโลหิตสูง การรับรู้ความสามารถของตนเอง บุหรี่ ผู้ชาย

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