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นางสาวตรีชฎา บุญจันทร์

PREDICTORS OF SMOKING CESSATION IN THAI PATIENTS

Miss Threechada Boonchan

A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Science in Pharmacy Program in Clinical Pharmacy

Department of Pharmacy

Faculty of Pharmaceutical Sciences

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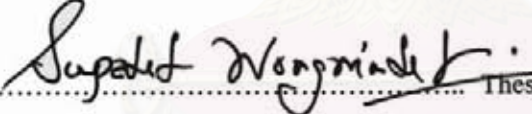
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ตรีชฎา บุญจันทร์: ปัจจัยทำนายการเลิกบุหรี่ในผู้ป่วยชาวไทย. (PREDICTORS OF SMOKING CESSATION IN THAI PATIENTS) อ.ที่ปรึกษา: ผศ. ดร.ศุภกิจ วงศ์วิวัฒนกิจ, อ.ที่ปรึกษาร่วม: นพ. วินัย ศรีสะอาด , 174 หน้า.

ความสำคัญและที่มาของปัญหา การรักษาผู้ป่วยให้เลิกบุหรี่ขึ้นอยู่กับปัจจัยหลายประการ ไม่ว่าจะเป็นปัจจัยด้านคุณลักษณะของผู้ป่วย ชนิดของยาเลิกบุหรี่ แบบแผนการใช้ยาและระยะเวลาในการใช้ยา ปัจจุบันยังไม่มีการศึกษาปัจจัยต่างๆ ที่สามารถใช้ทำนายการเลิกบุหรี่ในผู้ป่วยชาวไทย

วัตถุประสงค์ เพื่อศึกษาปัจจัยและสร้างแบบจำลองหลายตัวแปรเพื่อทำนายอัตราการเลิกบุหรี่ใน 7 วันก่อนวันประเมินผล (7-day point prevalence abstinence) และการเลิกบุหรี่อย่างต่อเนื่อง (continuous abstinence) ที่ 24 สัปดาห์ ในผู้ป่วยนอกชาวไทย

วิธีการวิจัย การวิจัยเชิงสหสัมพันธ์ (correlational research) ดำเนินการเก็บข้อมูลจากเวชระเบียนของผู้ป่วยที่เข้ารับการรักษาในคลินิกเลิกบุหรี่แบบย้อนหลังระหว่างวันที่ 1 ตุลาคม 2547 ถึงวันที่ 1 ตุลาคม 2549 ที่สถาบันธัญญารักษ์ โรงพยาบาลราชวิถีและโรงพยาบาลรามาธิบดี และติดตามผู้ป่วยที่เข้ารับการรักษาแบบไปข้างหน้าระหว่างวันที่ 1 ตุลาคม 2549 ถึงวันที่ 31 มกราคม 2550 ที่สถาบันธัญญารักษ์ โรงพยาบาลราชวิถี ในการวิจัยครั้งนี้มีผู้ป่วย 454 ราย และสร้างสมการหลายตัวแปรเพื่อใช้ทำนายการเลิกบุหรี่จากข้อมูลผู้ป่วย 249 ราย

ผลการวิจัย ผลการวิเคราะห์การถดถอยโลจิสติกแบบตัวแปรเดียวพบว่า ปัจจัยทำนายการเลิกบุหรี่ 7 วันก่อนวันประเมินผลที่ระยะเวลาติดตาม 24 สัปดาห์หลังวันกำหนดเลิกบุหรี่ ได้แก่ อายุที่เพิ่มขึ้น สถานภาพสมรส สถานภาพหม้ายหรือหย่าหรือแยกกันอยู่ ระดับการศึกษาตั้งแต่ปริญญาตรีขึ้นไป การมีโรคเรื้อรังในปัจจุบัน จำนวนบุหรี่ที่สูบ 11-20 มวนต่อวัน สูบบุหรี่นานอย่างน้อย 11 ปี มีความพยายามเลิกบุหรี่ก่อนหน้า 1 ครั้งหรือตั้งแต่ 2 ครั้งขึ้นไป การมาพบแพทย์อย่างน้อย 7 ครั้ง ชนิดของการรักษาด้วยยาและระยะเวลาของการรักษาด้วยยา ปัจจัยทำนายการเลิกบุหรี่อย่างต่อเนื่อง ได้แก่ ปัจจัยเดียวกันกับปัจจัยทำนายการเลิกบุหรี่ 7 วันก่อนวันประเมินผล ยกเว้นการมาพบแพทย์อย่างน้อย 7 ครั้ง เมื่อพิจารณาปัจจัยต่างๆ ร่วมกันโดยใช้การวิเคราะห์การถดถอยโลจิสติกแบบหลายตัวแปรโดยวิธีวิเคราะห์แบบมีขั้นตอน ชนิดขจัดย้อนหลังสร้างสมการหลายตัวแปรเพื่อใช้ทำนายการเลิกบุหรี่ พบว่าปัจจัยที่มีผลต่อการเลิกบุหรี่ 7 วันก่อนวันประเมินผลที่ระยะเวลาติดตาม 24 สัปดาห์หลังวันกำหนดเลิกบุหรี่ ได้แก่ ความพยายามในการเลิกบุหรี่ก่อนหน้า 1 ครั้ง [Odds ratio (OR) =2.92, 95% CI =1.41-6.06] ความพยายามในการเลิกบุหรี่ก่อนหน้าตั้งแต่ 2 ครั้ง (OR =3.55, 95%CI = 1.37-9.22) การใช้ยาที่เป็นทางเลือกอันดับแรกหรืออันดับสอง 1 ชนิดในแบบแผนการใช้ยา (OR = 4.57 , 95%CI = 1.55-13.47) การใช้ยาที่เป็นทางเลือกอันดับแรกและ/หรืออันดับสองร่วมกันตั้งแต่ 2 ชนิดขึ้นไปในแบบแผนการใช้ยา (OR = 6.41, 95%CI = 1.31-31.27) ปัจจัยที่มีผลต่อการเลิกบุหรี่อย่างต่อเนื่องที่ระยะเวลาติดตาม 24 สัปดาห์หลังวันกำหนดเลิกบุหรี่ ได้แก่ ความพยายามในการเลิกบุหรี่ก่อนหน้า 1 ครั้ง (OR =2.97, 95% CI = 1.38-6.39) ความพยายามในการเลิกบุหรี่ก่อนหน้าตั้งแต่ 2 ครั้ง (OR = 3.19, 95% CI = 1.18-8.56) การใช้ยาที่เป็นทางเลือกอันดับแรกหรืออันดับสอง 1 ชนิดในแบบแผนการใช้ยา (OR = 4.83, 95%CI = 1.57-14.85) การใช้ยาที่เป็นทางเลือกอันดับแรกและ/หรืออันดับสองร่วมกันตั้งแต่ 2 ชนิดขึ้นไปในแบบแผนการใช้ยา (OR =10.29, 95%CI = 2.06-51.45)

สรุปผลการวิจัย ปัจจัยทำนายที่เพิ่มโอกาสการเลิกบุหรี่ได้สำเร็จ ได้แก่ ผู้ที่เคยพยายามเลิกบุหรี่มาแล้ว 1 ครั้งและตั้งแต่ 2 ครั้งขึ้นไป การใช้ยาที่เป็นทางเลือกอันดับแรกหรืออันดับสองทั้งการใช้เพียง 1 ชนิดหรือใช้ร่วมกันตั้งแต่ 2 ชนิดขึ้นไป รวมทั้งเพิ่มระยะเวลาการใช้ยาให้นานขึ้น นอกจากนี้บุคคลากรทางการแพทย์ควรสร้างวิธีจูงใจให้ผู้ป่วยให้มาพบแพทย์ให้ได้อย่างน้อย 7 ครั้งเพื่อเพิ่มโอกาสเลิกบุหรี่ให้สำเร็จเช่นกัน และควรทำการศึกษาวิจัยความเหมาะสมในการใช้ยารักษาผู้ป่วยให้เลิกบุหรี่ตามกลุ่มคุณลักษณะที่จำเพาะของผู้ป่วยในอนาคต

ภาควิชา	เภสัชกรรม	ลายมือชื่อนิสิต..........................
สาขาวิชา	เภสัชกรรมคลินิก	ลายมือชื่ออาจารย์ที่ปรึกษา..........................
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4876566333 : MAJOR CLINICAL PHARMACY

KEY WORD: PREDICTORS/SMOKING CESSATION/SMOKING ABSTINENCE

THREECHADA BOONCHAN: PREDICTORS OF SMOKING CESSATION IN THAI PATIENTS. THESIS ADVISOR: ASST. PROF. SUPAKIT WONGWIWATTHANANUKIT, Pharm.D., Ph.D., THESIS COADVISOR: WINAI SRISAAD, M.D., 174 pp.

Background: Treating tobacco dependence depends on numerous factors such as patient socio-demographic characteristics, types of pharmacotherapy, dosage regimens, and duration of therapy. Currently no studies have been conducted to evaluate the predictors of smoking cessation in Thai patients.

Objectives: To determine the predictors and multivariate predictors model of smoking cessation in terms of 7-day point prevalence and continuous abstinence rates at 24 weeks in Thai patients.

Methods: Correlational research was conducted by collecting data from medical records as prospective and retrospective fashions during October 1, 2004 to January 31, 2007 at outpatients smoking cessation clinics of Thanyarak Institute, Rajavithi Hospital and Ramathibadi Hospital. Data of 454 patients and 249 patients were used to analyze the predictors and multivariate model of smoking cessation, respectively.

Results: Predictors analyzed by univariate logistic regression for higher 7-day point prevalence abstinence rates at 24 weeks were: increasing age, married/living with partner statuses, widowed/divorced/separated statuses, bachelor's degree graduate or upper, concurrent chronic illnesses, smoked 11-20 cigarettes per day, smoked at least 11 years, one previous quit attempt, ≥ 2 previous quit attempt, at least 7 sessions of visiting the clinician, types of pharmacotherapy and duration of using pharmacotherapy. Predictors for higher continuous abstinence rates were: all above predictors for 7-day point prevalence abstinence, except number of visiting sessions. After performing backward stepwise logistic regression procedures built multivariate logistic regression model, predictors related to 7-day point prevalence abstinence rate were: one previous quit attempt [Odds ratio (OR) = 2.92, 95%CI =1.41-6.06]; ≥ 2 previous quit attempts (OR =3.55, 95%CI = 1.37-9.22); used one first or second line pharmacotherapies as part of treatment (OR = 4.57 , 95%CI = 1.55-13.47); used combinations of first and/or second line pharmacotherapies as part of treatment (OR = 6.41, 95%CI = 1.31-31.27). For continuous abstinence rate at 24 weeks, predictors associated with smoking cessation were: one previous quit attempt (OR =2.97, 95% CI = 1.38-6.39); ≥ 2 previous quit attempts (OR = 3.19, 95% CI = 1.18-8.56); used one of first or second line pharmacotherapies as part of treatment (OR = 4.83, 95%CI = 1.57-14.85); used combinations of first and/or second line pharmacotherapies as part of treatment (OR = 10.29, 95%CI = 2.06-51.45).

Conclusions: Patients who had one and ≥ 2 previous quit attempts, attended ≥ 7 clinic visits, used one first or second line pharmacotherapies, used combinations of first and/or second line pharmacotherapies, and had longer duration of pharmacotherapy are associated with higher abstinence rates. More research is needed to determine the target patient characteristics and optimal use of pharmacotherapy for the treatment of tobacco dependence.

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Field of study.........Clinical Pharmacy.........Advisor's signature....

Academic year...........2007...................... Co-advisor's signature.....

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

AHRQ	=	Agency for Healthcare Research and Quality
AOR	=	adjusted odd ratio
CI	=	confidence interval
COPD	=	chronic obstructive lung disease
FTND	=	Fagerström Test for Nicotine Dependence
K-S	=	Kolmogorov-Smirnov test
NRT	=	nicotine replacement therapy
OR	=	odds ratio

CHAPTER I

INTRODUCTION

Cigarette smoking remains the chief preventable cause of illness and death worldwide including in Thailand. It is an established cause and/or risk factors of many acute and chronic diseases such as cancer, chronic obstructive lung disease (COPD) and cardiovascular diseases for smokers and nonsmokers alike. Statistics from Thai National Statistic Organization 2004 indicates that 9.6 million people who are fifteen years old or more are regular smokers, accounting for 19.5% of Thai population. This number translates into one out of six Thai people aged at least 15 years old [1]. In addition, 30% of patients with cancers died as a result of smoking and 80% of this group of patients also died from lung cancer [2]. The death of such patients results in national loss of crucial human resources. Moreover, the total economic burden from health expenditures for treating smoking-related illness becomes very high. One study has been conducted on the loss of the health expenditure of Thai smokers shows that the direct health care costs due to chronic obstructive pulmonary disease was estimated to 12,411 million bahts annually. This medical cost for smokers was equal to 0.27% of the gross national product which accounted for 4,628,000 bahts in 1998 estimated to be 4.40% of health expenditure of the nation in the same year [3]. The total economic health care costs of cardiovascular diseases as a result of smoking was 14,900,000 bahts per year which was equal to 0.32% of gross national product in 1998; or equal to 5.28% of national health expenditure in the same year [3]. Therefore health professionals and pharmacists are in the excellent position to participate in helping smokers to quit smoking.

Currently, sustained-release bupropion, varenicline and nicotine replacement therapy in a variety of formulations (e.g., polacrilex gum, transdermal patches, inhaler, spray, lozenge) have been approved by the United States and Thai Food and Drug

Administrations to be used as first-line pharmacotherapy for smoking cessation. Each of these agents has been found to be more effective than placebo in numerous randomized clinical trials [4-7]. These medications have clear advantage over placebo at doubling or even trebling the odds of quitting smoking. In addition, off label use of nortriptyline and clonidine have been recommended to be use as second-line pharmacotherapy for smoking cessation.

In Thailand, besides first or second-line pharmacotherapies, other smoking cessation pharmacotherapies: antidepressant (e.g., fluoxetine, amitryptyline), anxiolytic (e.g., lorazepam, alprazolam), sodium nitrate mouth wash, glucose tablet and ascorbic acid have been additional usages. There has been also usage of herbal medicines e.g., *Vernonia cineraea (Less.)*, clove [8]. Some patients could not quit smoking by using only monotherapy. Currently, treating tobacco dependence have been used the combination of pharmacotherpies, which provide higher efficacy than using single agent alone in many studies [4, 6, 9-15]. Moreover the longer duration of pharmacotherapy in treatment of tobacco dependence has been supported by some studies and the data showed that higher efficacy was observed in the group of patients who have extended duration of treatment [16, 48]. There are also other factors that have been identified as predictors of abstinence from smoking. These factors include age, marital status, educational level, health status, number of cigarettes per day, absence of psychiatric co-morbidity, emotional status, alcohol drinking, using addictive substances, confidence to quit, number of physician/clinic visits, stages of readiness to quit smoking, Fagerström Test for Nicotine Dependence scores (FTND scores), baseline cotinine level, time to smoking first cigarette of the day, number of previous quit attempt, longest time previously abstinent, types of using pharmacotherapy, duration of pharmacotherapy, number of visiting the clinician session, proportion of friends who smoked, number of smoker in household and

no-smoking policy at work **[17-37]**. However, none of studies have conducted in Thai smokers who treat tobacco dependence at clinical service.

However, there is no obvious way and study in Thailand indicating whether a certain patient should receive only single or combinations of pharmacotherapies, longer duration of using smoking cessation pharmacotherapy, or which patients have less opportunity to quit smoking than others. This information would provide healthcare professional to consider employing a certain type of smoking cessation pharmacotherapy together with providing appropriate counseling and monitoring. The purpose of this study was to determine factors associated with successful smoking cessation and develop a model to predict tobacco abstinence among Thai outpatient smokers who received clinical services for the treatment of tobacco dependence. Results of this study can be used to conceptualize the quitting process and aid in the development of the novel smoking cessation interventions for Thai outpatient smokers.

Objectives

To determine:

1. Predictors of smoking cessation (i.e., gender, age, marital status, educational level, alcohol drinking, health status, using other additive substances, number of cigarettes per day, number of years smoking, number of previous quit attempts, FTND scores, stages of readiness to quit smoking using Transtheoretical Model, time to smoking first cigarette of the day, number of visiting the clinician session, types of pharmacotherapy, duration of using pharmacotherapy) in terms of 7-day point prevalence and continuous abstinence rates at 24 weeks in Thai patients.

2. Multivariate predictors model of smoking cessation in terms of 7-day point prevalence and continuous abstinence rates at 24 weeks in Thai patients.

Operational definitions

1. *Quit date* means the first day in which the patients quit smoking. In this study the quit date is determined on the eighth day from the initial treatment day, except the patients who received nicotine replacement therapy (NRT). The quit date of patients who used NRT was set at the first day of the treatment.

2. *7-day point prevalence abstinence rate* means a measure of tobacco abstinence rate based on any smoking/tobacco use within 7 days prior to a follow up assessment.

3. *Continuous abstinence rate* means a measure of tobacco abstinence rate based on continuous abstinence of tobacco use from the quit date.

4. *Duration of using pharmacotherapy* means the period in which patients received smoking cessation pharmacotherapy by using single or combinations of pharmacotherapies as following: first line pharmacotherapy (i.e., all formulations of nicotine replacement therapy and sustained-release bupropion), second line pharmacotherpies (i.e., clonidine, nortriptyline), other antidepressants, anxiolytic, sodium nitrate mouth wash, ascorbic acid, the herbal medicine for smoking cessation (i.e., *Vernonia Cineraea (Less.)* infusion tea bag, clove) or any other medicines/ products which were prescribed by physicians to treat tobacco dependence.

Significance of the study

This study would add to the knowledge base on the:

1. Predictors of smoking cessation at 24 weeks in Thai patients.

2. Multivariate predictors and models of smoking cessation at 24 weeks in Thai patients.

3. Data on the predictors and models which can be used to better understanding the quitting process, to target the smoking cessation campaign for specific group of smokers and to aid in the development of the novel smoking cessation interventions for Thai smokers who want to quit smoking.

CHAPTER II

LITERATURE REVIEW

This study was conducted to determine factors which could be used to predict smoking abstinence of Thai outpatient smokers. Therefore, factors related to smoking cessation were reviewed in this chapter. The Chapter was divided into two sections as follows: (1) smoking cessation, (2) predictors of smoking cessation. Important factors which affect smoking cessation and previous studies related to predictors of smoking cessation were described in the second section.

1. Smoking cessation

Cigarette smoking is the leading cause of preventable death in Thailand. Each year, 52,000 Thai people die from diseases which smoking is responsible as a risk factor. It kills about 52,000 or about 115 per day or 6 per hour [1]. In addition, the country's economic loss resulted from chronic obstructive pulmonary disease was equivalent to 12,411 million baht annually which was equal to 0.27% of the gross national product which accounted for 4,628,000 baht in 1998; or equal to 4.40% of health expenditure of the nation in the same year [3].

Despite the clear health benefits of smoking cessation, smokers usually find it is difficult to stop and behavioral therapies often prove insufficient. Pharmacologic intervention may aid the smoking cessation because of the addictive nature of nicotine. Nicotine replacement therapy, which is regarded as first-line therapy, was developed to overcome the symptoms of nicotine withdrawal that many patients find distressing. Different modes of administration include inhalation and buccal or transdermal absorption. The orally administered non-nicotine drugs, varenicline and bupropion, are also regarded as first-line pharmacotherapy, either used alone or as an adjunct to nicotine replacement therapy. Second-line pharmacotherapy include clonidine and

nortriptyline. Other treatment strategies that have been examined include monoamine oxidase inhibitors and selective serotonin reuptake inhibitors; efficacy has yet to be proven definitively. A novel approach to treatment using the cannabinoid-1 receptor antagonist rimonabant is also under investigation.

However, some patients could not quit smoking by using pharmacotherapy. Past studies have examined demographic factors and smoking behavior to assess whether they differed between smokers who successful and unsuccessful to quit smoking. Predictors of successful smoking cessation for tobacco dependence treatment in hospital consist many dimensions e.g., treatment structure and intensity, treatment elements, and pharmacotherapy. In addition, demographic factors differed between smokers who were successful and unsuccessful to quit. Furthermore, smoking behavioral factors and environmental factors also differed between smokers who were successful and unsuccessful to quit. These predictors of smoking cessation were described in the second section.

2. Predictors of smoking cessation

2.1 Treatment structure and intensity

2.1.1 Intensity of clinical interventions

Fiore, Bailey, and Cohen (2000) conducted meta-analysis from 7 studies to evaluated efficacy of and estimated abstinence rates for advice to quit by a physician. This analysis shows that brief physician advice significantly increases long-term smoking abstinence rates [4]. They review forty-three studies for comparisons among various session lengths. Whenever possible, session length was categorized based on the maximum amount of time the clinician spent with a smoker addressing tobacco dependence in a single contact. Minimal counseling interventions were defined as 3 minutes or less, low intensity counseling was defined as greater than 3 minutes to 10 minutes, and higher intensity counseling interventions were defined as greater than 10

minutes. All three session lengths significantly increased abstinence rates over those produced by no-contact conditions. However, there was a clear trend for abstinence rates to increase across these session lengths, with higher intensity counseling producing abstinence rates that were significantly higher than the rates produced by minimal or low intensity counseling. The results are shown in Table 1 and Table 2, respectively.

Table 1   Meta-analysis: Efficacy of and estimated abstinence rates for advice to quit by a physician (N = 7 studies) **[4]**

Advice	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No advice to quit (reference group)	9	1.0	7.9
Physician advice to quit	10	1.3 (1.1-1.6)	10.2 (8.5-12.0)

Table 2   Meta-analysis: Efficacy of and estimated abstinence rates for various intensity levels of person-to-person contact (N = 43 studies) **[4]**

Level of contact	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No contact	30	1.0	10.9
Minimal counseling (< 3 minutes)	19	1.3 (1.01, 1.6)	13.4 (10.9, 16.1)
Low intensity counseling (3-10 minutes)	16	1.6 (1.2, 2.0)	16.0 (12.8, 19.2)
Higher intensity counseling (> 10 minutes)	55	2.3 (2.0, 2.7)	22.1 (19.4, 24.7)

They also reviewed thirty-five studies for the analysis assessing the impact of total contact time and forty-five studies for the analysis addressing the impact of number of treatment sessions. There is a dose-response relation between total amount of contact time and abstinence rates. Any contact time significantly increased abstinence rates over those produced by no contact (Table 3). The numbers of treatment sessions were categorized as zero or one session, two to three sessions, four to eight sessions, and greater than eight sessions. Multiple treatment sessions increase smoking abstinence rates over those produced by zero or one session. The evidence suggests a dose-response relation between number of sessions and treatment efficacy, with treatments lasting more than 8 sessions significantly more effective than interventions lasting either zero to one or two to three sessions. The results are shown in Table 3 and Table 4, respectively.

Table 3   Meta-analysis: Efficacy of and estimated abstinence rates for total amount of contact time (N = 35 studies) **[4]**

Total amount of contact time	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No minutes	16	1.0	11.0
1-3 minutes	12	1.4 (1.1, 1.8)	14.4 (11.3, 17.5)
4-30 minutes	20	1.9 (1.5, 2.3)	18.8 (15.6, 22.0)
31-90 minutes	16	3.0 (2.3, 3.8)	26.5 (21.5, 31.4)
91-300 minutes	16	3.2 (2.3, 4.6)	28.4 (21.3, 35.5)
>300 minutes	15	2.8 (2.0, 3.9)	25.5 (19.2, 31.7)

Table 4   Meta-analysis: Efficacy of and estimated abstinence rates form number of

person-to-person treatment sessions (N = 45 studies) **[4]**

Number of sessions	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
0-1 session	43	1.0	12.4
2-3 sessions	17	1.4 (1.1, 1.7)	16.3 (13.7, 19.0)
4-8 sessions	23	1.9 (1.6, 2.2)	20.9 (18.1, 23.6)
> 8 sessions	51	2.3 (2.1, 3.0)	24.7 (21.0, 28.4)

2.1.2 Type of clinician

Fiore, Bailey, and Cohen (2000) reviewed twenty-nine studies for the meta-analysis examining the effectiveness of various types of clinicians providing smoking cessation interventions.   These analyses compared the efficacy of interventions delivered by specific types of clinicians with interventions where there were no clinicians (e.g., where there was no intervention or the intervention consisted of self-help materials only). The result showed that smoking cessation interventions delivered by any single type of health care provider, such as a physician or non physician clinician (e.g., psychologist, nurse, dentist, or counselor), or by multiple clinicians, increase abstinence rates relative to interventions where there was no clinician (e.g., self-help interventions) (Table 5) **[4]**. Consequently, thirty-seven studies met selection criteria for the analysis examining the effectiveness of multiple clinicians used in smoking cessation interventions. The result show that smoking cessation interventions delivered by multiple types of clinicians increase abstinence rates relative to those produced by interventions where there was no clinician (Table 6) **[4]** .

Table 5   Meta-analysis: Efficacy of and estimated abstinence rates for interventions delivered by various types of clinicians (N = 29 studies) **[4]**

Type of clinician	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No clinician	16	1.0	10.2
Self-help	47	1.1 (0.9, 1.3)	10.9 (9.1, 12.7)
Nonphysician clinician	39	1.7 (1.3, 2.1)	15.8 (12.8, 18.8)
Physician clinician	11	2.2 (1.5, 3.2)	19.9 (13.7, 26.2)

Table 6   Meta-analysis: Efficacy of and estimated abstinence rates for interventions delivered by various numbers of clinician types (N = 37 studies) **[4]**

Number of clinician types	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No clinician	30	1.0	10.8
One clinician type	50	1.8 (1.5, 2.2)	18.3 (15.4, 21.1)
Two clinician types	16	2.5 (1.9, 3.4)	23.6 (18.4, 28.7)
Three or more clinician types	7	2.4 (2.1, 2.9)	23.0 (20.0, 25.9)

2.1.3 Formats of psychosocial treatments

Fiore, Bailey, and Cohen (2000) reviewed fifty-eight studies for the meta-analysis comparing different types of formats. Smoking cessation interventions delivered by means of proactive telephone counseling/contact, individual counseling, and group counseling/contact all increase abstinence rates relative to no intervention.

This format meta-analysis also evaluated the efficacy of self-help interventions (e.g., pamphlets/booklets/mailings/manuals, videotapes, audiotapes, referrals to 12-step programs, mass media community level interventions, reactive telephone hotlines/helplines, computer programs/Internet, and lists of community programs). Interventions delivered by means of widely varied self-help materials (whether as stand-alone treatments or as adjuvant) appeared to increase abstinence rates relative to no intervention in this particular analysis. However, the effect of self-help was weak and inconsistent across analyses conducted for this guideline. The impact of self-help was certainly smaller and less certain than that of proactive telephone, individual, or group counseling (Table 7) **[4]**.

They also reviewed fifty-four studies in the analysis comparing the number of format types used for smoking cessation interventions. The results, smoking cessation interventions that used more than two format types were more effective than interventions that used a single format type (Table 8) **[4]**. In addition, they reviewed twenty-one studies to evaluate the efficacy of providing multiple types of self-help interventions (e.g., pamphlets, videotapes, audiotapes, and reactive hotlines/helplines). The results provided little evidence that the provision of multiple types of self-help, when offered without any person-to person intervention, significantly enhances treatment outcomes (Table 9) **[4]**.

Table 7 Meta-analysis: Efficacy of and estimated abstinence rates for various types of format (N = 58 studies) **[4]**

Format	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No format	20	1.0	10.8
Self-help	93	1.2 (1.02, 1.3)	(10.9, 13.6)
Proactive telephone counseling	26	1.2 (1.1, 1.4)	13.1 (11.4, 14.8)
Group counseling	52	1.3 (1.1, 1.6)	13.9 (11.6, 16.1)
Individual counseling	67	1.7 (1.4, 2.0)	16.8 (14.7, 19.1)

Table 8 Meta-analysis: Efficacy of and estimated abstinence rates for number of formats (N = 54 studies) **[4]**

Number of Formats [a]	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No format	20	1.0	10.8
One format	51	1.5 (1.2, 1.8)	15.1 (12.8, 17.4)
Two formats	55	1.9 (1.6, 2.2)	18.5 (15.8, 21.1)
Three or four formats	19	2.5 (2.1, 3.0)	23.2 (19.9, 26.6)

[a] Formats included self-help, proactive telephone counseling, group, or individual counseling.

Table 9 Meta-analysis: Efficacy of and estimated abstinence rates for number of types of self-help (N = 21 studies) **[4]**

Factor	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No self-help	17	1.0	14.3
One type of self-help	27	1.0 (0.9, 1.1)	14.4 (12.9, 15.9)
Two or more types	10	1.1 (0.9, 1.5)	15.7 (12.3, 19.2)

2.2 Treatment elements

2.2.1 Types of counseling and behavioral therapies

Fiore, Bailey, and Cohen (2000) reviewed sixty-two studies for analyses examining the effectiveness of interventions using various types of counseling and behavioral therapies. The results revealed that four specific types of counseling and behavioral therapy categories yield statistically significant increases in abstinence rates relative to no-contact (e.g., untreated control conditions). These categories are: (1) providing practical counseling such as problem solving/skills training/relapse prevention/stress management; (2) providing support during a smoker's direct contact with a clinician (intra-treatment social support); (3) intervening to increase social support in the smoker's environment (extra-treatment social support); and (4) using aversive smoking procedures (rapid smoking, rapid puffing, other smoking exposure). A separate analysis was conducted eliminating studies that included the use of FDA-approved pharmacotherapy. The results of this analysis were substantially similar to the main analysis (Table 10) **[4]**.

Table 10 Meta-analysis: Efficacy of and estimated abstinence rates for various types

of counseling and behavioral therapies (N = 62 studies) **[4]**

Types of counseling and behavioral therapies	Number of arms	Estimated odds ratio (95%CI)	Estimated abstinence rate (95%CI)
No counseling/ behavioral therapy	35	1.0	11.2
Relaxation/breathing	31	1.0 (0.7, 1.3)	10.8 (7.9, 13.8)
Contingency contracting	22	1.0 (0.7, 1.4)	11.2 (7.8, 14.6)
Weight/diet	19	1.0 (0.8, 1.3)	11.2 (8.5, 14.0)
Cigarette fading	25	1.1 (0.8, 1.5)	11.8 (8.4, 15.3)
Negative affect	8	1.2 (0.8, 1.9)	13.6 (8.7, 18.5)
Intra-treatment social support	50	1.3 (1.1, 1.6)	14.4 (12.3, 16.5)
Extra-treatment social support	19	1.5 (1.1, 2.1)	16.2 (11.8, 20.6)
General problem solving	104	1.5 (1.3, 1.8)	16.2 (14.0, 18.5)
Other aversive smoking	19	1.7 (1.04, 2.8)	17.7 (11.2, 24.9)
Rapid smoking	19	2.0 (1.1, 3.5)	19.9 (11.2, 29.0)

2.3 Pharmacotherapy

In Thailand 2006, nicotine patch (transdermal) and gum (buccal) are nicotine replacement therapies which were approved by Thailand Food and Drug Administration.   The orally administered non-nicotine drugs bupropion is also approved by Thailand Food and Drug Administration as first-line pharmacotherapy for smoking cessation.   Numerous effective pharmacotherapy for smoking cessation now exist.   Except in the presence of contraindications, these should be used with all patients attempting to quit smoking. Patients who received pharmacotherapy treatments were more likely to quit smoking compared to patients who received

placebo[4]. Second-line treatments include clonidine and nortriptylines were used in smoking cessation clinic for treatment of tobacco dependence by physicians too. Other pharmacotherapy include antidepressants other than bupropion and nortriptyline may help to treat depression and anxiety and to regulate mood. Anxiolytics are used by physicians for abating a withdrawal symptom or replacing the reinforcing effects of nicotine. Effective in treating tobacco dependence of these medicines were describes as following:

2.3.1 Bupropion

Bupropion SR is the first non-nicotine medication shown to be effective for smoking cessation. Mechanism of action is presumed to be mediated by its capacity to block neural re-uptake of dopamine and/or norepinephrine.

Hughes, Stead and Lancaster (2007) reviewed thirty-one trial to compare long term abstinence between bupropion versus placebo. The trials of bupropion as the only pharmacotherapy gave a pooled odds ratio of 1.94 (95%CI = 1.72-2.19) [6].

2.3.2 Nicotine gum

Fiore, Bailey, and Cohen (2000) reviewed thirteen studies to estimated abstinence rates for 2 mg nicotine gum. Pooling thirteen trials shows evidence of a significant benefit of nicotine gum over placebo (OR 1.5, 95%CI = 1.3-1.8) [4].

Silagy, *et al.* (2004) conducted meta-analysis to compare effect of 4 mg versus 2 mg nicotine gum from 4 trials. The pooled OR of abstinence in the trials which directly compared 4 mg versus 2 mg gum was 2.20 (95%CI = 1.50-3.25) in highly dependent smokers which suggests that the 4 mg gum is more efficacious than the 2 mg gum as an aid to smoking cessation in highly dependent smokers [13].

2.3.3 Nicotine patch

Fiore, Bailey, and Cohen (2000) reviewed twenty-seven studies to estimated abstinence rates for nicotine patch. Pooling twenty-seven studies shows evidence of a significant benefit of nicotine patch over placebo (OR 1.9, 95%CI = 1.7-2.2) [4].

Silagy, *et al*. (2004) conducted meta-analysis to compare abstinence rates between nicotine patch and placebo. The pooled odds ratio (OR) of abstinence of nicotine patch relative to control was 1.81 (95%CI = 1.63-2.02) **[13]**.

2.3.4 Clonidine

Clonidine was originally used to lower blood pressure. It acts on the central nervous system and may reduce withdrawal symptoms in various addictive behaviors, including tobacco use. Gourlay, Stead and Benowitz (2004) made meta-analysis to determine clonidine's effectiveness in helping smokers to quit. Six trials meeting the criteria for inclusion in the meta-analysis were identified, involving a total of 776 participants. The pooled odds ratio for successful abstinence from smoking with clonidine versus placebo was 1.89 (95%CI = 1.30-2.74) **[41]**.

2.3.5 Nortriptyline

Nortriptyline is tricyclic antidepressant. Hughes, Stead and Lancaster (2007) reviewed six trials to compare long term abstinence (6-12 months) between using nortriptyline as the only pharmacotherapy. Pooling six trials shows evidence of a significant benefit of nortriptyline over placebo (N = 975, OR = 2.34, 95%CI =1.61-3.41) **[6]**.

2.3.6 Antidepressants other than sustained-release bupropion and nortriptyline

Hughes, Stead and Lancaster (2007) reviewed six trails to compare long term abstinence between selective serotonin reuptake inhibitors (SSRIs) and placebo; four of fluoxetine, one of sertraline and one of paroxetine. The pooled estimated OR across all six trials of SSRIs was 0.90 (95%CI = 0.69-1.18). Restricting the meta-analysis to the three trials where antidepressant medication was not an adjunct to NRT did not alter the conclusion that there was no evidence of a clinically important benefit (OR = 0.83, 95%CI = 0.59 -1.17) **[6]**.

2.3.7 Anxiolytics/benzodiazepines/beta-blockers

Hughes, Stead and Lancaster (2007) reviewed studies to determine abstinence rates for anxiolytics, benzodiazepines and beta-blockers. There was one trial each of the anxiolytics diazepam, meprobamate, metoprolol and oxprenolol. There were two trials of the anxiolytic buspirone. None of the trials showed strong evidence of an effect for any of these drugs in helping smokers to quit smoking. However, confidence intervals were wide, and an effect of anxiolytics cannot be ruled out on current evidence [42]. One trial for diazepam which was anxiolytic benzodiazepines was conducted by Hao, Young and Wei H (1988). They tested the benzodiazepine, diazepam in a randomized design against both placebo and clonidine. The test results found no difference between diazepam and placebo at long-term follow up (OR=1.00, 95%CI = 0.39-2.54) [43].

In the two trials comparing buspirone with placebo, the pooled odds ratio was 0.71 (95%CI = 0.34-1.48). The point estimate does not suggest effectiveness but the confidence intervals do not rule out a clinically useful effect [42]. One trial of beta-blockers which was conducted by Dow and Fee (1984) found a cessation rate at 12-month follow up of 17% for oxprenolol, 24% for metoprolol and 3% for placebo. The difference was statistically significant for metoprolol but not for oxprenolol [44]. However the marked difference between the groups on active drug and placebo developed after the end of drug treatment, which is surprising [42].

One trail of meprobamate was counducted by Schwartz and Dubitzky (1968). They tested meprobamate (400 mg per day) in a factorial design trial which randomized subjects to prescription or placebo, alone or in combination with group or individual counseling. The authors found no evidence for a beneficial effect of this tranquilliser on reduction in smoking. Subjects on placebo did consistently better than those on meprobamate within each counseling condition. They suggest that side

effects of the drug such as drowsiness and sensitivity to alcohol may have been detrimental to the subject's own determination to stop smoking [45].

2.3.8 Combinations of pharmacotherapies

Kornitzer, *et al.* (1995) conducted a placebo-controlled clinical trial to evaluate the possible beneficial effects of adding nicotine gum to the routine of subjects using the nicotine patch in 374 subjects. Study found a significant increase in sustained abstinence at 12, 24, and 52 weeks with the combination of active nicotine patch and active gum when compared with the active nicotine patch plus placebo gum, odds ratios were 1.72 (95%CI = 1.03-2.94), 2.04 (95%CI = 1.14-3.57), and 1.47 (95%CI = 0.76-2.76), respectively. No significant differences were observed when comparing active nicotine patch plus placebo gum and placebo patch plus active gum [9]. Blondal, *et al.* (1999) conducted a placebo controlled, double blind trial comparing nasal spray and patch with patch alone. They found a significant increase in sustained abstinence at one year with the combined therapy (OR = 3.03, 95%CI = 1.50-6.14), and no significant differences were observed after 6 years [10].

Bohadana, *et al.* (2000) compared the efficacy of the nicotine inhaler plus nicotine patch vs nicotine inhaler plus placebo patch for smoking cessation. A double-blind, randomized, placebo-controlled trial was conducted in 400 subjects who had smoked 10 or more cigarettes per day for 3 years or longer. Main outcome measures were complete abstinence (self-reported) and expired carbon dioxide concentration less than 10 ppm. Treatment with the nicotine inhaler plus nicotine patch resulted were consistently higher cessation rates than inhaler plus placebo patch throughout the study, but the differences were only statistically significant up to week 12. Analysis of the data in terms of the 1-year survival, with the proportion of participants completely abstinent from smoking as the survival variable, showed a significant association between abstinence and treatment with nicotine inhaler plus nicotine patch (log rank test; $x^2 = 4.11$; *p*-value= 0.04) [11].

Croghan, *et al*. (2003) conducted a multicenter, randomized, open-label clinical trial to determine whether the combined use of nicotine patch therapy and a nicotine nasal spray would improve smoking abstinence rates compared to either treatment alone, without behavioral counseling. At 6 months, the 7-day point prevalence abstinence rates were not significantly different among the three groups. Combination nicotine nasal spray and nicotine patches were delivered safely in a non specialized outpatient clinical setting and enhanced short-term smoking abstinence rates, but these rates were not sustained at 6 months **[12]**. Silagy, *et al*. (2004) reviewed seven trials to determine effect of combinations of different types of nicotine replacement therapy. They suggested a clinically modest but statistically significant benefit (OR = 1.42, 95%CI = 1.14-1.76), with only moderate heterogeneity (I^2 = 32.0%), but the trials were relatively clinically heterogeneous in the combinations and comparison therapies used **[13]**.

Jorenby, *et al*. (1999) conducted a double-blind trial comparing placebo with sustained-release bupropion, the nicotine patch, and combined sustained-release bupropion and nicotine patch reported that combination therapy was superior to either therapy alone. One-year cessation rates were 16% (26 of 160) for placebo, 16% (40 of 244) for sustained-release bupropion, 30% (74 of 244) for the nicotine patch, and 36% (87 of 245) for combination therapy. The difference in abstinence rates between the combination treatment and bupropion alone was not statistically significant, but the difference in abstinence rates between combination treatment and the nicotine patch was statistically significant **[14]**.

Hughes, Stead and Lancaster (2007) reviewed four trials to compared smoking abstinence at 6 months or greater follow-up between bupropion and NRT versus NRT alone. Using a random-effects model to pool the studies did not show evidence of a significant effect (OR = 1.37, 95%CI = 0.65-2.91). They also reviewed two trials using nortriptyline as an adjunct to nicotine patch therapy to evaluate long term smoking abstinence 6-12 months. Pooling two trials did not show evidence of an

additional benefit from nortriptyline (N = 318, OR = 1.48, 95%CI = 0.87-2.54) **[6]**. The one trail was study of Prochazka, *et al.* (2004) **[15]**. They conducted a randomized, double-blind, placebo-controlled trial to evaluate smoking cessation rates of nortriptyline combined with transdermal nicotine at months in 158 patients. In a backward stepwise logistic regression procedure, the only significant predictor of cessation was receipt of nortriptyline (OR = 2.62, 95%CI = 1.06-6.44). Another trial is study of Hall, *et al.* (2004)**.** They compared nortriptyline to placebo, and extended treatment to brief treatment. All participants received nicotine patch therapy for eight weeks and five sessions of group-based counseling. The extended treatment received both 52 weeks of nortriptyline or placebo and monthly individual counseling sessions. Since the brief nortriptyline regiment, 12 weeks of therapy, was similar to that of the other nortriptyline trials. There was no significant abstinence rates in brief nortriptyline plus NRT and extended nortriptyline plus NRT versus NRT alone. (OR = 0.55; 95%CI = 0.18-1.68 and OR = 1.59, 95%CI = 0.64-3.95, respectively) **[16]**.

2.3.9 Extended use of pharmacotherapy

Hall, *et al.* (2004) **[16]** conducted a study to determine the effects of long term antidepressant and psychological treatment. All participants had received nicotine patch therapy for eight weeks and five sessions of group-based counseling. The extended treatment received both 52 weeks of nortriptyline or placebo and monthly individual counseling sessions. Since the brief nortriptyline regiment, 12 weeks of therapy, is similar to that of the other nortriptyline trials. There were no significant abstinence rates in brief nortriptyline plus NRT and extended nortriptyline plus NRT versus NRT alone (OR = 0.55, 95%CI = 0.18-1.68 and OR = 1.59, 95%CI = 0.64-3.95, respectively). Hays, J. T., *et al.* (2001) **[47]** conducted a randomized controlled trial to evaluate the efficacy of bupropion to prevent smoking relapse. The participants received sustained-release bupropion 300 mg per day for 7 weeks. Participants who were abstinent throughout week 7 of open-label treatment were randomly assigned to

receive bupropion 300 mg per day or placebo for 45 weeks and subsequently followed for an additional year after the conclusion of medicine phase. Participants were briefly counseled at all follow-up visits. At the end of open-label bupropion treatment, 461 of 748 participants (58.8%) were abstinent from smoking. The point prevalence of smoking abstinence was significantly higher in the bupropion group than in the placebo group at the end (week 52) of drug therapy (55.1% vs. 42.3%, respectively; p-value = 0.008) and at week 78 (47.7% vs. 37.7%; p-value = 0.034) but did not differ at the final (week 104) follow-up visit (41.6% vs. 40.0%). The median time to relapse was significantly greater for bupropion recipients than for placebo recipients (156 days vs. 65 days; p-value = 0.021). The continuous abstinence rate was higher in the bupropion group than in the placebo group at study week 24 (17 weeks after randomization) (52.3% vs. 42.3%;; p-value = 0.037) but did not differ between groups after week 24. Weight gain was significantly less in the bupropion group than in the placebo group at study weeks 52 (3.8 kg vs. 5.6 kg; p-value = 0.002) and 104 (4.1 kg vs. 5.4 kg; p-value = 0.016). They concluded that in persons who stopped smoking with 7 weeks of bupropion treatment, sustained-release bupropion for 12 months delayed smoking relapse and resulted in less weight gain. Killen JD, *et al*. (2006) **[48]** conducted a randomized clinical trial of the efficacy of extended treatment with bupropion SR in producing longer term cigarette smoking cessation. Adult smokers (N = 362) received open-label treatment (11 weeks) that combined relapse prevention training, bupropion SR, and nicotine patch followed by extended treatment (14 weeks) with bupropion SR or matching placebo. Abstinence percentages were relatively high (week 11: 52%; week 25: bupropion, 42%; placebo, 38%; week 52: bupropion, 33%; placebo, 34%), but bupropion SR did not surpass placebo.

2.4 Predictors of smoking cessation studies

Past studies had examined such demographic factors as gender, age, marital status, income, and education to assess whether they differed between smokers who have successfully and unsuccessfully quit smoking. Murray, *et al*. (2000) conducted study to describe baseline and predictors of abstinence from smoking in 3,523 intervention participants who had completed annual five year follow-up data in the Lung Health Study. Logistic regressions were performed. The first outcome variable was abstinence from smoking at one year. Then for those who were able to quit smoking one year, the outcome variable was five years of sustained abstinence. There were 1,282 participants in this analysis. Neither age nor sex was a significant predictor of 5 years of abstinence. The significant covariates were baseline number of previous quit attempts (OR = 0.90, 95%CI = 0.83-0.98), use of nicotine gum at 12 months (OR = 0.37, 95%CI = 0.29-0.48), significant other present at orientation (OR = 1.29, 95%CI = 1.00-1.66), emotional factor score (OR = 0.93, 95%CI = 0.88-0.99), and self-reported hay fever at 12 months (OR = 0.43, 95%CI = 0.23-0.80). All odds ratios for continuous variables above are for a one-unit change. The variables and logistic results for four sex- and age- specific group e.g. 413 men ≤ 49 years, 406 men > 49 years, 232 women ≤ 49 years and 231 women > 49 years. All participants of each group were using nicotine gum at 12 months had a strong inverse association with sustained abstinence over the five years (OR = 0.36, 0.31, 0.44 and 0.40, 95%CI = 0.22-0.58, 0.19-0.51, 0.23-0.83, 0.22-0.73, respectively). Among men, those with more previous quit attempts at baseline (more history of relapse) were less likely to be abstinence for 5 years (OR = 0.82, 0.83 95%CI = 0.70-0.95, 0.71-0.98). Older men and women who scored higher on the emotional factors score were also less likely to be abstinence at each of five annual visits (OR = 0.89 and 0.84, 95%CI = 0.79-0.99 and 0.72-0.98) **[17]**.

Whitson, Heflin and Burchett (2006) conducted a prospective cohort study to identify subject characteristics that predict smoking cessation and describe patterns of

cessation and recidivism of elderly smokers. Five hundred and seventy-three subjects enrolled in the North Carolina Established Populations for Epidemiologic Studies of the Elderly who responded ''yes'' to question 179 on the baseline survey (Do you smoke cigarettes regularly now?) and survived at least 3 years, until the next in-person follow-up (1989/90). Subjects were classified as quitters (N =100) or nonquitters (N = 473) based on subsequent smoking behavior. For predictors of smoking cessation, Psychosocial and demographic variables that had been found to predict successful smoking cessation in younger populations or were potentially associated with cessation in older smokers were included in a multivariable model. In a logistic regression analysis that controlled for all variables assessed, smoking cessation was associated only with female sex (OR= 1.70, 95%CI = 1.04–2.77). There was a greater tendency toward smoking cessation in patients recently diagnosed with cancer, but the trend did not achieve statistical significance (OR = 1.68, 95%CI = 0.89–3.20). Race, age, number of cigarettes smoked per day, number of alcoholic drinks per day, education level, religious service attendance, and recent diagnosis of heart attack did not predict smoking cessation. No interaction was observed between race and sex or between age and sex [18].

Ferguson, *et al*. (2003) conducted a retrospective cohort study to examined baseline characteristics which associated with abstinence from tobacco 6 months after treatment for nicotine dependence at the Nicotine Dependence Center at the Mayo Medical Center between January 1, 1995 and June 30, 1997. A total of 1224 cigarette smokers (619 females, 605 males) were studied. A treatment plan individualized to the patient's needs is then developed. The main outcome measure was the self-reported 7-day point prevalence abstinence from tobacco obtained by telephone interview 6-months after the consultation. Results show the multivariate odds ratios and 95% confidence intervals for the predictors included in the final multivariate model. Males without a current psychiatric diagnosis (OR = 1.3, 95%CI = 1.0-1.7), at the action stage of change (OR = 1.6, 95%CI = 1.1-2.4), with FTND score < 5 (OR =

1.6, 95%CI = 1.2-2.1), and whose longest duration of previous abstinence from tobacco was ≥ 30 days (OR = 1.4, 95%CI = 1.0-1.8) were most likely to be 7-day point prevalence abstinence from tobacco obtained by telephone interview 6-months after the consultation **[19]**.

McGee and Williams (2006) conducted a study to examine predictors of persistent tobacco smoking and smoking cessation in a longitudinal study of women's health. The sample consisted of 575 women, with an average age of 34 years at baseline. Follow-up occurred some 13 years later. Two models of smoking behavior were examined, the first identifying correlates of daily smoking at baseline and the second identifying predictors of subsequent quitting at follow-up among those smoking at baseline. Of the 209 women smoking cigarettes at baseline, 75 (35.9%) reported as they were able to quit smoking at follow-up. Multivariate logistic regression used to identifying predictors of subsequent quitting at follow-up for these 209 women. Being young at birth of first child (<21 birth first child) predicted less quitting at follow-up than older first-time mothers (24.4% vs. 43.3%, OR = 0.39, 95%CI = 0.20-0.75). Among those reporting higher anxiety, 50.0% had quitted smoking by follow-up compared with 32.9% among the remaining women smoking at baseline who reported low anxiety (OR=2.93, 95%CI = 1.30-6.62). Number of cigarettes smoked at baseline showed a dose response relationship with quitting at follow-up, with prevalence of quitting being, 59.0% among women smoking <10 cigarettes daily, 29.5% among women smoking 10–19 cigarettes daily (OR = 0.21, 95%CI = 0.10–0.44 when compared with <10 daily) and 18.6% among women smoking >19 cigarettes daily, respectively (OR = 0.14, 95%CI = 0.06–0.37 when compared with <10 daily) **[20]**.

Nollen, *et al*. (2006) examined the predictors of quitting among African American (AA) light smokers (<10 cigarettes per day) enrolled in a smoking cessation trial. Baseline variables were analyzed as potential predictors from a 2 x 2 cessation trial in which participants were randomly assigned to 1 of 4 treatment groups: nicotine

gum plus health education counseling, nicotine gum plus motivational interviewing counseling, placebo gum plus health education counseling, or placebo gum plus motivational interviewing counseling. Chi-square tests, 2 sample t-tests, and multiple logistic regression analyses were used to identify predictors of cotinine verified abstinence at month 6. In the final regression model, health education rather than motivational interviewing counseling (OR = 2.26, 95%CI = 1.36-3.74), older age (OR = 1.03, 95%CI = 1.01-1.06), and higher body mass index (OR = 1.04, 95%CI =1.01 to 1.07) significantly increased the likelihood of quitting, while female gender (OR = 0.46, 95%CI = 0.28-0.76), ≤ $1,800/month income (OR = 0.60, 95%CI = 0.37-0.97), higher baseline cotinine (OR=0.948, 95%CI =0.946-0.950), and not completing all counseling sessions (OR = 0.48, 95%CI =0.27-0.84) reduced the odds of quitting **[21]**.

Harris, *et al*. (2004) conducted a study to identified factors that predicted successful quitting among African-Americans participating in a smoking cessation trial. Twenty-one baseline variables were analyzed as potential predictors from a double-blind placebo-controlled, randomized trial that used bupropion SR for smoking cessation among 600 African-American smokers. Chi-square tests, two sample t tests, and multiple logistic regression procedures were employed to identify predictors of 7-day abstinence among the 535 participants who completed the 7-week medication phase. Abstinence from smoking was defined as no smoking in the past 7 days confirmed by carbon monoxide level ≤ 10 ppm, or carbon monoxide > 10 ppm but salivary cotinine ≤ 20 ng/ml. Univariate predictors of cessation were receiving bupropion (*p*-value < 0.0001), not smoking menthol cigarettes (*p*-value = 0.0062), smoking after 30 min of waking (*p*-value < 0.0001), older age (*p*-value = 0.0085), smoking fewer cigarettes per day (*p*-value = 0.0038), and lower cotinine levels (*p*-value = 0.0002). Logistic regression identified three significant independent predictors. Participants who received bupropion treatment were more than twice as likely to quit smoking at the end of treatment compared to participants who received placebo (OR = 2.62, 95%CI = 1.77–3.88), while smoking within 30 min of waking

(OR = 0.40, 95%CI = 0.25–0.62) and higher salivary cotinine levels at baseline (OR = 0.799, 95%CI = 0.629–0.922) reduced the likelihood of quitting **[22]**.

Senore, *et al.* (1998) conducted a study to identify predictors of quitting following general practitioners'(GP) anti-smoking counseling. They studied determinants (characterised following the Precede framework) of successful quitting (one year sustained abstinence, biochemically confirmed at 6-and 12-month follow-up) among 861 smokers randomized to the intervention groups based on repeated counseling (RC), RC plus spirometric testing, and RC plus nicotine gum, in a smoking cessation trial carried out in Turin, Italy. GPs' intervention worked best for male (OR=2.30, 95%CI =1.13–4.52) and married (OR=3.63, 95%CI =1.37–9.59) smokers, for smokers who had maintained abstinence for at least one month in the past (OR=6.78; 95%CI =1.56–29.52) or at their first quit attempt (OR= 10.91, 95%CI =2.37–50.13), and for those who spontaneously reduced their coffee consumption (OR=3.30, 95%CI = 1.59–6.82); heavy smokers (≥ 20 cigarettes/day OR = 0.48, 95%CI = 0.24–0.93) and those living with other smokers (≥ 1 smokers in the household: OR = 0.44, 95%CI = 0.22–0.90) were less likely to give up. Previous anti-smoking advice by the GP represented a strong barrier to success for healthy smokers (OR = 0.19, 95%CI = 0.07–0.52), but not for those reporting symptoms of shortness of breath (OR=0.63, 95%CI = 0.39–9.20). There were no interactions between predictors and treatment conditions **[23]**.

Chen, White and Pandina (2001) conducted the study to examine the predictors of smoking cessation in a nonclinical sample of 134 male and 190 female, young adult, regular smokers(daily smokers) within a social learning and maturing-out framework. Four waves of prospective, longitudinal data from a community sample followed from adolescence into young adulthood (13 years later) were analyzed. Logistic regression analyses were used to test the effects of differential associations, definitions, differential reinforcement, and changes in adult role status on smoking cessation in young adulthood. Becoming married to a nonsmoker were 4.7 times more likely to

stop smoking compared to those who experienced no change in marital status, those who became divorced/separated, or those who began cohabiting (OR = 4.7, 95%CI = 2.1-10.4). Decreases in the proportion of friends who smoked were significant predictors of cessation (OR= 1.7, 95%CI = 1.2-2.4). Current smokers and stoppers did not differ significantly in terms of prior intensity of cigarette use or alcohol abuse/dependence. They also did not differ in terms of psychological characteristics, including depression and prior coping use of cigarettes. Social networks were more important than social roles for predicting cessation in young adulthood. In conclusion, they suggested that smoking cessation programs should focus on social learning processes [24].

Zhu, *et al*. (1999) conducted a cross-sectional surveys study to identify factors that predict quitting among adolescent smokers. Adolescent smokers aged 12–19 years (N = 633) from the national Teenage Attitudes and Practices Survey I (1989), were followed up in the Teenage Attitudes and Practices Survey II (1993). Multiple logistic regressions were applied to identify the predictors of quitting. As results, a total of 15.6% of adolescent smokers had quit smoking at the follow-up survey four years later. There was no significant difference in the quit rate by age, gender, or ethnicity. Five baseline factors were identified in a multivariate analysis as significant predictors of quitting: non-daily smoking (OR= 1.67, 95%CI = 1.03-2.71) when compared with daily smoking, length of past quit attempts: who had never quit and length of past quit attempts ≥ 14 days were more likely to stop smoking compared to those who had length of past quit attempts < 14 days(OR= 2.19, 95%CI = 1.06–4.53 and OR= 2.23, 95%CI = 1.14–4.36, respectively), self-estimation of likelihood of stop smoking a year from baseline (OR= 1.67, 95%CI = 1.03–2.73), mother's smoking status was not smoke (OR= 1.84, 95%CI = 1.06–3.21) and depression score ≤ 85 percentile (OR= 1.87, 95%CI = 1.04–3.35). The more risk factors the adolescents had, the less likely they would succeed in quitting. They concluded that quitting smoking by adolescents was influenced by multiple biological, behavioral, and psychosocial

variables. Identifying these variables can help tailor cessation programs to more effectively help adolescents to quit smoking [25].

Table 11 Multivariate logistic regression showing the odds of smoking reduction and cessation after 5 years by gender [26]

	Smoking reduction				Smoking cessation			
	Men		Women		Men		Women	
	N	Adjusted OR (95% CI)	N	Adjusted OR (95% CI)	N	Adjusted OR (95% CI)	N	Adjusted OR (95% CI)
Age								
19–59 years	177	1	110	1	138	1	78	1
≥60 years	85	2.71 (1.90–3.86)	30	0.88 (0.49–1.58)	57	1.38 (0.94–2.03)	30	1.39 (0.78–2.48)
Education								
<7 years	140	1	70	1	87	1	45	1
8–11 years	87	0.73 (0.53–1.01)	52	0.85 (0.55–1.31)	84	1.22 (0.87–1.71)	49	1.43 (0.90–2.27)
≥12 years	35	0.97 (0.61–1.52)	18	1.36 (0.69–2.71)	23	0.98 (0.58–1.65)	13	2.91 (1.38–6.16)
Cohabitant								
Yes	203	1	80	1	159	1	74	1
No	55	0.97 (0.68–1.39)	55	1.62 (1.06–2.48)	34	0.83 (0.55–1.25)	32	0.77 (0.48–1.25)
Amount smoked								
≥25 g/day	171	1	71	1	53	1	13	1
15–24 g/day	91	0.21 (0.15–0.29)	69	0.18 (0.12–0.28)	142	1.59 (1.10–2.29)	95	2.81 (1.39–5.65)
Type smoked								
Filter cigarettes	42	1	54	1	36	1	44	1
Cigarettes w/o filter	71	0.87 (0.55–1.37)	24	0.69 (0.39–1.19)	44	0.73 (0.45–1.18)	14	0.50 (0.27–0.95)
Other tobacco types	149	1.30 (0.84–2.01)	62	2.01 (1.19–3.40)	115	1.48 (0.94–2.39)	50	2.34 (1.32–4.12)
Inhale smoke								
No	62	1	42	1	64	1	43	1
Yes	200	1.08 (0.71–1.62)	98	1.35 (0.78–2.32)	131	0.52 (0.35–0.78)	63	0.70 (0.41–1.22)
FEV$_1$								
≥70% predicted	190	1	97	1	139	1	78	1
60–69% predicted	33	1.06 (0.68–1.65)	18	1.13 (0.63–2.04)	30	1.54 (0.99–2.40)	12	0.95 (0.48–1.87)
50–59% predicted	15	0.98 (0.53–1.83)	11	2.92 (1.35–6.27)	9	0.91 (0.42–1.96)	12	3.92 (1.87–8.21)
<50% predicted	17	2.14 (1.10–4.17)	9	4.05 (1.68–9.77)	16	3.00 (1.59–5.69)	4	1.71 (0.54–5.39)
Bronchitis symptoms								
No	213	1	109	1	163	1	94	1
Yes	44	0.73 (0.49–1.08)	31	0.93 (0.56–1.54)	31	0.95 (0.61–1.47)	13	0.85 (0.45–1.60)
Alcohol use								
Abstinent	14	1	39	1	17	1	29	1
1–6 drinks/week	32	0.80 (0.38–1.66)	51	0.98 (0.59–1.61)	60	0.83 (0.43–1.58)	55	1.37 (0.81–2.31)
7–13 drinks/week	60	1.03 (0.53–2.05)	22	0.91 (0.48–1.71)	64	0.85 (0.46–1.57)	18	1.01 (0.51–2.00)
≥14 drinks/week	151	1.17 (0.61–2.26)	26	1.00 (0.53–1.90)	75	0.73 (0.40–1.35)	6	0.40 (0.14–1.09)
Body mass index								
<20	10	1.68 (0.77–3.66)	11	0.85 (0.41–1.75)	7	1.53 (0.53–3.58)	11	1.22 (0.59–2.54)
20–24.9	88	1	69	1	71	1	43	1
25–29.9	130	1.52 (1.09–2.11)	43	1.47 (0.93–2.33)	97	1.26 (0.90–1.77)	37	1.63 (0.99–2.68)
≥30	33	1.29 (0.79–2.11)	16	1.38 (0.69–2.75)	19	0.93 (0.53–1.62)	16	2.32 (1.20–4.51)

Note. Data from The Copenhagen City Heart Study (CCHS). The variables in the table are entered as baseline determinants of the association between the variables and smoking reduction/cessation. OR, odds ratio; CI, confidence interval.

Godtfredsen, *et al.* (2001) conducted a prospective population study of 3,791 moderate and heavy smokers, 15 g tobacco/day or more, who were enrolled in the Copenhagen City Heart Study in 1976–1978 and attended a reexamination 5 years later. Data on smoking behavior were collected at baseline and follow-up. Smoking reduction was defined as a decrease in mean daily tobacco consumption of 10 g or more. Using multivariate logistic regression, subjects who reported reduced smoking

or who reported smoking cessation were compared with subjects who continued the habit unchanged. After 5 years 13% of the men and 9% of the women had reduced their tobacco consumption, and 9 and 7%, respectively, had quit altogether. Smoking reduction was strongly associated with high tobacco consumption (more than 25 g/day) at baseline and also with severely impaired lung function ($FEV_1 < 50\%$ predicted) and overweight (BMI > 25). Predictors of smoking cessation included impaired lung function and a tobacco consumption of 15–24 g/day. Additional determinants of smoking reduction and cessation such as inhalation habits and sociodemographic variables differed by gender (Table 11 shows the multivariate logistic regression showing the odds of smoking reduction and cessation after 5 years by gender) [26].

Nerín, *et al*. (2004) conducted a cross-sectional descriptive study to identify the predictors of successful outcome in a smoking cessation program at 6-month follow up. Study of a sample of smokers who attended a smoking cessation clinic for combined medical and cognitive-behavioral group therapy. The independent variables assessed included age, sex, level of education, nicotine dependence (Fagerström test), prior attempts to quit smoking, medication prescribed, compliance with group therapy regimen, and success at a week and 3 months. Success was defined as self-reported abstinence, confirmed by CO-oximetry (carbon monoxide < 10 ppm). Univariate logistic regression analysis was performed and significant variables were entered into a multivariate logistic regression model. The study population comprised of 248 individuals, 67.7% male and 32.3% female, with a mean ($\pm$ SD) age of 43.1 ($\pm$ 10.5) years. The mean score on the Fagerström test was 6.3 ($\pm$2.1) points and 84.7% of the individuals complied with the treatment regimen. Success rates were as follows: 77% at one week, 30.2% at 3 months, and 31.9% at 6 months. Three variables- -success at 3 months, age, and nicotine dependence - - were entered into the multivariate logistic regression model; the only variable predictive of successful smoking cessation at 6 months was success at 3 months (OR = 5.1, 95%CI = 2.7-9.6) [27].

MacKenzie, Pereira and Mehler (2004) conducted study to explore the relationship between baseline characteristics of hospitalized smokers and 6-month to 2-year self-reported quit rates. Adult smokers (N = 154) who were admitted to the medicine service of an urban public hospital were surveyed. They used the pharmacy database, a follow-up telephone survey, and medical records to characterize nicotine patch use and post-discharge smoking abstinence. Among the 102 patients for whose smoking status at least 6 months after discharge was known, 18 (18%) were not smoking at last contact (mean follow-up 20 months). Individual factors associated with quitting include confidence to quit within 1 week, stages of change other than pre-contemplation, filling a nicotine patch prescription after discharge, number of previous quit attempts, and increasing age. With multivariate modeling, only confidence to quit (OR = 9.8, 95%CI = 2.8–35.0) and the number of previous quit attempts (OR = 1.3 per attempt, 95%CI = 1.0–1.5) remained significantly associated with future abstinence [28].

Dale, *et al.* (2001) conducted a double-blind, placebo-controlled, dose-response trial to identify predictors of smoking abstinence at the end of medication use that could assist in the optimal use of a sustained-release (SR) form of bupropion for treating cigarette smokers that was performed at three sites (Mayo Clinic, Rochester, MN; Palo Alto Center for Pulmonary Disease Prevention, Palo Alto, CA; and West Virginia University, Morgantown, WV). Six-hundred and fifteen healthy men and women ($\geq$ 18 years of age) who were smoked at least 15 cigarettes per day and who were motivated to stop smoking. Random assignment of patients to placebo or SR bupropion treatment, 100, 150, or 300 mg/day, for 7 weeks (total duration of study was 52 weeks: 7 weeks of treatment and 45 weeks of follow-up). Logistic regression was used to identify predictors of abstinence at the end of the medication phase. Univariate predictors included the following: bupropion dose (*p*-value < 0.001); older age (*p*-value = 0.024); lower number of cigarettes smoked per day (*p*-value < 0.001); lower Fagerström Tolerance Questionnaire score (*p*-value = 0.011); longest time previously

abstinent that was < 24 h or > 4 weeks (*p*-value < 0.001); absence of other smokers in the household (*p*-value = 0.021); greater number of previous stop attempts (*p*-value = 0.019); and study site (*p*-value = 0.004). Multivariate predictors of abstinence at the end of the medication phase were the following: higher bupropion dose (*p*-value < 0.001); lower number of cigarettes smoked per day (*p*-value < 0.001); longest time previously abstinent from smoking (*p*-value = 0.002); male gender (*p*-value = 0.014); and study site (*p*-value = 0.021). They conclude that bupropion SR therapy was effective in treating cigarette smokers independently of all other characteristics studied. Lower smoking rate, brief periods (i.e. < 24 h) or long periods (i.e. >4 weeks) of abstinence with previous attempts to stop smoking, and male gender were predictive of better outcomes, independent of the dose of bupropion that was used **[29]**.

Bak, *et al*. (2002) conducted a prospective follow-up study to assess modification of smoking habits and to identify predictors of persistent smoking after first-ever stroke. All patients admitted to the only neurology department of Funen County (465,000 inhabitants) with first-ever stroke from August 1, 1999, to January 31, 2001, were prospectively identified. A comprehensive structured interview was completed both during hospitalization and at 6-month follow-up. The interview comprised questions on education, occupation, marital status, lifestyle, concomitant diseases, and functional disability. They estimated the relative risk of persistent smoking at follow-up using unconditional logistic regression. One hundred and three patients (14%) from 734 patients with a first-ever stroke in the study period died in the 6-month period after their admission. A total of 511 patients (81%) who participated in the interview both on admission and at follow-up were included in the present study. Among 198 patients (38.7%) who were current smokers on admission, 43 patients (21.7%) gave up smoking within 6 months of suffering a stroke. Gender, functional status, and sociodemographic characteristics were independently associated with persistent smoking (Table 12 shows the risk of persistent smoking at 6 months after first-ever stroke in patients who were current smokers on admission) **[30]**.

Table 12 Risk of persistent smoking at 6 months after first-ever stroke in patients

who were current smokers on admission **[30]**

	Stopped Smoking (n=43)	Persistent Smoking (n=155)	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio* (95% CI)	P†
Sex					
Male	23	109	1.0	1.0	
Female	20	46	0.5 (0.2–1.0)	0.4 (0.1–1.0)	0.04
Age at follow-up, y					
20–54	10	44	1.0	1.0	
55–74	22	86	0.9 (0.4–2.0)	0.5 (0.2–1.4)	0.17
≥75	11	25	0.5 (0.2–1.4)	0.3 (0.1–1.2)	0.09
Barthel Index at follow-up					
100	26	107	1.0	1.0	
50–95	10	45	1.1 (0.5–2.5)	0.9 (0.3–2.6)	0.89
0–45	7	3	0.1 (0.03–0.4)	0.1 (0.02–0.5)	<0.01
Marital status					
Living alone	9	57	1.0	1.0	
Living with partner	30	92	0.5 (0.2–1.1)	0.2 (0.1–0.6)	<0.01
Others‡	4	6	0.2 (0.1–1.0)	0.1 (0.02–0.6)	0.01
Occupation					
Blue collar	16	80	1.0	1.0	
White collar	16	40	0.5 (0.2–1.1)	0.3 (0.1–0.8)	<0.01
Entrepreneurs	6	22	0.7 (0.3–2.1)	1.0 (0.3–3.5)	0.99
Others§	5	13	0.5 (0.2–1.7)	1.5 (0.3–6.9)	0.60
Tobacco consumption‖					
Light or moderate smoker	26	73	1.0	1.0	
Heavy smoker	17	82	1.7 (0.9–3.4)	1.6 (0.7–3.7)	0.27
Alcohol consumption					
No regular intake	20	37	1.0	1.0	
Moderate intake	18	89	2.7 (1.3–5.6)	2.1 (0.8–5.2)	0.12
High intake	4	29	3.9 (1.2–12.7)	2.7 (0.7–11.1)	0.16
Body mass index					
Low or normal	18	78	1.0	1.0	
Overweight	18	55	0.7 (0.3–1.5)	0.7 (0.3–1.8)	0.47
Obese	7	21	0.7 (0.3–1.9)	0.5 (0.1–1.7)	0.26

*Adjusted for sex, age, Barthel Index at 6 months after stroke, marital status, occupation, and tobacco consumption before stroke.
†For adjusted odds ratios.
‡Living with family or friends or institutionalized.
§Housewife, long-term unemployment, and other unclassifiable occupations.
‖Tobacco consumption before stroke.

Grandes, *et al*. (2003) conducted a quasi-experimental non-randomized controlled trial that was performed at Primary healthcare centers of the Basque Health Service, Spain to identify predictors of abstinence and assess effectiveness over a two-year follow-up of a smoking cessation programmed in routine general practice. All smokers attending seven intervention (N = 1203) and three control (N = 565) practices during one year (from September 1995 to October 1996) were included. The associations between attempts to stop smoking, relapses, and sustained biochemically confirmed abstinence between 12 and 24 months' follow-up, with baseline characteristics and patients' preference with regard to three possible therapeutic options, were assessed by means of logistic regression and survival analyses. The results, sustained abstinence was biochemically confirmed in 7.3% of smokers in the intervention practices (relative probability = 2.8, 95%CI =1.6-4.7; probability difference = 4.7%, 95%CI = 2.7%-6.7%); in 5% of smokers who received advice and a handout (adjusted OR [AOR] = 1.9, 95%CI = 1.0-3.4), in 16% who received advice, a handout and follow-up (AOR = 6.6, 95%CI = 2.9-14.6), and in 22% who received advice, a handout, follow-up and nicotine patches (AOR = 13.1, 95%CI = 6.6-25.9). Positive predictors included previous attempts to stop smoking (AOR = 1.8, 95%CI = 1.1 to 2.7), and age (for each 10 years AOR = 1.32, 95%CI = 1.13-1.44). The Fagerström nicotine dependence score was negatively associated (for each point AOR = 0.89, 95%CI = 0.82-0.97) **[31]**.

Simon, Browner and Mangano (1992) conducted cohort study to determine the frequency and predictors of smoking relapse one year in 235 smokers who were admitted for major non-cardiac surgery and survived hospitalization. Twelve-month postoperative follow-up of patients was performed by direct interview and included self-reported smoking status. At 12 months post-hospitalization, the rate of relapse was 76%. Smokers with a history of alcohol abuse were more likely than non-alcohol abusers to resume smoking (84% vs 67%, *p*-value < 0.01). Other significant univariate predictors of relapse at 12 months included CAD, pack-year history of smoking, and

duration of hospitalization. Among CAD patients, 70% relapsed as compared with 81% among non-CAD patients (p-value < 0.10). Smokers with hospital stays of two or more weeks were less likely to relapse than smokers with shorter stays (66% vs 81%, p-value < 0.05), and relapsers had on average 5 fewer days of hospitalization (p-value < .05). Smokers with 50 or more pack years of smoking had a relapse rate of 87% compared with 73% for the 30- to 49-packyear smokers and 64% for smokers with fewer than 30 pack-years (p-value < 0.05). Multivariate analysis disclosed that only pack-year history of smoking (OR = 1.47, 95%CI = 1.09-1.98) and history of alcohol abuse (OR = 3.07, 95%CI = 1.42- 6.66) were statistically significant independent predictors of relapse at 12 months (Table 13). Using the logistic coefficients to estimate the risk of relapse, a 40 pack-year smoker with a history of alcohol abuse had a 94% relapse probability compared with a 71% probability in a 20 pack-year smoker without a history of alcohol abuse. None of the demographic variables (race, age, marital status) predicted relapse at one year, nor did current tobacco use measured in packs smoked per day. With the exception of the presence of CAD, no medical condition was associated with relapse [32].

Ong, *et al.* (2005) conducted a prospective cohort study to determine the predictors of continued smoking abstinence in patients receiving smoking cessation intervention during and following hospital admission in a university-affiliated hospital. A total of 248 smokers admitted with primary cardiac and respiratory conditions received verbal advice (lasting about one hour) and standard booklets on smoking cessation from a dedicated nurse counselor. After discharge, participants received follow-up telephone counseling calls every 2 weeks from the same smoking counselor. The main outcome measure was continued abstinence at 2 months after hospital discharge, as determined by self-reporting and carbon monoxide breath testing. The following groups of covariates were analyzed to determine the possible factors associated with smoking abstinence: demographics, smoking history, readiness to quit smoking, and medical history. As results, at 2 months post-discharge, 108 (43.5%)

patients remained abstinent. Low nicotine dependence score (OR = 2.30, 95%CI = 1.25–4.26), decision to quit by sudden cessation as compared to reduction of smoking (OR = 7.19, 95%CI = 1.56–33.06), and initial hospitalization for their medical condition (OR = 6.37, 95%CI = 1.33–30.44) were the main independent predictors of positive outcome [33].

Table 13 Variables associated with smoking relapse at 12 months[a] [32]

	OR	95%CI	*p*-value
Univariate models			
History of alcohol abuse	2.69	1.33-5.40	0.006
Pack-year history (per 10 pack-year)	1.39	1.05-1.84	0.02
Postoperative days (per 7 day)	0.86	0.75-1.00	0.04
Coronary artery disease	0.54	0.27-1.07	0.08
	Adjusted OR	**95%CI**	***p*-value**
Multivariated models			
History of alcohol abuse	3.07	1.42-6.66	0.005
Pack-year history (per 10 pack-year)	1.47	1.09-1.98	0.01
Postoperative days (per 7 day)	0.88	0.75-1.02	0.10
Coronary artery disease	0.49	0.23,1.03	0.06
Type of Surgery [b]	0.50	0.23,1.10	0.09

a   No other variables were significant at the $p < 0.10$ level

b   Major vascular and intrathoracic versus all other

Chaaya, MehioSibai and ElChemaly (2006) conducted a study to investigate smoking patterns in an elderly, low-income population and to identify predictors of smoking cessation, in addition to analyzing the importance of smoking in relation to other risk factors for hospitalization. The data were part of an urban health study conducted among 740 individuals aged ≥ 60 years in three suburban communities of low socio-economic status in Beirut, one of them a refugee camp. A detailed interview schedule was administered that included comprehensive social and health information.

They used stepwise logistic regression to determine the effect of smoking and smoking cessation on hospitalization while controlling for other variables. Smoking cessation among the elderly was strongly associated with having chronic disease and suffering from disability (AOR = 4.29 and 1.79, 95%CI = 1.663–11.11 and 1.107–2.912, respectively). All socio-demographic variables studied, the presence of definite depression, the number of pack-years, and age at smoking initiation were not significantly correlated with smoking cessation (Table 14 presents the unadjusted and adjusted odds ratios of smoking cessation among the elderly who had ever smoked by selected socio-demographic, health and smoking characteristics) **[34]**.

Tucker, *et al*. (2005) conducted a study to explored whether the demographic, psychosocial, and behavioral factors associated with quitting between ages 23–29 remained significant predictors of this outcome after controlling for age at first use and quantity–frequency of smoking at age 23. This study compared young adult nonsmokers (N = 1216), light smokers (N = 406), and regular smokers (N = 360). Participants were recruited from middle schools in 1,985 (age 13) and assessed repeatedly through 2001 (age 29). Mail surveys were used to obtain information on smoking status and hypothesized predictors of cessation at age 23, and quit attempts and cessation occurring between ages 23–39 among regular smokers. Logistic regression analysis was used to identify predictors of quit attempts and 6-month cessation. As Predictors of 6-month abstinence, among the age 23 smokers, 103 (26% weighted) reported at age 29 that their most recent quit attempt had lasted at least 6 months. Results from separate logistic regression analyses, controlling for demographic variables, indicated that smokers were significantly more likely to quit for 6 months or longer if they were less often around people who smoked, did not live with children, were not at risk for poor mental health, did not sell drugs, and perceived themselves to be in better health. Greater satisfaction with friends was marginally (*p*-value < 0.10) associated with six-month abstinence. Better perceived health status (health status scale from 1 = excellent to 5 = poor, OR = 0.64, 95%CI = 0.44-0.93) and

less exposure to other smokers remained significant predictors (Around people who smoke, OR = 4.29, 95%CI = 1.67–11.11) of 6-month abstinence when these variables were entered into a single model. Not living with children (*p*-value = 0.08) and not selling drugs (*p*-value = 0.058) were marginally associated with 6-month abstinence in the multivariate model. Note that age at first use (OR = 1.15, 95%CI = 1.00–1.33, *p*-value = 0.053) and quantity frequency of smoking (OR = 0.96, 95%CI = 0.93–1.00, *p*-value = 0.061) were both marginally associated with 6-month abstinence in models that controlled for demographic variables. When these two smoking variables were entered into the model, less exposure to other smokers became marginally significant (OR = 0.53, 95%CI = 0.27–1.05, *p*-value = 0.069) **[35]**.

Steinberg, *et al*. (2006) conducted a retrospective cohort analysis of 790 smokers treated at the Tobacco Dependence Clinic of the University of Medicine and Dentistry of New Jersey-School of Public Health from 2001 – 2003 to evaluates abstinence rates among smokers treated in a tobacco specialist clinic with individual and/or group counseling plus combination pharmacotherapy. 790 smokers treated and contacted 4 weeks after quit-date were studied. Patients received medications and behavioral interventions. Abstinence over the previous 7 days was evaluated at 4 weeks and 6 months. Patients lost to 6-month follow-up were considered still smoking. Overall, 36% of patients were abstinent at 6 months (20% who used no medications, 37% using one medication, 37% using 2 medications, 42% using 3 medications, and 42% using 4+ medications) (P = 0.017). 27% still used medications at 6 months, and had higher abstinence rates (65%) than those who stopped their medications (27%) (*p*-value < 0.001). Number of medications predicted abstinence at 4 weeks adjusted OR = 2.30 (95%CI = 1.27–4.18) for 1 medication, OR = 4.78 (95%CI = 2.72–8.40) for 2 medications, OR = 5.83 (95%CI = 2.98–11.40) for 3 medications, and OR = 11.80 (95%CI = 4.10–33.95) for ≥ 4 medications]. Increasing age, increasing level of education, longer time after waking to first cigarette, more than 7 clinical contacts, and more medications used were related to higher abstinence at 6

months. Confidence in ability to quit (a continuous variable on a 1 –10 scale) was not related to higher abstinence at 6 months (Table 15 shows adjusted odds ratios for 4-week and 6-month abstinence rates) **[36]**.

Lee and Kahende (2007) conducted a study to examine the predictors of successfully quitting smoking. Using data from the 2000 National Health Interview Survey, they employed multiple regression analysis to compare demographic, behavioral, and environmental characteristics of current smokers who tried unsuccessfully to quit in the previous 12 months with characteristics of those able to quit for at least 7 to 24 months before the survey. As results, successful quitters were more likely than those unable to quit to have rules against smoking in their homes, less likely to have switched to light cigarettes for health concerns, and more likely to be aged 35 years or older, married or living with a partner, and non-Hispanic White, and to have at least a college education **[37]**. The results were shown in Table 16.

Table 14 Unadjusted and adjusted odds ratios of smoking cessation among the elderly who had ever smoked by selected socio-demographic, health and smoking characteristics **[34]**.

Characteristics	Current (N = 214), n (%)	Ex-smoker (N = 165) , n (%)	Unadjusted OR	AOR (95%CI)
Socio-demographic				
Age, year, mean ± SD	66.25 ± 5.47	69.35 ± 7.22	1.082	0.996 (0.987–1.006)
Sex				
Male	141 (56.6)	108 (43.4)	0.980	1.216 (0.726–2.042)
Female	73 (56.1)	57 (43.9)		1.00
Income*				
Enough	113 (56.8)	86 (43.2)		1.00
Not enough	100 (55.8)	79 (44.2)	1.043	0.904 (0.588–1.391)
Literacy				
Any formal schooling	116 (59.2)	80 (40.8)	0.791	0.815 (0.507–1.310)
No formal schooling	98 (53.5)	85 (46.5)		1.000
Health-related				
Chronic disease				
Yes	183 (53.5)	159 (46.5)	4.975	4.291 (1.663–11.11)
No	31 (86.1)	5 (13.9)		1.000
Disability				
Yes	51 (42.8)	68 (57.2)	2.233	1.795 (1.107–2.912)
No	162 (62.5)	97 (37.5)		1.000
Definite depression				
Yes	47 (55.3)	38 (44.7)		1.000
No	167 (57.6)	123 (42.4)	0.922	0.942 (0.565–1.569)
Smoking-related, mean ± SD				
Pack years	51.99 ± 53.79	52.46 ± 39.40	1.000	1.000 (0.995–1.005)
Age at start	22.2 ± 9.79	21.59 ± 10.61	0.540	0.994 (0.974–1.014)

* Perceived sufficiency to meet basic needs.

Table 15 Adjusted odds ratios for 4-week and 6-month abstinence rates, 2001– 2003;

Tobacco Dependence Clinic –New Jersey **[36]**

	n	4-week abstinence				6-month abstinence			
		Adjusted odds ratio	95.0% CI for OR		P value	Adjusted odds ratio	95% CI for OR		P value
Age									
Under 25	70	1	Referent			1	Referent		
25–44	342	2.04	1.14	3.64	0.02	1.16	0.62	2.15	0.64
45–64	325	2.61	1.45	4.71	<0.01	1.88	1.01	3.50	0.05
65+	53	3.43	1.49	7.90	<0.01	3.86	1.69	8.81	<0.01
Education									
No high school degree	76	1	Referent			1	Referent		
High school graduate	191	1.07	0.58	1.98	0.83	2.00	0.99	4.04	0.05
Some college	291	1.31	0.73	2.36	0.37	2.42	1.24	4.71	0.01
College graduate	145	2.05	1.06	3.98	0.03	3.32	1.63	6.78	<0.01
Graduate degree	87	1.95	0.93	4.11	0.08	3.00	1.38	6.53	<0.01
Time to 1st cigarette									
<5 min	340	1	Referent			1	Referent		
5–30 min	306	1.96	1.36	2.80	<0.01	1.48	1.04	2.11	0.03
>30 min	130	2.31	1.42	3.78	<0.01	2.07	1.30	3.30	<0.01
Confidence in ability to quit[b]	779	1.11	1.03	1.20	0.01	1.02	0.95	1.09	0.65
Number of face-to-face contacts									
Up to 7	231	1	Referent			1	Referent		
More than 7	44	2.61	1.39	4.88	<0.01	2.48	1.48	4.17	<0.01
Number of medications									
0	104	1	Referent			1	Referent		
1	186	2.30	1.27	4.18	<0.01	1.92	1.00	3.68	0.05
2	335	4.78	2.72	8.40	<0.01	2.32	1.26	4.27	<0.01
3	132	5.83	2.98	11.40	<0.01	2.03	1.02	4.03	0.04
4+	33	11.80	4.10	33.95	<0.01	2.92	1.14	7.46	0.02

[a] Gender, race, importance in quitting, and number of cigarettes were included in the model. These were not significant predictors of abstinence and are not displayed.

[b] Confidence in ability to quit is a *continuous* variable on a 1–10 scale.

Table 16 Odds ratios with 95% confidence intervals comparing smoker who successfully quit smoking with unsuccessful quitters: National Health Interview Survey, 2000 **[37]**

Characteristics		OR	95%CI	*p*-value
Demographic				
Age, year	18-24	1.00	Reference	
	25-34	1.32	0.92-1.90	0.137
	35-44	1.47	1.02-2.12	0.038
	45-54	1.80	1.19-2.71	0.005
	55-64	3.58	2.30-5.58	< 0.001
	≥ 65	5.34	3.47-8.22	< 0.001
Education	Less than high school	1.00	Reference	
	High school graduate or GED	1.02	0.73-1.43	0.889
	Some college or associate degree	1.20	0.87-1.66	0.268
	College graduate or higher	1.83	1.24-2.69	0.002
Marital status	Married or living with a partner	1.00	Reference	
	Never married, divorced, separated, or widowed	0.73	0.58-0.91	0.005
Race/ethnicity	Non-Hispanic White	1.00	Reference	
	Non-Hispanic Black	0.67	0.47-0.97	0.032
	Hispanic	0.69	0.49-0.96	0.026
	Other	0.74	0.42-1.28	0.279
Behavioral				
Lifetime quit attempts	1	1.00	Reference	
	2	0.43	0.31-0.60	< 0.001
	3-5	0.28	0.21-0.37	< 0.001
	≥ 6	0.19	0.14-0.26	< 0.001
Ever switched to low-tar/nicotine products	Yes	1.00	Reference	
	No	1.32	1.04-1.66	0.021
Environmental				
Others smoking at home	Yes	1.00	Reference	
	No	10.47	8.15-13.46	< 0.001
No-smoking policy at work	No	1.00	Reference	
	Yes	2.01	1.20-3.37	0.008

Note. GED = general equivalency diploma. Successful quitters were defined as those who had maintained their quit status for 7 to 24 months. Unsuccessful quitters were defined as those who had tried to quit for 1 day or more during the past year but relapsed before 7 months.

Table 17 Summary studies about predictors of smoking cessation

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
Murray, *et al*. (2000) [17]	Exploratory analysis	5 years of sustained abstinence.	Smoking status at annual visits was determined by self-report and validated. In nicotine users, smoking status was validated by expired air CO ≤ 9 ppm. In nonnicotine users, smoking status was validated by salivary cotinine < 20 ng/ml	3,523 intervention participants, 1,282 participants in this analysis.	***Multivariate Logistic regressions*** Increased abstinence 1. Significant other present at orientation Decreased abstinence 1. Increase number of previous quit attempts (more history of relapse) 2. Use of nicotine gum at 12 months 3. Higher emotional factor score 4. Self-reported hay fever at 12 months	1.29 (1.00-1.66) 0.90 (0.83-0.98) 0.37 (0.29-0.48) 0.93 (0.88-0.99) 0.43 (0.23-0.80)
Whitson, Heflin and Burchett (2006) [18]	Prospective cohort study.	3-year follow-up abstinence	Smoking status was determined by interview, quitter were who responded ''yes'' to question "Do you smoke cigarettes regularly now?"	573 elderly smokers in this analysis.	***Multivariate Logistic regressions*** Increased abstinence Only female sex Greater tendency toward smoking cessation Patients recently diagnosed with cancer	1.70 (1.04-2.77) 1.68 (0.89-3.20)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
Ferguson, *et al*. (2003) [19]	Retrospective cohort study	6-month tobacco abstinence	Self-reported 7-day point prevalence abstinence from tobacco obtained by telephone interview 6-months after the consultation.	1,224 cigarette smokers treated for nicotine dependence	***Multivariate analysis, a bootstrap resampling model selection procedure was employed*** Increased abstinence 1. Males without a current psychiatric diagnosis 2. The action stage of change 3. FTND scores < 5 4. Longest duration of previous abstinence from tobacco was > 30 days	 1.3 (1.0-1.7) 1.6 (1.1-2.4) 1.6 (1.2-2.1) 1.4 (1.0-1.8)
McGee and Williams (2006) [20]	Longitudinal study	Subsequent quitting at follow-up (follow-up occurred some 13 years later)	Self-report of smoking status (non-smoking, daily smoking, exsmoker) by interview.	575 intervention women, 209 women smoking cigarettes at baseline in this analysis.	***Multivariate logistic regression*** Increased abstinence 1. Reporting higher anxiety Decreased abstinence 1. Being young (< 21) at birth of first child 2. Increase number of cigarettes smoked at baseline	 2.93 (1.30-6.62) 0.39 (0.20-0.75)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
					(compared with <10 daily)	
					10-19 cigarettes daily	0.21 (0.10-0.44)
					>19 cigarettes daily	0.14 (0.06-0.37)
Nollen, *et al.* (2006) **[21]**	Randomized placebo-controlled trial	Abstinence at month 6.	Abstinence was defined as no smoking (not even a puff) in the past 7 days confirmed by a salivary cotinine of ≤ 20 ng/mL.	637 African American light smokers (<10 cigarettes per day) included in final analysis	*Multiple logistic regression* <u>Increased abstinence</u> 1. Health education rather than motivational interviewing counseling 2. Older age 3. Higher body mass index <u>Decreased abstinence</u> 1. Female gender 2. < $1,800/month income 3. Higher baseline cotinine 4. Not completing all counseling sessions	 2.26 (1.36-3.74) 1.03 (1.01-1.06) 1.04 (1.01-1.07) 0.46 (0.28-0.76) 0.60 (0.37-0.97) 0.948 (0.946-0.950) 0.48 (0.27-0.84)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
Harris, *et al.* (2004) **[22]**	Data from randomized double-blind, Placebo controlled trial of bupropion	7-day point prevalence abstinence at the end of medication phase (7 weeks)	Abstinence was defined as no smoking in the past 7 days confirmed by carbon monoxide level ≤ 10 ppm, or > 10 ppm but salivary cotinine ≤ 20 ng/ml.	600 African-American smokers in a randomized controlled trial of bupropion	*Multiple logistic regression analysis* Increased abstinence 1. Received bupropion treatment Decreased abstinence 1. Smoking within 30 minutes of waking 2. Higher salivary cotinine levels at baseline	2.62 (1.77-3.88) 0.40 (0.25-0.62) 0.80 (0.63-0.92)
Senore, *et al.* (1998) **[23]**	Randomized trial	one year sustained abstinence	Smokers who reported having quit smoking at least 1 week before the follow-up interviews performed at 6-and 12-month, urine sample for cotinine determination confirmed	861 smokers randomized to the intervention groups	*Multiple logistic regression analysis* Increased abstinence 1. Male sex 2. Married status 3. Smokers who had maintained abstinence for at least one month in the past 4. At their first quit attempt 5. Spontaneously reduced their coffee consumption	2.30 (1.13-4.52) 3.63 (1.37-9.59) 6.78 (1.56-29.52) 10.91 (2.37-50.13) 3.30 (1.59-6.82)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
					Decrease abstinence	
					1. Heavy smokers (> 20 cigarettes/day)	0.48 (0.24-0.93)
					2. Living with other smokers (> 1 smokers in the household)	0.44 (0.22-0.90)
Chen, White and Pandina (2001) [24]	Prospective longitudinal study	Stop smoking 13 years later	Smokers who reported not smoking by self-report questionnaires	324 young adults, regular (daily) smokers.	*Multiple logistic regression analysis* Increased abstinence 1. Becoming married 2. Decreases in the proportion of friends who smoked	4.7 (2.1-10.4) 1.7 (1.2-2.4)
Zhu, *et al*. (1999) [25]	Cross-sectional surveys	Quit smoking at the follow-up survey 4 years later	Smokers who reported not smoking by self-administered questionnaire	633 adolescent smokers aged 12-19 years in this analysis.	*Multiple logistic regression analysis* Increased abstinence 1. Non-daily smoking when compared to daily smoking 2. Length of past quit attempts when compared to longest quit < 14 days Longest quit ≥14 days Never quit	1.67 (1.03-2.71) 2.23 (1.14-4.36) 2.19 (1.06-4.53)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
					3. Self-estimation of likelihood of stop smoking a year from baseline	1.67 (1.03-2.73)
					4. Mother did not smoke	1.84 (1.06-3.21)
					5. Depression score ≤ 85 percentile	1.87 (1.04-3.35)
Godtfredsen, *et al*. (2001) **[26]**	Prospective population study	Quit smoking at 5 years later follow-up	Smokers who reported not smoking by self-administered questionnaire	3,791 moderate and heavy smokers, 15 g tobacco/day or more	*Multiple logistic regression analysis* Increased abstinence 1. Impaired lung function : FEV_1 < 50% predicted 2. Tobacco consumption of 15-24 g/day compared with ≥ 25 g/day	Author did not show OR and 95%CI of over all men and women
Nerín, *et al*. (2004) **[27]**	Cross-sectional descriptive study	Successful outcome in a smoking cessation program at 6-month follow up	Success was defined as self-reported abstinence, confirmed by CO-oximetry (carbon monoxide <10 ppm).	248 smokers who attended a smoking cessation clinic for combined medical and cognitive-behavioral group therapy.	*Multiple logistic regression analysis* Three variables- -success at 3 months, age, and nicotine dependence - -were entered 1. Only variable predictive of successful smoking cessation at 6 months was success at 3 months.	5.1 (2.7-9.6)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
Ong, *et al*. (2005) [33]	Prospective cohort study	Continuously abstinent at 2 months after hospital discharge	Continuously abstinent was determined by self-reporting and carbon monoxide breath testing.	248 smokers admitted with primary cardiac and respiratory conditions received verbal advice and standard booklets on smoking cessation.	***Multivariate analysis*** Increased abstinence 1. Low nicotine dependence score (< 5 points) 2. Determination to quit by sudden cessation 3. Initial hospitalization	2.30 (1.25-4.26) 7.19 (1.56-33.06) 6.37 (1.33-30.44)
MacKenzie, Pereira and Mehler (2004) [28]	Exploratory analysis	6-month to 2-year self reported quit rates	Self-reported point-prevalent smoking status through telephone contact and/or medical record review.	154 adult smokers who admitted to the medicine service of an urban public hospital, 102 patients in analysis	***Multiple logistic regression analysis*** Increased abstinence 1. Confidence to quit 2. Number of previous quit attempts (per attempt)	9.8 (2.8-35.0) 1.3 (1.0-1.5)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)

Dale, *et al*. (2001) **[29]**	Double-blind, placebo-controlled, dose-response trial.	Point prevalence abstinence rates at the end of the medication phase (for 7 weeks)	Self-reported abstinence was considered to be validated by an expired air CO level of ≤ 10 ppm.	615 healthy men and women (> 18 years of age) who were smoking > 15 cigarettes per day and who were motivated to stop smoking.	*Multiple logistic regression analysis*
					 <u>Increased abstinence</u>
					 1. Higher doses of bupropion when compare to those receiving placebo
					     Bupropion SR, 100 mg/d
					     Bupropion SR, 150 mg/d
					     Bupropion SR, 300 mg/d:
					 2. Lower number of cigarettes smoked per day
					 3. Longest time previously abstinent > 4 weeks
					 <u>Decreased abstinence</u>
					 1. Female gender
						
						1.8 (1.0-3.2)
						3.2 (1.9-5.6)
						4.0 (2.3-7.0)
						$p < 0.001$
						$p = 0.002$
						
						0.6 (0.4-0.9)

Bak, *et al*. (2002) **[30]**	used data from a prospective follow-up study	Persistent smoking at 6 months after first-ever stroke	Smoking status was determined by interview	734 patients with a first-ever stroke, 198 patients who were current smokers on admission were	*Multiple logistic regression analysis* (predicted persistent smoking at 6 months) <u>Decrease persistent smoking at 6 months</u> 1. Female sex 2. Barthel Index at follow-up 0-45 (compared with 100)	**predicted persistent smoking** 0.4 (0.1-1.0) 0.1 (0.02-0.5)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
				in analysis	3. Marital status (compare with living alone)	
					Living with partner	0.2 (0.1-0.6)
					Living with family or friends or institutionalized.	0.1 (0.02-0.6)
					4. White collar occupation (compare with blue collar)	0.3 (0.1-0.8)
Simon, Browner and Mangano (1992) **[32]**	Cohort study	Smoking relapse at 12 months postoperative follow-up	Direct interview and included self-reported smoking status	235 smokers who were admitted for major non-cardiac surgery and survived, 186 subjects for analysis	***Multiple logistic regression analysis*** (predicted smoking relapse at 12 months) Increase smoking relapse at 12 months 1. Pack-year history of smoking 2. History of alcohol abuse	**predicted smoking relapse** 1.47 (1.09-1.98) 3.07 (1.42-6.66)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)

Grandes, *et al*. (2003) **[31]**	Quasi-experimental non-randomised controlled trial	Sustained abstinence between 12 and 24 months' follow-up	Self-reported smoking status through telephone contact, all those who claimed to be off cigarettes were checked by measurement of expired carbon monoxide confirmed sustained abstinence.	All smokers attending seven intervention (N = 1203) and three control (N = 565)	*Multiple logistic regression analysis*
					
					Increased abstinence
					
					1. Programme versus controls
					
					    Advice and a handout
					
					    Advice, a handout and follow-up
					
					    Advice, a handout, follow-up and nicotine patches
					
					2. Previously stopped $\geq$ 3 months
					
					3. Increase age (each 10 years)
					
					Decreased abstinence
					
					1. Higher Fagerström dependence score
						
						1.9 (1.0-3.4)
						
						6.6 (2.9-14.6)
						
						13.1 (6.6-25.9)
						
						1.8 (1.1-2.7)
						
						1.32 (1.13-1.44)
						
						0.89 (0.82-0.97)

Chaaya, MehioSibai and ElChemaly (2006) **[34]**	Cross-sectional study	current smoking status (smoker, ex-smoker or never smoker),	Smoking was assessed by asking a series of questions on cigarettes and narghile (water-pipe) smoking.	740 individuals aged $\geq$ 60 years, 379 ever smokers in analysis for identify predictors	*Multivariate logistic regression analysis* Increased abstinence 1. Having chronic disease 2. Suffering from disability	 4.29 (1.67-11.11) 1.79 (1.11-2.91)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
Tucker, *et al*. (2005) [35]	Survey study	6 months abstinence or longer between ages 23-29.	Mail surveys were used for smoking assessment	360 smokers at age 23 for identify predictors of smoking cessation	*Multivariate logistic regression analysis* Decrease abstinence 1. Poor health (Health status scale from 1 = excellent to 5 = poor) 2. Around people who smoke	 0.64 (0.44-0.93) 0.53 (0.29-0.96)
Steinberg, *et al*. (2006) [36]	retrospective cohort study	7 days point prevalence abstinence at 6 month after quit date	Continual abstinence from quit-date (no smoking since quit-date) was also recorded. Abstinence rates were confirmed by expired carbon monoxide (CO) levels of < 10 ppm, when possible. 6-month follow-up was generally collected by telephone or mail.	790 smokers treated and contacted 4 weeks after quit-date	*Multivariate logistic regression analysis* Increased abstinence 1. Increasing age (compared with under 25) 45- 64 years More than or equal 65 years 2. Increasing level of education (compared with no high school degree) Some college College graduate Graduate degree 3. More than 7 clinical contacts	 1.88 (1.01-3.50) 3.86 (1.69-8.81) 2.42 (1.24-4.71) 3.32 (1.63-6.78) 3.00 (1.38-6.53) 2.48 (1.48-4.17)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
					4. Longer time after waking to first cigarette (compared with <5 minutes)	
					5 - 30 min	1.48 (1.04-2.11)
					>30 min	2.07 (1.30-3.30)
					5. More than 1 medications were used (compared with 0 medication)	
					2 medications were used	2.32 (1.26-4.27)
					3 medications were used	2.03 (1.02-4.03)
					4 medications or more were used	2.92 (1.14-7.46)
Lee C, Kahende J. (2007) **[37]**	cross-sectional survey	Compared recent successful quitters (who had quit 7-24 months earlier and had not relapsed) with	Smoking status was assessed by asking questions	4,011 current and former smokers who had attempted to quit during the previous 12 months	*Multivariate logistic regression analysis* <u>Increased abstinence</u> 1. College graduate or higher (compared with < high school) 2. Never switched to low-tar/nicotine products 3. No have others smoking at home 4. No-smoking policy at work	 1.83 (1.24-2.69) 1.32 (1.04-1.66) 10.47 (8.15-13.46) 2.01 (1.20-3.37)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
		current smokers who had a recent failed quit attempt (past 12 months).			5. Increase years of age (compared with 18-24 years)	
					25-34	1.32 (0.92-1.90)
					35-44	1.47 (1.02-2.12)
					45-54	1.80 (1.19-2.71)
					55-64	3.58 (2.30-5.58)
					$\geq$ 65	5.34 (3.47-8.22)
					Decrease abstinence	
					1. More lifetime quit attempts (compared with 1 attempt)	
					2	0.43 (0.31-0.60)
					3-5	0.28 (0.21-0.37)
					> 6	0.19 (0.14-0.26)
					2. Race/ethnicity (compared with Non-Hispanic White)	
					Non-Hispanic Black	0.43 (0.31-0.60)
					Hispanic	0.28 (0.21-0.37)

Table 17 Summary study about predictors of smoking cessation (continue)

Authors	Study design	Outcome	Measure outcome	Sample	Significant predictors of smoking cessation	OR (95%CI)
					3. Never married, divorced, separated, or widowed (compared with Married or living with a partner)	0.73 (0.58-0.91)

From previous studies, there are many predictors that related to smoking cessation. Some predictors have been reported and associated with higher and lower abstinence rates. The investigator categorized these predictors into four dimensions as follows: (1) demographic characteristics, (2) smoking behavioral characteristics, (3) treatment and pharmacotherapy and, (4) environmental factors. Table 18 presents predictors of smoking cessation according to four dimensions. Currently, there is no obvious way and study in Thailand indicating whether a certain patient should receive only single or combinations of pharmacotherapies, longer duration of using smoking cessation pharmacotherapy, or which patients have less opportunity to quit smoking than others. Therefore, correlational research was conducted to determine factors associated with successful smoking cessation and develop a model to predict tobacco abstinence among Thai outpatient smokers who received clinical services for the treatment of tobacco dependence.

Table 18 Predictors of smoking cessation according to four dimensions.

Increased abstinence rates	Decreased abstinence rates
Demographic characteristics	
Female gender [18] Male gender [19, 23]	Female gender [21, 29, 30]
Married status or living with partner [23, 24, 30, 37]	
Older age [21, 31, 36, 37]	Self-reported hay fever at 12 months [17]
Higher body mass index [21]	Lower income [21]
Recently diagnosed with cancer [18]	Poor health (scale from 1 excellent to 5 poor) [35]
Having chronic disease [34]	
Suffering from disability [34]	
Initial hospitalization [33]	
Reporting higher anxiety [20]	
Depression score ≤ 85 percentile [25]	Higher emotional factor score [17]

Table 18 Predictors of smoking cessation according to four dimensions. (continue)

Increased abstinence rates	Decreased abstinence rates
Demographic characteristics (continue)	
Barthel Index at follow-up 0-45 [30]	
Impaired lung function [26]	
Being young (< 21)at birth of first child [20]	
Spontaneously reduced their coffee consumption [23]	
History of alcohol abuse [32]	
Confidence to quit [25, 28]	
Higher educational level [36, 37]	
Smoking behavioral characteristics	
Action stage of readiness to quit smoking [19]	Increase number of cigarettes per day [20, 23, 26 32]
Non-daily smoking [25]	
Lower FTND scores [19, 31, 33]	Higher baseline cotinine [21, 22]
Smokers who had maintained abstinence for at least one month in the past [23]	Time to smoking first cigarette of the day within 30 minute [22, 36]
Never quit attempt [23, 25]	
Increase number of previous quit attempts [28]	Increase number of previous quit attempts [17, 37]
Length of past quit attempts > 14 days [25]	
Longest time previously abstinent > 4 weeks [29]	
Longest time previously abstinent > 3 months [31]	
Treatment and pharmacotherapy	
Using of first or second line pharmacotherapies that AHRQ recommended [4]	Use of nicotine gum at 12 months [17]
More sessions of visiting the clinician [4, 36]	Not completing all counseling sessions [21]
Higher doses of bupropion [29]	
Received bupropion treatment [4,22]	
Extended duration of bupropion [48]	
More than 1 medications were used (compared with 0 medication) [36]	
Determination to quit by sudden cessation [33]	

Table 18 Predictors of smoking cessation according to four dimensions. (continue)

Increased abstinence rates	Decreased abstinence rates
Environmental Factors	
No-smoking policy at work [37]	Around people who smoke [35]
Decreases in the proportion of friends who smoked [24]	Living with other smokers [23, 37]

       Investigators interviewed clinicians and counselors at smoking cessation clinic about predictors of smoking cessation in Thai patients. Besides above predictors of smoking cessation in previous study, according to the interview, an intention to quit smoking was an important factor related to successful smoking cessation in Thai patient smokers. Types of pharmacotherapy and duration of using pharmacotherapy in Thai patients also depended on income and medical welfare.

CHAPTER III

METHODS

This study was carried out to determine predictors of smoking cessation in outpatient smoking cessation clinics/services. This chapter describes in detail how the study was conducted. It is divided into five sections as follows: (1) study design, (2) participants, (3) study procedures, (4) ethical approval and (5) statistical analyses.

1. <u>Study design</u>

Correlational research was used to determine the associations or correlations between factors (i.e., gender, age, marital statues, educational level, alcohol drinking, health status, using other additive substances, number of cigarettes per day, number of years smoking, number of previous quit attempts, Fargerström Test for Nicotine Dependence scores (FTND scores), stages of readiness to quit smoking using Transtheoretical Model, time to smoking first cigarette of the day, number of visiting the clinician session, types of pharmacotherapy, duration of using pharmacotherapy).

2. <u>Participants</u>

2.1 Population and sample

Population and sample were medical records of outpatients who received tobacco dependence treatment at Thanyarak Institute, Rajavithi Hospital and Ramathibadi Hospital. Data were retrieved and recorded during October 1, 2004 to October 1, 2006 in retrospective fashion. In addition, population and sample were outpatients who received tobacco dependence treatment at Thanyarak Institute and Rajavithee Hospital. This sample was outpatients who received tobacco dependence treatment in prospective fashion between October 1, 2006 and January 31, 2007.

2.2 Sample size estimation

Sample size of 300 subjects was calculated by using equation of the study of Hsieh, Bloch and Larsen MD[38], at an alpha significant level of 0.05 (i.e., Type I error) and a power of 80%.

$$N = \frac{[Z_{1-\alpha/2} \sqrt{\overline{P}(1-\overline{P})/R} + Z_{1-\beta}\sqrt{(P_0(1-P_0)+P_1(1-P_1)(1-R)/R)}]^2}{(P_0-P_1)^2(1-R)}$$

Determination

N   =   number of patients in each group

$Z_{1-\alpha/2}$ =   Z score at probability of $(1-\alpha/2)$ when $\alpha = 0.05$

                $(1-\alpha/2) = 0.975$ so that $Z_{0.975} = 1.96$

$Z_{1-\beta}$ =   Z score at probability of $(1-\beta)$ when $\beta = 0.20$

                $(1-\beta) = 0.80$ so that $Z_{0.80} = 0.84$

P_0 =   Rate of smoking abstinence when factor X was not given(X=0)

P_1 =   Rate of smoking abstinence when factor X was given(X=1)

R   =   Proportion of samples in which factor X was given

From the study of Steinberg, *et al*.(2006), the researcher defined using smoking cessation pharmacotherapy as the factor which related to 7-day point prevalence abstinence rate at 24 weeks or 6 months[36]. Comparing between the patients who took smoking cessation pharmacotherapy and did not, it was found that the abstinence rates were 38.19% and 20.19%, respectively. Consequently, the proportion of patients who took smoking cessation pharmacotherapy was 86.83%. So, $P_0 = 0.20$ $P_1 = 0.38$ and $R = 0.87$

$$N = \frac{[1.96 \sqrt{0.36(1-0.36)/0.87} + 0.84\sqrt{(0.20(1-0.20)+0.38(1-0.38)(1-0.87)/0.87)}]^2}{(0.20-0.38)^2(1-0.87)}$$

$N = (1.01+0.37)^2/(0.20-0.38)^2(1-0.87) = 98$

From the study by Titirat (2004) **[39]**, the drop out rate of patients who had treated tobacco dependence in the 5th week after initial day of treatment was approximately 60%. Using the estimate drop out 60%, sample size was calculated as following: N = 98 / (1-0.60) = 245

Based on calculation above, therefore, sample size of at least 300 samples was estimated. The number of sample collected from retrospective medical record review (i.e., 2/3) and one third of the sample was collected as prospective data. Thus, at least 200 patients for medical record review and at least 100 patients from prospective study.

2.3 Inclusion and exclusion criteria

Inclusion criteria: medical records and outpatients had to meet the following criteria:

1. Patients were contacted at least 4 weeks after the quit date for evaluating using of smoking cessation pharmacotherapy.

2. Abstinence data the follow-up visit at 8, 12, 16 and 24 weeks after the quit date must be recorded in the medical records or via telephone by nurses or researcher. Data were treated as current smokers if there was no information at each specific period.

Exclusion criteria:

Medical records and outpatients with no data at 4 weeks after the quit date.

3. **Study procedures**

3.1 Baseline characteristic data

Gender, age, marital status, educational level, concomitant present illness, history of drug abuse, alcohol drinking, number of cigarettes per day and number of years smoking from medical records or interview by clinicians or nurses were recorded into the form (appendix D). For prospective data collection, the investigator interviewed the patients, then evaluated his/her stages of readiness to quit smoking by

using Transtheoretical Model (appendix F)[20], nicotine dependence level by using Fagerström Test for Nicotine Dependence (appendix G) [20] and interviewed why they were still smoking by using "Why are you still smoking?" questionnaires (appendix H)[20].

3.2 Usage of smoking cessation pharmacotherapy or product data

Types of smoking cessation pharmacotherapy and duration of pharmacotherapy were recorded in the form (appendix E).

3.3 Smoking cessation counseling

All patients would receive regular service i.e., knowledge concerning dangers of smoking, how to behave themselves to help quit smoking successfully, behavior and skill adjustment to avoid anything instigating and deviating them from right path at the beginning of quitting and each follow-up visit from physicians and/or nurses. Number of clinic visits was also recorded in the form (appendix E).

3.4 Outcome measures

Primary outcomes were 7-days point prevalence abstinence and continuous abstinence at 24 weeks after the quit date. 7-days point prevalence abstinence and continuous abstinence were also accessed at 4, 8, 12, and 16 weeks after the quit date. 7-day point prevalence abstinence and continuous abstinence follow-up assessment days are depicted Figure 1 and 2, respectively. Abstinence data were recorded into the form (appendix E).

Abstinence data at 4 weeks after the quit date was stated individually. Physician or nurse recorded them when patients followed up visiting at hospital. Abstinent data at 8, 12, 16 and 24 weeks after the quit date was stated individually. They were recorded when patients followed up at hospital in medical records or on asking over the telephone by physician, nurse or investigator. Abstinence data were treated as being smokers if there were no information on such above specified period. Figure 3 depicts the diagram of study procedures.

Initial day of treatment

1st assessment   2nd assessment   3rd assessment   4th assessment   5th assessment

7 days   7 days   7 days   7 days   7 days

Day 0	Day 8

Weeks

4	8	12	16	24

After

quit

Quit Date

date

Figure 1   Seven-day point prevalence abstinence follow-up assessment days

Initial day of treatment

1st assessment   2nd assessment   3rd assessment   4th assessment   5th assessment

Day 0	Day 8

Weeks

4	8	12	16	24

After

quit

Quit Date

date

- - - - - - - -   dotted line symbolizes the quit date and the assessment for the use of

nicotine replacement therapy

⎯⎯⎯⎯⎯   thick line symbolizes the quit date and the assessment for the use of other

pharmacotherapy

Figure 2   Continuous abstinence follow-up assessment days

As retrospective data collection, 735 medical records of outpatients who received tobacco dependence treatment at Thanyarak Institute, Rajavithi Hospital and Ramathibadi Hospital.during October 1, 2004 to October1, 2006 were retrieved.

As prospective data collection, 225 outpatients who received tobacco dependence treatment from October 1, 2006 to January 31, 2007 at Thanyarak Institute and Rajvithee were invited to participate in the study. The investigators explained the study procedures as well as obtaining the complete filling and signing in Research Subject Information Sheets and Consent forms. (Appendix I)

1. Baseline characteristic data were recorded into the forms (appendix D).
2. Types of smoking cessation pharmacotherapy and duration smoking cessation pharmacotherapy were recorded in the forms (appendix E).
3. Abstinence data at 4, 8, 12, 16 and 24 weeks follow-up visits after the quit date were recorded in following smoking cessation form (appendix E).

1. Baseline characteristic data were recorded into form (appendix D).
2. Types of smoking cessation pharmacotherapy and duration of pharmacotherapy were recorded in the form (appendix E).
3. Investigator interviewed the patients and evaluated stage of readiness to quit smoking by using Transtheoretical Model, determined nicotine dependence level by using Fagerström Test for Nicotine Dependence and find out why they were still smoking by using "Why are you still smoking?" questionnaires (appendix F- H)
4. Abstinence data at 4, 8, 12, 16 and 24 weeks follow-up visits after the quit date were recorded in following smoking cessation form (appendix E).

506 patients had no data completely at 4 weeks follow-up visit after the quit date then they were excluded from the study.

Data on 454 patients were used in the study.

Figure 3 The diagram of study procedures

4. **Ethical approval**

The Human Research Ethics Committee at the Ramathibadi's Faculty of Medicine, Thanyarak Instutitue and Rajavithi Hospital approved this study. For prospective data collection, the researcher explained the study procedures as well then the patients would complete filling and signing in Research Subject Information Sheet and Consent form (appendix I).

5. **Statistical analyses**

Data were analyzed by using the Statistical Package for Social Sciences (SPSS) software version 11.5.

1. Descriptive statistics (i.e., mean, standard deviation, median, percent and frequency were used to evaluate baseline characteristics including demographics, smoking behavioral and smoking cessation pharmacotherapy data and abstinence rates.

2. Chi-square or Fisher' exact tests were used to determine the abstinence rate differences of categorical variables. Variables had p-value ≤ 0.25 were included in multivariate logistic regression analyses.

3. Univariate logistic regression analysis was used to calculate odds ratios with 95% confidence interval of abstinence rates for each variable.

4. Multivariate logistic regression analysis with backward stepwise procedure was performed to identify a set of multiple predictors of abstinence rate at 24 weeks. Adjusted odds ratios for abstinence rate at 24 weeks were also reported in the model. The predictors in the final model were determined to be the best fit with the data based on the -2 log likelihood and overall accuracy parameters.

5. The level of any statistical tests was established at an $\alpha = 0.05$

CHAPTER IV

RESULTS AND DISCUSSIONS

The purpose of this correlational research was to determine the predictors and multivariate model of smoking cessation in terms of 7‑day point prevalence and continuous abstinence rates at 24 weeks after the quit date in Thai patients smokers. This chapter is divided into results and discussions. The results were divided into 4 parts as follows:

1. Patient baseline characteristics
2. Abstinence and non abstinence rates among patients baseline characteristics
3. Univariate predictors of smoking cessation
4. Multivariate predictors of smoking cessation

Results

1. Patient baseline characteristics

Data of 960 patients were retrieved in the study, 735 medical records of outpatients who received during October 1, 2004 to October 1, 2006 in three centers and 225 outpatients who participated during October 1, 2006 to January 31, 2007 in two centers. Overall 454 patients who had complete data at the 4 weeks follow‑up visit after the quit date and met the inclusion criteria were included in the study, 323(43.94%) from 735 medical records and 131(58.22%) from 225 patients. All data on study variables from 454 patients, chi‑square and univariate logistic regression analyses were used to determine the abstinence rate differences among patient characteristic variables and odds ratios for the abstinence rates at 24 weeks after the quit date (7‑day point prevalence abstinence and continuous abstinence rates). Data on 249 patients were included in the multivariate logistic regression analysis.

1.1 Demographic characteristics

Baseline demographic characteristics of the patients are described in Table 19. Data of the 454 patients, 88.55% were male and 49.56%, 44.49%, and 5.95% were single, married or living with partner, and widowed, separated, or divorced statuses, respectively. The ratio of male: female was about 8:1. The mean age ($\pm$ SD) was 36.97 $\pm$ 16.44 years (range 12–79 years). However, test of normality for age was not normal distribution (Kolmogorov-Smirnov test: p-value < 0.01) and the median of age was 38.00 years (range 12–79 years of age). Age of patients, 23.57% were $\leq$ 18 years of age (adolescents), 42.07% were 19-45 years of age and 34.36% were $\geq$ 46 years of age. 27.75 % of all patients had concurrent chronic illnesses which excluded psychiatric disorders (Appendix A. presents health status of the participating patients). Twenty-nine of 454 patients (6.93%) had concurrent psychiatric disorders. Four hundred and twenty-two patients had alcohol drinking data, 9.24% drank every day, 15.17% were social drinking and 75.59% were non drinking. Two hundreds and seventy-one patients had educational level data, 63.47% of these patients did not exceed high school education, 14.76 % had finished vocational level and 21.77% had finished at least bachelor's degree. Four hundreds and thirty-two patients had additive substance dependence data, 97.22% were not using any additive substances and 2.78% were using other additive substances.

Table 19 Demographic characteristics

Variable	Mean ($\pm$ SD) /Number (%)	
Gender (N = 454)		
male	402	(88.55)
female	52	(11.45)
Age; years (N = 454)[a]		
$\leq$ 18 years of age	107	(23.57)
19 – 45 years of age	191	(42.07)
more than 45 years of age	156	(34.36)
Marital status (N = 454)		
single	225	(49.56)
married or living with partner	202	(44.49)
widowed, separated, or divorced	27	(5.95)
Educational level (N = 271)		
high school or lower	172	(63.47)
vocational level	40	(14.76)
bachelor's degree or upper	59	(21.77)
Alcohol drinking (N = 422)		
daily drinking	39	(9.24)
social drinking	64	(15.17)
non drinking	319	(75.59)
Concurrent illnesses (psychiatric disorders were excluded) (N = 454)		
present	126	(27.75)
not present	328	(72.25)
Concurrent psychiatric disorders (N = 454)		
present	29	(6.39)
not present	425	(93.61)
Using any other additive substances (N = 432)		
use	12	(2.78)
not use	420	(97.22)

(a) Test normality: K-S Test < 0.01, mean ($\pm$ SD) $= 36.97 \pm 16.44$, median $= 38.00$ years (range 12-79)

1.2 Smoking behavioral characteristics

All of 454 patients have data on the number of cigarettes per day. Tests of normality for number of cigarettes per day were not normal (Kolmogorov-Smirnov test: p-value < 0.01) and the median was 15.00 cigarettes per day (range 1-60 cigarettes per day). Number of cigarettes per day was divided into four groups, 43.17% smoked 1-10 cigarettes per day, 42.07% smoked 11-20 cigarettes per day, 7.71% smoked 21-30 cigarettes per day and 7.05% had smoked 31 cigarettes per day or more. Test of normality on the age started smoking were not normal (Kolmogorov-Smirnov test: p-value < 0.01) and the median was 17.00 years of age (range 7-47 years). Normality test for number of years smoking was not normal (Kolmogorov-Smirnov test: p–value < 0.01). The median was 20 years (range 6 months – 60 years). Number of years smoking was divided into three groups, 35.24% smoked ≤ 10 years, 43.39% smoked 11-30 years and 21.37% smoked ≥ 31 years.

Four hundreds and fifty patients had data on the number of previous quit attempts. Normality test for number of previous quit attempts was not normal (Kolmogorov-Smirnov test: p–value < 0.01). Most of the patients had never attempted to quit (56.44%), 28.00% had 1 previous quit attempt and 15.56% had more than 1 quit attempt. One hundred and forty-four patients were scored for nicotine dependence by using Fagerström test. The test score was divided into five level of nicotine dependence i.e., (1) the score from 0 to 2 was very low nicotine dependence, (2) the score from 3 to 4 was low nicotine dependence, (3) the score from 5 to 6 was medium nicotine dependence, (4) the score 7 was high or heavy nicotine dependence and (5) the score from 8 to 10 was very high nicotine dependence. 28.47% of patients were very low nicotine dependence, 17.36% were low nicotine dependence, 25.00% were medium nicotine dependence, 11.11% were high (heavy) nicotine dependence and 18.06% were very high nicotine dependence.

One hundred and thirty-one patients from the prospective data collecting were arranged for stages of readiness to quit smoking by using Transtheoretical Model, 52.67% were in precontemplation or contemplation stages and 47.33% were in preparation or action stages. Two hundred and seventeen patients had time to smoking first cigarette of the day, 53.92% smoked the first cigarette of the day immediately or within 10 minutes, 28.11% smoked within 10 minutes to 2 hours and 17.97% smoked the first cigarette of the day more than 2 hour. Causes of smoking from 134 patients, 21.64% were mostly caused from nicotine dependence, 22.39% were mostly caused from psychological dependence, 13.43% mostly caused from socio-cultural dependence and 42.54% consisted of more than one cause (nicotine dependence, psychological dependence and socio-cultural dependence) of smoke. (Table 20 presents the smoking behavioral characteristics of the patients)

Table 20 Smoking behavioral characteristics

	Variable	Number (%)	
Number of cigarettes/day	1-10 cigarettes/day	196	(43.17)
(N = 454) [a]	11-20 cigarettes/day	191	(42.07)
	21-30 cigarettes/day	35	(7.71)
	≥ 31 cigarettes/day	32	(7.05)
Number of years smoking	≤ 10 years	160	(35.24)
(N = 454) [b]	> 11-30 years	197	(43.39)
	≥ 31 years	97	(21.37)
Number of previous quit	never attempted	254	(56.44)
attempts (N =450)	1 quit attempt	126	(28.00)
	≥ 2 quit attempts	70	(15.56)
Fagerström test for nicotine	very low 0-2	41	(28.47)
dependence scores	low 3-4	25	(17.36)
(N = 144)	medium 5-6	36	(25.00)
	high (heavy) 7	16	(11.11)
	very high 8-10	26	(18.06)
Stages of readiness to quit	precontemplation or contemplation stages	69	(52.67)
smoking (N= 131) [c]	preparation or action stages	62	(47.33)
Time to smoking first	immediately - with in 10 minutes	117	(53.92)
cigarette of the day (N = 217)	> 10 minutes - 2 hours	61	(28.11)
	more than 2 hour	39	(17.97)
Why do you smoke? (N =134)	most of cause from nicotine dependence	29	(21.64)
	most of cause from psychological dependence	30	(22.39)
	most of cause from socio-cultural dependence	18	(13.43)
	cause of nicotine and psychological dependence equally	14	(10.45)
	cause of nicotine and socio-cultural dependence equally	7	(5.22)
	cause of psychological and socio-cultural dependence equally	20	(14.93)
	all dimensions are equal.	16	(11.94)

(a) Test normality: K-S Test < 0.01, median = 15.00 cigarettes / day, mean ($\pm$ SD) = 15.69 ($\pm$ 10.49)

(b) Test normality: K-S Test < 0.01, median = 20.00 years. , mean ($\pm$ SD) = 18.78 ($\pm$ 14.19)

(c) Stages of readiness to quit smoking were evaluated by using Transtheoretical Model

1.3 Treatment and pharmacotherapy data

Test of normality for number of visiting the clinician session were not normal (Kolmogorov-Smirnov test: p-value < 0.01) and the median was 3.00 sessions (range 3-13 sessions). 56.61 % had 3 sessions, 37.22% had 4- 6 sessions and 6.17% had 7 sessions or more. 9.47% of patients did not use any pharmacotherapy (stopped smoking immediately or stopped gradually) and 90.53% used smoking cessation pharmacotherapy. Four hundreds and eleven patients (90.53%) which used pharmacotherapy, 270 patients (65.69%) used one first or second line pharmacotherapies as part of treatment, 20 patients (4.87%) used combinations of first and/or second line pharmacotherapies as part of treatment, 64 patients (15.57%) used single or combinations of other antidepressants which were not classified as first or second line pharmacotherapies as part of treatment and 57 patients (13.87%) used other drugs which were not classified as antidepressants in drug regimens. Test of normality on the duration of using pharmacotherapy were not normal (Kolmogorov-Smirnov test: p-value < 0.01) and the median was 4.00 weeks. The duration of using pharmacotherapy was divided into two groups, 76.40% used pharmacotherapy 7 weeks or less and 23.60% used pharmacotherapy more than 7 weeks. Consequently, 82 patients (28.28%) of 290 patients that used first or second line pharmacotherapies used more than 7 weeks. (Table 21 presents the treatment and pharmacotherapy data and Table 49 in appendix B presents the various drug regimens used in the tobacco dependence treatment in patients)

Table 21 Treatment and pharmacotherapy data

Variable	Mean ($\pm$ SD) /Number (%)	
Number of visiting the clinician session (N = 454)	4.02	($\pm$ 1.67)[a]
3 sessions	257	(56.61)
4 -6 sessions	169	(37.22)
$\geq$ 7 sessions	28	(6.17)
Treatment choice (N = 454)		
not used pharmacotherapy	43	(9.47)
used pharmacotherapy	411	(90.53)
Types of pharmacotherapy (N = 454)[ß]		
not used pharmacotherapy	43	(9.47)
used one first or second line pharmacotherapies as part of treatment [b]	270	(59.47)
used combinations of first and/or second line pharmacotherapies as part of treatment[b]	20	(4.41)
used single or combinations of other antidepressants as part of treatment[c]	64	(14.10)
used other drugs which were not classified as antidepressants[d]	57	(12.56)
Using first or second line pharmacotherapies (N = 454)		
not used first or second line pharmacotherapies	164	(36.12)
used one first or second line pharmacotherapies as part of treatment	270	(59.47)
used combination of first and/or second line pharmacotherapies as part of treatment	20	(4.41)
Duration of using pharmacotherapy (N = 454)		
not used pharmacotherapy	43	(9.47)
used pharmacotherapy $\leq$ 7 weeks	314	(69.16)
used pharmacotherapy > 7 weeks	97	(21.37)
Duration of using first or second line pharmacotherapies (N = 454)		
not used first or second line pharmacotherapies	164	(36.12)
used first or second line pharmacotherapies $\leq$ 7 weeks	208	(45.81)
used first or second line pharmacotherapies > 7 weeks	82	(18.06)

(a) Test normality: K-S < 0.01 , median = 3.00 sessions (range 3-13 sessions)

(b) First line pharmacotherapy i.e., bupropion, all dosage forms of nicotine replacement therapy) and second line pharmacotherapy i.e. nortriptyline, clonidine

(c) Using single or combinations of other antidepressants which were not classified as first or second line pharmacotherapy as part of treatment

(d) Using other drugs which were not classified as first or second line pharmacotherapies or any antidepressants in regimen.

[ß] See also Appendix B: Table 49 presents the various drug regimens used in the tobacco dependence treatment in patients

2. Abstinence and non abstinence rates among patients baseline characteristics

2.1 Abstinence rates

Of the 454 participants, continuous abstinence at 4, 8, 12, 16 and 24 weeks follow-up visit were 51.98%, 37.22%, 25.11%, 20.26% and 17.62%, respectively. Seven-day point prevalence abstinence at 4, 8, 12, 16 and 24 weeks follow-up visit were 60.79%, 46.92%, 32.38%, 26.21% and 22.69%, respectively. Table 22 shows smoking abstinence of patients at each follow-up visit assessment. The percentages of patients who were 7-day point prevalence abstinence that were not classified as continuous abstinence at 4, 8, 12, 16 and 24 weeks follow-up visit assessment were 14.49%, 20.66%, 23.13%, 22.69% and 22.33%, respectively. These results of abstinence may present that patients can not stop smoking in several months or patients can not stop smoking at quit date. After three months, the percentage of who were 7-day point prevalence abstinence, but not classify as continuous abstinences trend line seemed to decrease. At this time point may suggest that patients who could stop smoking in previous time came back to smoke again. Figure 4 illustrates trend line of 7-day point prevalence and continuous abstinence of patients at each follow-up visit assessment.
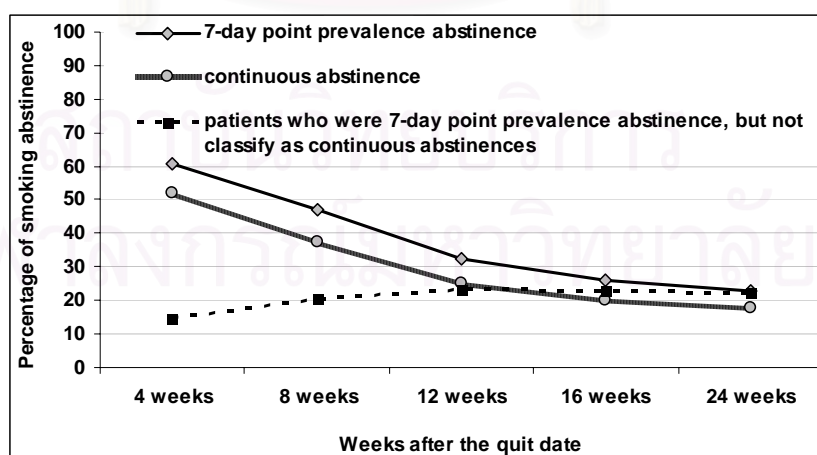
Figure 4 Seven-day point prevalence and continuous abstinence of patients at each follow-up visit assessment (N = 454).

Table 22 Smoking abstinence of patients at follow-up visit assessment (N = 454)

Weeks after the quit date	N (%)		
	7-day point prevalence abstinence	Continuous abstinence	Patients who were 7-day point prevalence abstinence, but not classify as continuous abstinence
4 weeks	276 (60.79)	236 (51.98)	40 (14.49)
8 weeks	213 (46.92)	169 (37.22)	44 (20.66)
12 weeks	147 (32.38)	114 (25.11)	34 (23.13)
16 weeks	119 (26.21)	92 (20.26)	27 (22.69)
24 weeks	103 (22.69)	80 (17.62)	23 (22.33)

2.2 **Demographic characteristics of patients who were abstinence and non abstinence from smoking**

At 24 weeks after the quit date, the percentage of 7-day point prevalence abstinence rate was 22.64% in males and 23.08% in females. Continuous abstinence was 17.91% and 15.38% in male and female. The level of statistical tests was established at an $\alpha = 0.05$. There were no statistically significant difference between gender for both 7-day point prevalence and continuous abstinence (chi-square test: *p*-value =1.00 and 0.80, respectively). Seven-day point prevalence abstinence rate was 11.21% in at least 18 years of age or lesser group, 19.90% in 19-45 years of age group and 33.97% in at least 46 years of age group. For continuous abstinence rate were 9.35%, 16.23% and 25.00% in each group, respectively. There were associations between age and abstinence rates for both 7-day point prevalence abstinence and continuous abstinence rats (chi-square test: both *p*-value < 0.01). Both 7-day point prevalence and continuous abstinence rate in the single marital status was lower than married/living with partner and widowed, separated, or divorced statuses. There were statistically significant differences between marital statuses for both abstinences at 24 weeks (chi-square test: both *p*-value < 0.01). Patients who finished high school or

lower had lower abstinence rates than patients who had finished vocational level and bachelor's degree or upper both 7- day point prevalence and continuous abstinence rates. There were statistically significant differences among educational levels for both 7-day point prevalence and continuous abstinence rates (chi-square: p-value < 0.01 and 0.01, respectively).

Among daily drinking, non drinking and social drinking groups, there were no statistically significant differences of smoking abstinence for both 7-day point prevalence and continuous abstinence rates at 24 weeks after the quit date (chi-square test: p-value = 0.19 and 0.11, respectively). However, patients who were drinking alcohol daily at baseline had low smoking abstinence rates since 4 weeks to 24 weeks after the quit date for both 7-day point prevalence and continuous abstinence rates. The change of smoking abstinence at 4 weeks and 24 weeks follow-up visit of daily drinking group (7-day point prevalence abstinences: 35.90% at 4 weeks, 23.08% at 24 weeks and continuous abstinence: 17.95% at 4 weeks, 10.26% at 24 weeks) were smaller than non drinking (7-day point prevalence abstinences: 68.34% at 4 weeks, 22.26% at 24 weeks and continuous abstinence: 60.50% at 4 weeks, 18.50% at 24 weeks) and social drinking group (7-day point prevalence abstinences: 48.44% at 4 weeks, 32.81% at 24 weeks and continuous abstinence: 39.06% at 4 weeks, 26.56% at 24 weeks). (Figure 6a and Figure 6b in page 120 depicts 7-day point prevalence and continuous abstinence rates based on alcohol drinking at each follow-up visit, respectively)

Patients who had concurrent chronic illnesses had higher abstinence rates than those who did not. There were statistically significant differences between present and not present concurrent chronic illnesses both 7-day point prevalence and continuous abstinence rates (chi-square test: p-value: both p-value < 0.01). Patients who had concurrent psychiatric disorders at baseline had lower smoking abstinence since at 4 weeks (7-day point prevalence abstinences: 27.59% and continuous abstinence:

17.24%) until at 24 weeks (7-day point prevalence abstinences: 10.34% and continuous abstinence: 6.90%) after the quit date. However, at 24 weeks, there were no statistically significant differences between present and not present concurrent psychiatric disorders for both 7-day point prevalence abstinence and continuous abstinence rates (chi-square: p-value = 0.16 and 0.19, respectively). Between using and not using any additive substances, there were no statistically significant differences for both 7-day point prevalence and continuous abstinence rates (Fisher's exact test: both p-value = 1.00). Table 23 and Table 24 present 7-day point prevalence and continuous abstinence rates at 24 weeks by selected demographic characteristics, respectively.

Table 23 Seven-day point prevalence abstinence rates at 24 weeks by selected
demographic characteristics

variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Gender (N =454)				
male	402	91 (22.64)	311 (77.36)	1.00
female	52	12 (23.08)	40 (76.92)	
Age; years (N = 454)				
≤ 18 years of age	107	12 (11.21)	95 (88.79)	< 0.01* [§]
19 – 45 years of age	191	38 (19.90)	153 (80.10)	
≥ 46 years of age	156	53 (33.97)	103 (66.03)	
Marital status (N = 454)				
single	225	29 (12.89)	196 (87.11)	< 0.01* [§]
married or living with partner	202	66 (32.67)	136 (67.33)	
widowed, separated, or divorced	27	8 (29.63)	19 (70.37)	
Educational level (N = 271)				
high school or lower	172	27 (15.70)	145 (84.30)	< 0.01* [§]
vocational level	40	10 (25.00)	30 (75.00)	
bachelor's degree or upper	59	25 (42.37)	34 (57.63)	
Alcohol drinking (N = 422)				
non drinking	319	71 (22.26) 21	248 (77.74) 43	0.19 [§]
social drinking	64	(32.81)	(67.19)	
daily drinking	39	9 (23.08)	30 (76.92)	
Concurrent illnesses (psychiatric disorders were excluded) (N = 454)				
present	126	45 (35.71)	81 (64.29)	< 0.01* [§]
not present	328	58 (17.68)	270 (82.32)	
Concurrent psychiatric disorders (N = 454)				
present	29	3 (10.34)	26 (89.66)	0.16 [§]
not present	425	100 (23.53)	325 (76.47)	
Using any other additive substances (N = 432)				
use	12	3 (25.00)	9 (75.00)	1.00 [b]
not used	420	98 (23.33)	322 (76.67)	

(a) Pearson Chi-Square were used to determine differences between variables. (b) Fisher's Exact Test were used to determine differences between categorical variables. * Significant level at p-value ≤ 0.05 [§] Variables that showed a relationship at p-value ≤ 0.25 (by Chi-square or fisher's Exact tests) were included in multivariate logistic regression model.

Table 24 Continuous abstinence rates at 24 weeks by selected demographic

characteristics

variable	N	N. of Abstinence (%)		p-value [a]
		Yes	No	
Gender (N =454)				
male	402	72 (17.91)	330 (82.09)	0.80
female	52	8 (15.38)	44 (84.62)	
Age; years (N = 454)				
≤ 18 years of age	107	10 (9.35)	97 (90.65)	< 0.01* [§]
19 – 45 years of age	191	31 (16.23)	160 (83.77)	
≥ 46 years of age	156	39 (25.00)	117 (75.00)	
Marital status (N = 454)				
single	225	24 (10.67)	201 (89.33)	< 0.01* [§]
married or living with partner	202	49 (24.26)	153 (75.74)	
widowed, separated, or divorced	27	7 (25.93)	20 (74.07)	
Educational level (N = 268)				
high school or lower	172	23 (13.37)	149 (86.63)	0.01* [§]
vocational level	40	8 (20.00)	32 (80.00)	
bachelor's degree or upper	59	18 (30.51)	41 (69.49)	
Alcohol drinking (N = 422)				
non drinking	319	59 (18.50)	260 (81.50)	0.11[§]
social drinking	64	17 (26.56)	47 (73.44)	
daily drinking	39	4 (10.26)	35 (89.74)	
Concurrent illnesses (psychiatric disorders were excluded) (N = 454)				
present	126	33 (26.19)	93 (73.81)	< 0.01* [§]
not present	328	47 (14.33)	281 (85.67)	
Concurrent psychiatric disorders (N = 454)				
present	29	2 (6.90)	27 (93.10)	0.19 [§]
not present	425	78 (18.35)	347 (81.65)	
Using any other additive substances (N = 432)				
use	12	2 (16.67)	10 (83.33)	1.00[b]
not use	420	77 (18.33)	343 (81.67)	

(a) Pearson Chi-Square were used to determine differences between variables. (b) Fisher's Exact Test were used to determine differences between categorical variables. * Significant level at p-value ≤ 0.05   [§] Variables that showed a relationship at p-value ≤ 0.25 (by Chi-square or fisher's Exact tests) were included in multivariate logistic regression model.

2.3 Smoking behavioral characteristics of patients who were abstinence and non abstinence from smoking

The level of statistical tests was established at an $\alpha = 0.05$. At 24 weeks after the quit date, there were significant difference by chi square test among number of cigarettes per day for both 7-day point prevalence and continuous abstinence rates (chi-square: p-value = 0.03 and < 0.01, respectively). Results did not show any trends for lower abstinence rates when increasing number of cigarettes daily. Number of years smoking was divided into ≤ 10 years, 11-30 years and ≥ 31 years. There were significant differences among number of years smoking for both 7-day point prevalence and continuous abstinence rates (chi-square test: p-value < 0.01 and 0.02, respectively). Number of previous quit attempts was categorized into never attempted, one quit attempt and more than one quit attempts. There were significant differences among number of previous quit attempts for both 7-day point prevalence abstinence and continuous abstinence at 24 weeks (p-value < 0.01 and 0.02, respectively). Stages of readiness to quit smoking by Transtheoretical Model were divided into two groups, precontemplation or contemplation stages and preparation or action stages. Abstinence rate at 24 weeks seem to be lower in the precontemplation or contemplation stages, but there were no significant differences among the groups of stages of readiness to quit smoking for both 7-day point prevalence and continuous abstinence rates (chi square test: p-value = 0.17 and 0.08, respectively).

In this study, FTND scores were grouped in three groups as follows: very low or low nicotine dependence, medium nicotine dependence and high or very high nicotine dependence. There were no significant differences among nicotine dependence levels for both 7-day point prevalence and continuous abstinence rates at 24 weeks (chi square test: p-value = 0.24 and 0.29). Time to smoking first cigarette of the day was divided into three groups as follows: immediately to within 10 minutes, > 10 minutes-2 hours and > 2 hours. Time to smoking first cigarette of the day were not

significant different for both 7-day point prevalence and continuous abstinence rates at 24 weeks (chi-square test: p-value = 0.58 and 0.53, respectively). Abstinence rates seem to be higher in patients who smoked the first cigarette of the day within 10 minutes than patients who smoked the first cigarette of the day more than 10 minutes. Although, relations of some smoking behavioral variables did not demonstrate the significant smoking abstinence at p-value $\leq$ 0.05. However, all variables that showed a relationship at p-value $\leq$ 0.25 (by chi-square tests) were included in multivariate logistic regression model. Table 25 and Table 26 present 7-day point prevalence and continuous abstinence rates at 24 weeks after the quit date by selected smoking behavioral characteristics, respectively.

Table 25   Seven-day point prevalence abstinence rates at 24 weeks by selected

smoking behavioral characteristics

variable	N	N. of Abstinence (%)		p-value
		Yes	No	
Number of cigarettes/day (N = 454)				
1-10 cigarettes/day	196	32 (16.33)	164 (83.67)	0.03* [§]
11-20 cigarettes/day	191	55 (28.80)	136 (71.20)	
21-30 cigarettes/day	35	9 (25.71)	26 (74.29)	
≥ 31 cigarettes/day	32	7 (21.88)	25 (78.13)	
Number of years smoking (N = 454)				
≤ 10 years	160	23 (14.38)	137 (85.63)	< 0.01* [§]
≥ 11-30 years	197	49 (24.87)	148 (75.13)	
≥ 31 years	97	31 (31.96)	66 (68.04)	
Number of previous quit attempts(450)				
never attempted	254	41 (16.14)	213 (83.86)	< 0.01* [§]
1 quit attempts	126	35 (27.78)	91 (72.22)	
≥ 2 quit attempts	70	24 (34.29)	46 (65.71)	
Stages of readiness to quit smoking (N= 131)				
precontemplation or contemplation stages	69	22 (31.88)	47 (68.12)	0.17[§]
preparation or action stages	62	27 (43.55)	35 (56.45)	
FTND scores (N = 144)[b]				
very low 0-2 and low 3-4	66	19 (28.79)	47 (71.21)	0.24[§]
medium 5-6	36	15 (41.67)	21 (58.33)	
high (heavy) 7 and very high 8-10	42	18 (42.86)	24 (57.14)	
Time to smoking first cigarette of the day (N = 217)				
immediately - with in 10 minutes	117	37 (31.62)	80 (68.38)	0.58
> 10 minutes - 2 hours	61	17 (27.87)	44 (72.13)	
more than 2 hours	39	9 (23.08)	30 (76.92)	

(a) Pearson Chi-square were used to determine differences among categorical variables. (b) FTND scores = Fagerström Test for Nicotine Dependence scores.   * Significant level at p-value ≤ 0.05   [§] Variables that showed a relationship at p-value ≤ 0.25 (by Chi-square or fisher's Exact tests) were included in multivariate logistic regression model.

Table 26 Continuous abstinence rates at 24 weeks by selected smoking behavioral characteristics

variable	N	N. of Abstinence		p-value[a]
		Yes	No	
Number of cigarettes/day (N = 454)				
1-10 cigarettes/day	196	21 (10.71)	175 (89.29)	< 0.01* [§]
11-20 cigarettes/day	191	47 (24.61)	144 (75.39)	
21-30 cigarettes/day	35	6 (17.14)	29 (82.86)	
> 30 cigarettes/day	32	6 (18.75)	26 (81.25)	
Number of years smoking (N = 454)				
≤ 10 years	160	18 (11.25)	142 (88.75)	0.02 * [§]
≥ 11-30 years	197	39 (19.80)	158 (80.20)	
≥ 31 years	97	23 (23.71)	74 (76.29)	
Number of previous quit attempts (N=450)				
Never attempted	254	34 (13.39)	220 (86.61)	0.02* [§]
1 quit attempts	126	28 (22.22)	98 (77.78)	
≥ 2 quit attempts	70	18 (25.71)	52 (74.29)	
Stages of readiness to quit smoking (N= 131)				
precontemplation or contemplation stages	69	16 (23.19)	53 (76.81)	0.08 [§]
preparation or action stages	62	23 (37.10)	39 (62.90)	
FTND scores (N = 144) [b]				
very low 0-2 and low 3-4	66	15 (22.73)	51 (77.27)	0.29
medium 5-6	36	12 (33.33)	24 (66.67)	
high (heavy) 7 and very high 8-10	42	15 (35.71)	27 (64.29)	
Time to smoking first cigarette of the day (N = 217)				
immediately - with in 10 minutes	117	28 (23.93)	89 (76.07)	0.53
> 10 minutes - 2 hours	61	13 (21.31)	48 (78.69)	
more than 2 hours	39	6 (15.38)	33 (84.62)	

(a) Pearson Chi-square were used to determine differences among categorical variables. (b) FTND scores = Fagerström Test for Nicotine Dependence scores.   * Significant level at p-value ≤ 0.05   [§] Variables that showed a relationship at p-value ≤ 0.25 (by Chi-square or fisher's Exact tests) were included in multivariate logistic regression model.

2.4 **Treatment and pharmacotherapy data of patients who were abstinence**

   and non abstinence from smoking

The level of statistical tests was established at an $\alpha = 0.05$. Number of visiting the clinician session was categorized as 3 sessions, 4-6 sessions, and ≥ 7 sessions. Smoking cessation interventions of all session delivered by multiple clinicians (e.g., physician, psychologist, nurse, pharmacist, or counselor). There was significant difference among numbers of visiting the clinician session for only 7-day point prevalence abstinence rates (chi-square test: p-value = 0.02) but there was no significant difference for continuous abstinence rates (chi-square test: p-value = 0.84). Types of pharmacotherapy were classified into five groups: (1) not used pharmacotherapy (quit smoking immediately or quit smoking gradually), (2) used one first or second line pharmacotherapies as part of treatment, (3) used combinations of first and/or second line pharmacotherapies as part of treatment, (4) used single or combinations of any other antidepressants as part of treatment and, (5) used other drugs which were not classified as any antidepressants. There were significant differences among types of pharmacotherapy for both 7-day point prevalence and continuous abstinence rates at 24 weeks (chi-square test: p-value = 0.01 and < 0.01, respectively).

Types of pharmacotherapy were classified into new categories by using of first or second line pharmacotherapies in regimen as follows: (1) not used first or second line pharmacotherapies (zero first or second line pharmacotherapy in drug regimens), (2) used one first or second line pharmacotherapies as part of treatment (one first or one second line pharmacotherapies in drug regimens) and (3) used combinations of first and/or second line pharmacotherapies as part of treatment (≥ 2 first and/or second line pharmacotherapies in drug regimens). There were significant differences among groups of using first or second line pharmacotherapies both 7-day point prevalence and continuous abstinence at 24 weeks (both p-value < 0.01).

Duration of using pharmacotherapy was categorized into three groups: as not used pharmacotherapy (0 week), used pharmacotherapy $\leq$ 7 weeks and used pharmacotherapy > 7 weeks. There were no significant differences among the duration of using pharmacotherapy for both 7-day point prevalence abstinence and continuous abstinence rates at 24 weeks (chi-square test: p-value = 0.07 and 0.13, respectively). Duration of using first or second line pharmacotherapies was categorized into three groups: (1) not used first or second line pharmacotherapies in regimen (0 weeks), (2) used first or second line pharmacotherapies as part of treatment $\leq$ 7 weeks and (3) used first or second line pharmacotherapies as part of treatment > 7 weeks. Chi-square test indicated significant differences among the groups of duration of using first or second line pharmacotherapies for both 7-day point prevalence abstinence and continuous abstinence rates at 24 weeks (chi-square test: both p-value < 0.01).

Results showed that more sessions of visiting the clinicians was related to higher 7-day point prevalence abstinence rates at 24 weeks than lesser sessions of visiting (3 session = 19.84%, 4-6 sessions = 23.67%, $\geq$ 7 sessions = 42.86%). The use of first or second line pharmacotherapies as one or combinations as part of treatment had higher abstinence rates for both 7-day point prevalence and continuous abstinence rates at 24 weeks. Patients who used first or second line pharmacotherapies more than 7 weeks had higher 7-day point prevalence abstinence rates (32.93%) than those who discontinued first or second line pharmacotherapies prior 7 weeks (25.00%) or those who did not use first or second line pharmacotherapies (16.28%). Table 27 and Table 28 present 7-day point prevalence and continuous abstinence rates at 24 weeks after the quit date by selected treatment and pharmacotherapy data, respectively.

Table 27   Seven-day point prevalence abstinence rates at 24 weeksby selected

treatment and pharmacotherapy data.

Variable	N	N. of Abstinence (%)		p-value [a]
		Yes	No	
Number of visiting the clinician session (N = 454)				
3 sessions	257	51 (19.84)	206 (80.16)	0.02* [§]
4 -6 sessions	169	40 (23.67)	129 (76.33)	
≥ 7 sessions	28	12 (42.86)	16 (57.14)	
Types of pharmacotherapy (N = 454)				
not used pharmacotherapy	43	7 (16.28)	36 (83.72)	0.01* [§]
used one first or second line pharmacotherapies as part of treatment	270	71 (26.30)	199 (73.70)	
used combinations of first and/or second line pharmacotherapies as part of treatment	20	8 (40.00)	12 (60.00)	
used single or combinations of other antidepressants as part of treatment	64	12 (18.75)	52 (81.25)	
used other pharmacotherapy which were not classified as any antidepressants	57	5 (8.77)	52 (91.23)	
Using first or second line pharmacotherapies (N = 454)				
not used first or second line pharmacotherapies	164	24 (14.63)	140 (85.37)	< 0.01*
used one first or second line pharmacotherapies as part of treatment	270	71 (26.30)	199 (73.70)	
used combinations of first and/or second line pharmacotherapies as part of treatment	20	8 (40.00)	12 (60.00)	
Duration of using pharmacotherapy (N = 454)				
not used pharmacotherapy	43	7 (16.28)	36 (83.72)	0.07 [§]
used pharmacotherapy ≤ 7 weeks	314	66 (21.02)	248 (78.98)	
used pharmacotherapy > 7 weeks	97	30 (30.93)	67 (69.07)	
Duration of using first or second line pharmacotherapies (N = 454)				
not used first or second line pharmacotherapies	164	24 (14.63)	140 (85.37)	< 0.01*
used first or second line pharmacotherapies ≤ 7 weeks	208	52 (25.00)	156 (75.00)	
used first or second line pharmacotherapies > 7 weeks	82	27 (32.93)	55 (67.07)	

(a) Pearson Chi-square were used to determine differences between categorical variables.

* Significant level at *p*-value ≤ 0.05   [§] Variables that showed a relationship at *p*-value ≤ 0.25 (by Chi-square or fisher's Exact tests) were included in multivariate logistic regression model.

Table 28 Continuous abstinence rates at 24 weeks by selected treatment and pharmacotherapy data.

Variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Number of visiting the clinician session (N = 454)				
3 sessions	257	43 (16.73)	214 (83.27)	0.84
4 -6 sessions	169	32 (18.93)	137 (81.07)	
≥ 7 sessions	28	5 (17.86)	23 (82.14)	
Types of pharmacotherapy (N = 454)				
not used pharmacotherapy	43	3 (6.98)	40 (93.02)	< 0.01* [§]
used one first or second line pharmacotherapies as part of treatment	270	56 (20.74)	214 (79.26)	
used combinations of first and/or second line pharmacotherapies as part of treatment	20	8 (40.00)	12 (60.00)	
used single or combinations of other antidepressants as part of treatment	64	9 (14.06)	55 (85.94)	
used other pharmacotherapy which were not classified as any antidepressants	57	4 (7.02)	53 (92.98)	
Using first or second line pharmacotherapies (N = 454)				
not used first or second line pharmacotherapies	164	16 (9.76)	148 (90.24)	< 0.01*
used one of first or second line pharmacotherapies as a part of treatment	270	56 (20.74)	214 (79.26)	
used combinations of first and/or second line pharmacotherapies as part of treatment	20	8 (40.00)	12 (60.00)	
Duration of using pharmacotherapy (N = 454)				
not used pharmacotherapy	43	3 (6.98)	40 (93.02)	0.13 [§]
used pharmacotherapy ≤ 7 weeks	314	57 (18.15)	257 (81.85)	
used pharmacotherapy > 7 weeks	97	20 (20.62)	77 (79.38)	
Duration of using first or second line pharmacotherapies (N = 454)				
not used first or second line pharmacotherapies	164	16 (9.76)	148 (90.24)	< 0.01*
used first or second line pharmacotherapies ≤ 7 weeks	208	45 (21.63)	163 (78.37)	
used first or second line pharmacotherapies > 7 weeks	82	19 (23.17)	63 (76.83)	

(a) Pearson Chi-square were used to determine differences between categorical variables.

* Significant level at p-value ≤ 0.05   [§] Variables that showed a relationship at p-value ≤ 0.25 (by Chi-square or fisher's Exact tests) were included in multivariate logistic regression model.

3. Univariate predictors of smoking cessation

Unadjusted odds ratios for abstinence rate 24 weeks after the quit date for each variable were calculated by univaraite logistic regression.

3.1 Univariate demographic predictors of abstinence rates at 24 weeks

Univariate logistic regression analysis showed that the following independence demographic variables were predictors of abstinence rates at 24 weeks: years of age, marital status, educational level, and concurrent chronic illnesses. The results also indicated that increasing age had higher abstinence rates. Odds ratios for 7-day point prevalence abstinence rate were 1.97 (95%CI = 0.88-3.95) in the group of 19-45 years of age group and 4.07 (95%CI = 2.05-8.09) in the group of ≥ 46 years of age when compared with the group of ≤ 18 years of age. Odds ratios for continuous abstinence were 1.88 (95%CI = 0.88-4.00) in the group of 19-45 years of age group and 3.23 (95%CI = 1.53-6.81) in the group of ≥ 46 years of age when compared with the group ≤ 18 years of age. Results showed that patients in ≥ 46 years of age group had more abstinence rates than adolescent patients. Abstinence rates between adolescent patients and adult patients were not different. Married or living with partner and widowed, separated, or divorced statuses were statistically significant predictors of highly successful 7-day point prevalence abstinence and continuous abstinence rates when compared with a single status. Odds ratios for 7-day point prevalence abstinence rates were 3.28 (95%CI = 2.01-5.35) in married or living with partner status and 2.85 (95%CI = 1.14-7.09) in widowed, separated, or divorced status. Odds ratios for continuous abstinence rates were 2.68 (95%CI = 1.58-4.56) in married or living with partner status and 2.93 (95%CI = 1.12-7.65) in widowed, separated, or divorced status. Univariate logistic regression analysis also implied that patients who had higher educational levels increased smoking cessation. Odds ratios for 7-day point prevalence abstinence rates were 1.79 (95%CI = 0.78-4.09) in the patients who had vocational graduate and 3.95 (95%CI =2.04 -7.64) in those who had bachelor's degree or upper

when compared with those who possessed high school or lower. Odds ratios for continuous abstinence rates were 1.62 (95%CI = 0.66-3.95) in the patients who had vocational graduate and 2.84 (95%CI =1.40-5.77) in those who graduated bachelor's degree or upper when compared with those who graduated in high school or lower. Patients with concurrent chronic illnesses had higher smoking abstinence rates at 24 weeks for both 7-day point prevalence abstinence and continuous abstinence rates. Odds ratios were 2.59 (95%CI = 1.63-4.10) and 2.12 (95%CI =1.28-3.51), respectively.

The demographic variables which were not correlated significantly with abstinence rates at 24 weeks were as follows: gender, alcohol drinking, concurrent psychiatric disorders, and using any other additive substances. Odds ratios in female group for 7-day point prevalence abstinence and continuous abstinence rates were 1.03 (95%CI = 0.52-2.04) and 0.83 (95%CI = 0.38-1.85) when compared to those in male group. Odds ratios in non drinking and social drinking groups for 7-day point prevalence abstinence rates were 0.95 (95%CI = 0.43-2.10) and 1.63 (95%CI = 0.66-4.04) when compared with daily drinking group. For continuous abstinence rates, odds ratios were 1.99 (95%CI = 0.68-5.80) and 3.16 (95%CI = 0.98-10.24) in non drinking and social drinking groups, respectively. Odds ratios of 7-day point prevalence and continuous abstinence rates in patients who did not have concurrent psychiatric disorders were 2.67 (95%CI = 0.79 - 9.00) and 3.03 (95%CI = 0.71-13.03) when compared to those who had concurrent psychiatric disorders. Odds ratios of 7-day point prevalence and continuous abstinence rates in patients who did not use other additive substances were 0.91 (95%CI = 0.24 - 3.44) and 1.12 (95%CI = 0.24-5.23) as compared to those who did use other additive substances. Table 29 and Table 30 present the univariate demographic predictors of 7-day point prevalence abstinence and continuous abstinence rates at 24 weeks after the quit date, respectively.

Table 29 Univariate demographic predictors of 7‑day point prevalence abstinence rates at 24 weeks.[a]

variable	N	N. of Abstinence (%)		OR	95%CI	*p*-value
Gender (N =454)						
male	402	91	(22.64)	Reference		
female	52	12	(23.08)	1.03	0.52 - 2.04	0.94
Age; years (N = 454)						
≤ 18 years of age	107	12	(11.21)	Reference		
19 – 45 years of age	191	38	(19.90)	1.97	0.98 - 3.95	0.06
≥ 46 years of age	156	53	(33.97)	4.07	2.05 - 8.09	< 0.01*
Marital status (N = 454)						
single	225	29	(12.89)	Reference		
married or living with partner	202	66	(32.67)	3.28	2.01 - 5.35	< 0.01*
widowed, separated, or divorced	27	8	(29.63)	2.85	1.14 - 7.09	0.02*
Educational level (N = 271)						
high school or lower	172	27	(15.70)	Reference		
vocational level	40	10	(25.00)	1.79	0.78 - 4.09	0.17
bachelor's degree or upper	59	25	(42.37)	3.95	2.04 -7.64	< 0.01*
Alcohol drinking (N = 422)						
non drinking	319	71	(22.26)	0.95	0.43-2.10	0.91
social drinking	64	21	(32.81)	1.63	0.66-4.04	0.29
daily drinking	39	9	(23.08)	Reference		
Concurrent illnesses (psychiatric disorders were excluded) (N = 454)						
present	126	45	(35.71)	2.59	1.63 - 4.10	< 0.01*
not present	328	58	(17.68)	Reference		
Concurrent psychiatric disorders (N = 454)						
present	29	3	(10.34)	Reference		
Not present	425	10	(23.53)	2.67	0.79 - 9.00	0.11
Using any other additive substances (N = 432)						
use	12	3	(25.00)	Reference		
not used	420	98	(23.33)	0.91	0.24 - 3.44	0.89

(a) Univariate logistic regression analysis was performed to calculate the odds ratios (with 95% CI) of 7-day point prevalence abstinence rates at 24 week after the quit date for each demographic variable.

* *p*-value ≤ 0.05

Table 30 Univariate demographic predictors of continuous abstinence rates at 24 weeks.[a]

variable	N	N. of Abstinence (%)		OR	95%CI	*p*-value
Gender (N =454)						
male	402	72	(17.91)	Reference		
female	52	8	(15.38)	0.83	0.38-1.85	0.65
Age; years (N = 454)						
≤ 18 years of age	107	10	(9.35)	Reference		
19 – 45 years of age	191	31	(16.23)	1.88	0.88-4.00	0.10
≥ 46 years of age	156	39	(25.00)	3.23	1.53-6.81	< 0.01*
Marital status (N = 454)						
single	225	24	(10.67)	Reference		
married or living with partner	202	49	(24.26)	2.68	1.58-4.56	< 0.01*
widowed, separated, or divorced	27	7	(25.93)	2.93	1.12-7.65	0.03*
Educational level (N = 271)						
high school or lower	172	23	(13.37)	Reference		
vocational level	40	8	(20.00)	1.62	0.66-3.95	0.29
bachelor's degree or upper	59	18	(30.51)	2.84	1.40-5.77	< 0.01*
Alcohol drinking (N = 422)						
non drinking	319	59	(18.50)	1.99	0.68-5.80	0.21
social drinking	64	17	(26.56)	3.16	0.98-10.24	0.054
daily drinking	39	4	(10.26)	Reference		
Concurrent illnesses (psychiatric disorders were excluded) (N = 454)						
present	126	33	(26.19)	2.12	1.28-3.51	< 0.01*
not present	328	47	(14.33)	Reference		
Concurrent psychiatric disorders (N = 454)						
present	29	2	(6.90)	Reference		
not present	425	78	(18.35)	3.03	0.71-13.03	0.14
Using any other additive substances (N = 432)						
use	12	2	(16.67)	Reference		
not use	420	77	(18.33)	1.12	0.24-5.23	0.88

(a) Univariate logistic regression analysis was performed to calculate the odds ratios (with 95% CI) of continuous abstinence rates at 24 week after the quit date for each demographic variable.

* *p*-value ≤ 0.05

3.2 Univariate smoking behavioral predictors of abstinence rates at 24 weeks

Number of cigarettes smoked per day was divided into four groups: ≤ 10, 11-20, 21-30 and ≥ 31 cigarettes per day. Odds ratios of 7-day point prevalence abstinence rates were 2.07 (95%CI = 1.27-3.39) in 11-20 cigarettes per day group, 1.77 (95%CI = 0.76-4.14) in 21-30 cigarettes per day group and 1.43 (95%CI = 0.57-3.60) in ≥ 31 cigarettes per day group when compared to those who smoked ≤ 10 cigarettes per day. Odds ratios of continuous abstinence rates were 2.72 (95%CI = 1.55-4.76) in patients who smoked 11-20 cigarettes per day, 1.72 (95%CI = 0.64-4.63) in 21-30 cigarettes per day group and 1.92 (95%CI = 0.71-5.21) in those who smoked ≥ 31 cigarettes per day when compared to those who smoked ≤ 10 cigarettes per day. By comparison with patients who smoked ≤ 10 years, odds ratios of 7-day point prevalence abstinence rates were 1.97 (95%CI =1.14-3.41) in those who smoked 11-30 years and 2.80 (95%CI = 1.51-5.17) in those who smoked ≥ 31 years. Odds ratios of continuous abstinence rates were 1.95 (95%CI = 1.07-3.56) in patients who smoked 11-30 years, and 2.45 (95%CI = 1.24-4.83) in those who smoked ≥ 31 years. Results indicated that the abstinence rates were higher when increasing the number of years smoking.

The number of previous quit attempts was compared to those who had never attempted to quit. Odds ratios of 7-day point prevalence abstinence rates were 2.00 (95%CI =1.20-3.34) in one quit attempt group and 2.71 (95%CI = 1.49 - 4.92) in ≥ 2 quit attempts group. Odds ratios of continuous abstinence rates were 1.85 (95%CI =1.06-3.22) in one quit attempt group and 2.24 (95%CI = 1.17-4.27) in ≥ 2 quit attempts group. These results suggested that the patients who had previous quit attempts were associated significantly with higher abstinence rates. FTND score was categorized into three groups as follows: very low or low nicotine dependence, medium nicotine dependence, and high or very high nicotine dependence. By compared to high or very high nicotine dependence, odds ratios of 7-day point

prevalence abstinence and continuous abstinence rates were not different both in very low or low nicotine dependence group and in medium nicotine dependence group. Seven-day point prevalence abstinence and continuous abstinence in patients who were arranged in preparation or action stages group according to stages of readiness to quit smoking by using Transtheoretical Model were not different when compared to those who were arranged in precontemplation or contemplation stages. When compared to patient who smoked the first cigarette of the day within 10 minutes, odds ratios of 7-day point prevalence abstinence and continuous abstinence rates were not different in those who smoked the first cigarette of the day > 10 minutes- 2 hours or in those who smoked the first cigarette of the day more than 2 hours. Table 31 and Table 32 present univariate smoking behavioral predictors of 7-day point prevalence abstinence and continuous abstinence rates, respectively.

Table 31 Univariate smoking behavioral predictors of 7-day point prevalence abstinence rates at 24 weeks.[a]

variable	N	N. of Abstinence (%)		OR	95%CI	p-value
Number of cigarettes/day (N = 454)						
≤ 10 cigarettes/day	196	32	(16.33)	Reference		
11-20 cigarettes/day	191	55	(28.80)	2.07	1.27 - 3.39	< 0.01*
21-30 cigarettes/day	35	9	(25.71)	1.77	0.76 - 4.14	0.18
≥ 31 cigarettes/day	32	7	(21.88)	1.43	0.57 - 3.60	0.44
Number of years smoking (N = 454)						
≤ 10 years	160	23	(14.38)	Reference		
≥ 11-30 years	197	49	(24.87)	1.97	1.14-3.41	0.01*
≥ 31 years	97	31	(31.96)	2.80	1.51-5.17	< 0.01*
Number of previous quit attempts(N = 450)						
never attempted	254	41	(16.14)	Reference		
1 quit attempts	126	35	(27.78)	2.00	1.20 - 3.34	0.01*
≥ 2 quit attempts	70	24	(34.29)	2.71	1.49 - 4.92	< 0.01*
FTND scores (N =144)[b]						
very low 0-2 and low 3-4	66	19	(28.79)	0.54	0.24 - 1.21	0.14
medium 5-6	36	15	(41.67)	0.95	0.39 - 2.35	0.92
high (heavy) 7 and very high 8-10	42	18	(42.86)	Reference		
Stages of readiness to quit smoking (N= 131)						
precontemplation and contemplation stages	69	22	(31.88)	Reference		
preparation or action stages	62	27	(43.55)	1.65	0.81-3.36	0.17
Time to smoking first cigarette of the day (N = 217)						
immediately - with in 10 minutes	117	37	(31.62)	Reference		
> 10 minutes - 2 hours	61	17	(27.87)	0.84	0.42-1.65	0.61
more than 2 hours	39	9	(23.08)	0.65	0.28-1.50	0.31

(a) Univariate logistic regression analysis was performed to calculate the odds ratios (with 95% CI) of 7-day point prevalence abstinence at 24 week after the quit date for each smoking behavioral variable.

(b) FTND scores = Fagerström Test for Nicotine Dependence scores

* p-value ≤ 0.05

Table 32 Univariate smoking behavioral predictors of continuous abstinence rates at 24 weeks.[a]

variable	N	N. of Abstinence (%)		OR	95%CI	*p*-value
Number of cigarettes/day (N = 454)						
1-10 cigarettes/day	196	21	(10.71)	Reference		
11-20 cigarettes/day	191	47	(24.61)	2.72	1.55-4.76	< 0.01*
21-30 cigarettes/day	35	6	(17.14)	1.72	0.64-4.63	0.28
≥ 31 cigarettes/day	32	6	(18.75)	1.92	0.71-5.21	0.20
Number of years smoking (N = 454)						
≤ 10 years	160	18	(11.25)	Reference		
≥ 11-30 years	197	39	(19.80)	1.95	1.07-3.56	0.03*
≥ 31 years	97	23	(23.71)	2.45	1.24-4.83	0.01*
Number of previous quit attempts (N=450)						
never attempted	254	34	(13.39)	Reference		
1 quit attempts	126	28	(22.22)	1.85	1.06-3.22	0.03*
≥ 2 quit attempts	70	18	(25.71)	2.24	1.17-4.27	0.01*
FTND scores (N = 144) [b]						
very low 0-2 and low 3-4	66	15	(22.73)	0.53	0.23-1.24	0.14
medium 5-6	36	12	(33.33)	0.90	0.35-2.30	0.83
high (heavy) 7 and very high 8-10	42	15	(35.71)	Reference		
Stages of readiness to quit smoking (N= 131)						
precontemplation and contemplation stages	69	16	(23.19)	Reference		
preparation or action stages	62	23	(37.10)	1.95	0.91-4.18	0.08
Time to smoking first cigarette of the day (N = 217)						
immediately - with in 10 minutes	117	28	(23.93)	Reference		
> 10 minutes - 2 hours	61	13	(21.31)	0.86	0.41-1.81	0.69
more than 2 hours	39	6	(15.38)	0.58	0.22-1.52	0.27

(a) Univariate logistic regression analysis was performed to calculate the odds ratios (with 95% CI) of continuous abstinence at 24 week after the quit date for each smoking behavior variable.

(b) FTND scores = Fagerström Test for Nicotine Dependence scores

* *p*-value ≤ 0.05

3.3 Univariate treatment/pharmacotherapy predictors of abstinence rates at 24 weeks

Results presented indicated that multiple session of visiting the clinicians increased abstinence rates. Compared to the patients who had 3 sessions of visiting the clinicians, odds ratios of 7-day point prevalence abstinence rates were 1.25 (95%CI = 0.78-2.00) in those who had 4-6 sessions and 3.03 (95%CI = 1.35-6.80) in those who had ≥ 7 sessions. Odds ratios of continuous abstinence rates among number of visiting the clinician session were not different. Results supported for the usage first or second line pharmacotherapies because patients who used the one first or second line pharmacotherapies or combinations of them as part of treatment had higher abstinence rates when compared those who did not use. Odds ratios of 7-day point prevalence abstinence rates were 1.83 (95%CI = 0.78-4.31) in patients who used the one of first or second line pharmacotherapies using as part of treatment, 3.43 (95%CI = 1.03-11.46) in those who used the combinations of first and/or second line pharmacotherapies as part of treatment when compared to those who did not use pharmacotherapy. Odds ratios of continuous abstinence rates were 3.49 (95%CI = 1.04-11.70) in patients who used the one first or second line pharmacotherapies as part of treatment, 8.89 (95%CI = 2.03-38.87) in those who used the combinations of first and/or second line pharmacotherapies as part of treatment when compared to patients who did not use any pharmacotherapy. There were no significant differences for both odds ratios of 7-day point prevalence and continuous abstinence rates in patients who used the single or combinations of any other antidepressants as part of treatment and patients who used the other drugs which were not classified as antidepressants when compared with those who did not use pharmacotherapy.

Duration of using pharmacotherapy was divided into three groups: did not use pharmacotherapy, used pharmacotherapy ≤ 7 weeks and used pharmacotherapy > 7 week. There was no significant difference for both odds ratios of 7-day point

prevalence abstinence and continuous abstinence rates in patients who used pharmacotherapy $\leq$ 7 weeks or > 7 weeks when compared to patients who did not use pharmacotherapy. The duration of using first or second line pharmacotherapies were considered also. Odds ratios of 7-day point prevalence abstinence were 1.94 (95%CI = 1.14-3.32) in those who used the first or second line pharmacotherapies $\leq$ 7 weeks and 2.86 (95%CI = 1.52-5.39) in those who used the first or second line pharmacotherapies > 7 weeks when compared to patient who did not use first or second line pharmacotherapies. Odds ratios of continuous abstinence rates were 2.55 (95%CI = 1.38-4.71) in patients who used first or second line pharmacotherapies $\leq$ 7 weeks and 2.79 (95%CI = 1.35-5.77) in those who using first or second line pharmacotherapies > 7 weeks. Results implied that longer of using first or second line pharmacotherapies provided higher abstinence rates. However, extended use of other drugs which were not first or second line pharmacotherapies seemed to have no benefit in increasing abstinence rates. Table 33 and Table 34 present univariate treatment/ pharmacotherapy predictors of 7-day point prevalence abstinence and continuous abstinence rates at 24 weeks after the quit date, respectively.

Table 33 Univariate treatment/pharmacotherapy predictors of 7-day point prevalence abstinence rates at 24 weeks.[a]

variable	N	N. of Abstinence (%)		OR	95%CI	p-value
Number of visiting the clinician session (N = 454)						
≤ 3 sessions	257	51	(19.84)	Reference		
4 -6 sessions	169	40	(23.67)	1.25	0.78-2.00	0.35
≥ 7 sessions	28	12	(42.86)	3.03	1.35-6.80	0.01*
Types of pharmacotherapy (N = 454)						
not used pharmacotherapy	43	7	(16.28)	Reference		
used one first or second line pharmacotherapies as part of treatment	270	71	(26.30)	1.83	0.78-4.31	0.16
used combinations of first and/or second line pharmacotherapies as part of treatment	20	8	(40.00)	3.43	1.03-11.46	0.05*
used single or combinations of other antidepressants as part of treatment	64	12	(18.75)	1.19	0.43-3.31	0.74
used other pharmacotherapy which were not classified as antidepressants	57	5	(8.77)	0.49	0.15-1.68	0.26
Using first or second line pharmacotherapies (N = 454)						
not used first or second line pharmacotherapies	164	24	(14.63)	Reference		
used one first or second line pharmacotherapies	270	71	(26.30)	2.08	1.25-3.47	< 0.01*
used combinations of first and/or second line pharmacotherapies	20	8	(40.00)	3.89	1.44-10.51	0.01*
Duration of using pharmacotherapy (N = 454)						
not used pharmacotherapy	43	7	(16.28)	Reference		
used pharmacotherapy ≤ 7 weeks	314	66	(21.02)	1.37	0.58-3.21	0.47
used pharmacotherapy > 7 weeks	97	30	(30.93)	2.30	0.92-5.76	0.07
Duration of using first or second line pharmacotherapies (N = 454)						
not used first or second line pharmacotherapies	164	24	(14.63)	Reference		
used first or second line pharmacotherapies ≤ 7 weeks	208	52	(25.00)	1.94	1.14-3.32	0.01*
used first or second line pharmacotherapies > 7 weeks	82	27	(32.93)	2.86	1.52-5.39	< 0.01*

(a) Univariate logistic regression analysis was performed to calculate the odds ratios (with 95% CI) of 7-day point prevalence abstinence at 24 week after the quit date for each treatment/pharmacotherapy variable.

* p-value ≤ 0.05

Table 34 Univariate treatment/pharmacotherapy predictors of continuous abstinence rates at 24 weeks.[a]

variable	N	N. of Abstinence (%)		OR	95%CI	p-value
Number of visiting the clinician session (N = 454)						
≤ 3 sessions	257	43	(16.73)	Reference		
4 -6 sessions	169	32	(18.93)	1.16	0.70-1.93	0.56
≥ 7 sessions	28	5	(17.86)	1.08	0.39-3.00	0.88
Types of pharmacotherapy (N = 454)						
not used pharmacotherapy	43	3	(6.98)	Reference		
used one first or second line pharmacotherapies as part of treatment	270	56	(20.74)	3.49	1.04-11.70	0.04*
used combinations of first and/or second line pharmacotherapies as part of treatment	20	8	(40.00)	8.89	2.03-38.87	< 0.01*
used single or combinations of other antidepressants as part of treatment	64	9	(14.06)	2.18	0.56-8.57	0.26
used other pharmacotherapy which were not classified as antidepressants	57	4	(7.02)	1.01	0.21-4.75	0.99
Using first or second line pharmacotherapies (N = 454)						
not used first or second line pharmacotherapies	164	16	(9.76)	Reference		
used one first or second line pharmacotherapies	270	56	(20.74)	2.42	1.34-4.38	< 0.01*
used combinations of first and/or second line pharmacotherapies	20	8	(40.00)	6.17	2.20-17.32	< 0.01*
Duration of using pharmacotherapy (N = 454)						
not used pharmacotherapy	43	3	(6.98)	Reference		
used pharmacotherapy ≤ 7 weeks	314	57	(18.15)	2.96	0.88-9.90	0.08
used pharmacotherapy > 7 weeks	97	20	(20.62)	3.46	0.97-12.36	0.06
Duration of using first or second line pharmacotherapies (N = 454)						
not used first or second line pharmacotherapies	164	16	(9.76)	Reference		
used first or second line pharmacotherapies ≤ 7 weeks	208	45	(21.63)	2.55	1.38-4.71	< 0.01*
used first or second line pharmacotherapies > 7 weeks	82	19	(23.17)	2.79	1.35-5.77	0.01*

(a) Univariate logistic regression analysis was performed to calculate the odds ratios (with 95% CI) of continuous abstinence at 24 week after the quit date for each treatment/pharmacotherapy variable.

* *p*-value ≤ 0.05

4. Multivariate predictors of smoking cessation

Selected variable that there were *p*-value ≤ 0.25 in chi-square tests as in the following list: *(1) age* (i.e., ≤ 18 (adolescents), 19-45 and ≥ 46 years of age), *(2) marital statuses* (i.e., single, married or living with partner and divorced, widowed), *(3) education levels* (i.e., high school or lower, vocational graduate and bachelor's degree or upper), *(4) alcohol drinking* (i.e., non drinking, social drinking and daily drinking), *(5) concurrent chronic illnesses* (i.e., present and not present) *(6) number of cigarettes per day* (i.e., 1-10 cigarettes/day, 11-20 cigarettes/day, 21-30 cigarettes/day and ≥ 31 cigarettes/day),*(7) number of years smoking* (i.e., ≤ 10 years, 11-30 years and ≥ 31 years), *(8) number of previous quit attempts* (i.e., never attempted, one quit attempts and ≥ 2 quit attempts), *(9) FTND scores* (i.e., very low 0-2 or low 3-4, medium 5-6 and high(heavy) 7 or very high 8-10), *(10) stages of readiness to quit smoking* (i.e., precontemplation or contemplation stages and preparation or action stages), *(11) number of visiting the clinician session* (i.e., 3 sessions, 4-6 sessions and ≥ 7 session), *(12) types of pharmacotherapy* (i.e., used one of first or second line pharmacotherapies as part of treatment, used combinations of first and/or second line pharmacotherapies as part of treatment, used single or combinations of other antidepressants as part of treatment and not used pharmacotherapies or used other pharmacotherapy which were not classified as antidepressants), *(13) duration of using pharmacotherapy* (i.e., used pharmacotherapy ≤ 7 weeks, used pharmacotherapy > 7 weeks). The reasons to set *p*-value ≤ 0.25 in the selection of variables into the multivariate logistic regression model were: (1) this is the first study to explore predictors of smoking cessation in Thai outpatient smokers. (2) There are currently no predictors that can be used to determine as predict smoking cessation in these patients. The investigator would like to cover all of the variables that may become potential predictors of smoking cessation in the multivariate model.

First step, all above variables were included in the analysis to build the model. Prospective data from 123 out of 131 patients were used in this step because these patients had complete data on stages of readiness to quit smoking and FTND scores. Eight patients with concurrent psychiatric disorders were excluded. Multivariate logistic regression analysis with backward stepwise and best subset variable selection procedures was performed to identify a set of multiple predictors for both 7-day point prevalence abstinence and continuous abstinence rates. Stages of readiness to quit smoking and FTND scores were not significant predictors of both 7-day point prevalence abstinence and continuous abstinence rates at 24 weeks in the models. The 95% confidence intervals of odds ratios for some predictors [i.e., (1) used one first or second line pharmacotherapies as part of treatment, (2) used combination of first and/or second line pharmacotherapies as part of treatment] had wider intervals. This may indicate that there was too small sample size to analyze the model. (Appendix C presents patients baseline characteristic, abstinence rates by selected characteristics and the models in 123 patients) Therefore, the investigator elected to exclude two variables (i.e., stages of readiness to quit smoking and FTND scores). Data from 249 patients were used in the analysis instead to built the model. (Table 35, Table 36 and Table 37 depict demographic characteristics, smoking behavioral characteristics and treatment and pharmacotherapy data in 249 patients, respectively. Seven-day point prevalence abstinence and continuous abstinence rates at 24 weeks by selected demographic characteristics in 249 patients were presented in Table 38 and Table 39, respectively. Seven-day point prevalence abstinence and continuous abstinence rates at 24 weeks by selected smoking behavioral characteristics in 249 patients were presented in Table 40 and Table 41, respectively. Seven-day point prevalence abstinence and continuous abstinence rates at 24 weeks by selected treatment and pharmacotherapy data in 249 patients were presented in Table 42 and Table 43, respectively. Table 44 presents smoking abstinence of patients at follow-up visit

assessment in 249 patients). Data from 249 patients were 197 patients (79.12%) from Thanyarak Institute, 40 patients (16.06%) from Rajavithi Hospital and 12 patients (4.82%) from Ramathibadi Hospital.

Table 35 Demographic characteristics (N=249)

Variable		Mean ($\pm$ SD) /Number (%)	
Gender	male	231	(92.77)
	female	18	(7.23)
Age; years [a]			
	$\leq$ 18 years of age	104	(41.77)
	19 – 45 years of age	88	(35.34)
	more than 45 years of age	57	(22.89)
Marital status	single	153	(61.45)
	married or living with partner	87	(34.94)
	widowed, separated, or divorced	9	(3.61)
Educational level	high school or lower	160	(64.26)
	vocational level	37	(14.86)
	bachelor's degree or upper	52	(20.88)
Alcohol drinking	daily drinking	188	(75.50)
	social drinking	43	(17.27)
	non drinking	18	(7.23)
Concurrent illnesses (psychiatric disorders were excluded)			
	present	55	(22.09)
	not present	194	(77.91)
Concurrent psychiatric disorders			
	present	0	(0.00)
	not present	249	(100.00)
Using any other additive substances			
	use	5	(2.01)
	not use	244	(97.99)

(a) Test normality: K-S Test < 0.01, mean $\pm$ SD = 30.88 $\pm$ 16.55, median = 27.00 years (range 12-73)

Table 36 Smoking behavioral characteristics (N=249)

	Variable	Number (%)	
Number of cigarettes/day	1-10 cigarettes/day	132	(53.01)
	11-20 cigarettes/day	94	(37.75)
	21-30 cigarettes/day	13	(5.22)
	≥ 31 cigarettes/day	10	(4.02)
Number of years smoking	≤ 10 years	135	(54.22)
	> 11-30 years	74	(29.72)
	≥ 31 years	40	(16.06)
Number of previous quit attempts	never attempted	159	(63.86)
	1 quit attempt	61	(24.50)
	≥ 2 quit attempts	29	(11.65)
Fagerström test for nicotine dependence scores (N=128)	very low 0-2	39	(30.47)
	low 3-4	22	(17.19)
	medium 5-6	31	(24.22)
	high (heavy) 7	13	(10.16)
	very high 8-10	23	(17.97)
Stages of readiness to quit smoking[a] (N=123)	precontemplation or contemplation stages	65	(52.85)
	preparation or action stages	58	(47.15)
Time to smoking first cigarette of the day (N=134)	immediately - with in 10 minutes	57	(42.54)
	> 10 minutes - 2 hours	40	(29.85)
	more than 2 hour	37	(27.61)
Why do you smoke? (N=123)	most of cause from nicotine dependence	27	(21.95)
	most of cause from psychological dependence	27	(21.95)
	most of cause from socio-cultural dependence	18	(14.63)
	cause of nicotine and psychological dependence equally	11	(8.94)
	cause of nicotine and socio-cultural dependence equally	6	(4.88)
	cause of psychological and socio-cultural dependence equally	20	(16.26)
	all dimensions are equal.	14	(11.38)

(a) Stages of readiness to quit smoking were evaluated by using Transtheoretical Model

Table 37 Treatment and pharmacotherapy data (N=249)

Variable	Number (%)	
Number of visiting the clinician session		
3 sessions	154	(61.85)
4 -6 sessions	88	(35.34)
≥ 7 sessions	7	(2.81)
Treatment choice		
not used pharmacotherapy	20	(8.03)
used pharmacotherapy	229	(91.97
Types of pharmacotherapy [ß]		
not used pharmacotherapy	20	(8.03)
used one first or second line pharmacotherapies as part of treatment [b]	104	(41.77)
used combinations of first and/or second line pharmacotherapies as part of treatment [b]	13	(5.22)
used single or combinations of other antidepressants as part of treatment [c]	58	(23.29)
used other drugs which were not classified as antidepressants [d]	54	(21.69)
Using first or second line pharmacotherapies		
not used first or second line pharmacotherapies	132	(53.01)
used one first or second line pharmacotherapies as part of treatment	104	(41.77)
used combination of first and/or second line pharmacotherapies as part of treatment	13	(5.22)
Duration of using pharmacotherapy		
not used pharmacotherapy	20	(8.03)
used pharmacotherapy ≤ 7 weeks	196	(78.71)
used pharmacotherapy > 7 weeks	33	(13.25)
Duration of using first or second line pharmacotherapies		
not used first or second line pharmacotherapies	132	(53.01)
used first or second line pharmacotherapies ≤ 7 weeks	93	(37.35)
used first or second line pharmacotherapies > 7 weeks	24	(9.64)

(a) Test normality: K-S < 0.01 ,mean $\pm$ SD = 3.71 $\pm$ 1.23 median = 3.00 sessions (range 3-10 sessions)

(b) First line pharmacotherapy i.e., bupropion, all dosage forms of nicotine replacement therapy) and second line pharmacotherapy i.e. nortriptyline, clonidine

(c) Using single or combinations of other antidepressants which were not classified as first or second line pharmacotherapies as a part of treatment

(d) Using other drugs which were not classified as first or second line pharmacotherapies or any antidepressants in regimen.

[ß] See also Appendix B: Table 49 presents the various drug regimens used in the tobacco dependence treatment in patients

Table 38   Seven-day point prevalence abstinence rates at 24 weeks by selected

demographic characteristics (N =249)

variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Gender				
male	231	54 (23.38)	177 (76.62)	0.16
female	18	7 (38.89)	11 (61.11)	
Age; years				
≤ 18 years of age	104	12 (11.54)	92 (88.46)	<0.01*[§]
19 – 45 years of age	88	26 (29.55)	62 (70.45)	
≥ 46 years of age	57	23 (40.35)	34 (59.65)	
Marital status				
single	153	23 (15.03)	130 (84.97)	<0.01*[§]
married or living with partner	87	36 (41.38)	51 (58.62)	
widowed, separated, or divorced	9	2 (22.22)	7 (77.78)	
Educational Level				
high school or lower	160	27 (16.88)	133 (83.13)	<0.01*[§]
vocational level	37	9 (24.32)	28 (75.68)	
bachelor's degree or upper	52	25 (48.08)	27 (51.92)	
Alcohol drinking				
non drinking	188	38 (20.21)	150 (79.79)	0.01*[§]
social drinking	43	18 (41.86)	25 (58.14)	
daily drinking	18	5 (27.78)	13 (72.22)	
Concurrent illnesses (psychiatric disorders were excluded)				
present	55	21 (38.18)	34 (61.82)	0.01*[§]
not present	194	40 (20.62)	154 (79.38)	
Concurrent psychiatric disorders				
present	-			
not present	249	188 (75.50)	61 (24.50)	
Using any other additive substances				
use	5	3 (60.00)	2 (40.00)	0.10
not use	244	58 (23.77)	186 (76.23)	

(a) Pearson Chi-square were used to determine differences between variables.   (b) Fisher's Exact Test were used to

determine differences between categorical variables.   * Significant level at p-value ≤ 0.05   [§] Variables were included in

multivariate logistic regression model.

Table 39 Continuous abstinence rates at 24 weeks by selected demographic

characteristics (N =249)

variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Gender				
male	231	44 (19.05)	187 (80.95)	0.76[b]
female	18	4 (22.22)	14 (77.78)	
Age; years				
$\leq$ 18 years of age	104	10 (9.62)	94 (90.38)	<0.01*[§]
19 – 45 years of age	88	21 (23.86)	67 (76.14)	
$\geq$ 46 years of age	57	17 (29.82)	40 (70.18)	
Marital status				
single	153	18 (11.76)	135 (88.24)	<0.01*[§]
married or living with partner	87	28 (32.18)	59 (67.82)	
widowed, separated, or divorced	9	2 (22.22)	7 (77.78)	
Educational level				
high school or lower	160	23 (14.38)	137 (85.63)	0.01*[§]
vocational level	37	7 (18.92)	30 (81.08)	
bachelor's degree or upper	52	18 (34.62)	34 (65.38)	
Alcohol drinking				
non drinking	188	29 (15.43)	159 (84.57)	<0.01*[§]
social drinking	43	16 (37.21)	27 (62.79)	
daily drinking	18	3 (16.67)	15 (83.33)	
Concurrent illnesses (psychiatric disorders were excluded)				
present	55	16 (29.09)	39 (70.91)	0.06[§]
not present	194	32 (16.49)	162 (83.51)	
Concurrent psychiatric disorders				
present	-	-	-	-
not present	249	48 (19.28)	201 (80.72)	-
Using any other additive substances				
use	5	2 (40.00)	3 (60.00)	0.25
not use	244	46 (18.85)	198 (81.15)	

(a) Pearson Chi-square were used to determine differences between variables. (b) Fisher's Exact test were used to determine differences between categorical variables. * Significant level at p-value $\leq$ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 40 Seven-day point prevalence rates at 24 weeks by selected smoking

behavioral characteristics (N=249)

variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Number of cigarettes per day				
1-10 cigarettes/day	132	21 (15.91)	111 (84.09)	<0.01[b]*[§]
11-20 cigarettes/day	94	33 (35.11)	61 (64.89)	
21-30 cigarettes/day	13	3 (23.08)	10 (76.92)	
≥ 31 cigarettes/day	10	4 (40.00)	6 (60.00)	
Number of years smoking				
≤ 10 years	135	20 (14.81)	115 (85.19)	<0.01*[§]
≥ 11-30 years	74	28 (37.84)	46 (62.16)	
≥ 31 years	40	13 (32.50)	27 (67.50)	
Number of previous quit attempts				
never attempted	159	23 (14.47)	136 (85.53)	<0.01*[§]
1 quit attempts	61	23 (37.70)	38 (62.30)	
≥ 2 quit attempts	29	15 (51.72)	14 (48.28)	
Stages of readiness to quit smoking (N=123)				
precontemplation or contemplation stages	65	43 (66.15)	22 (33.85)	0.21
preparation or action stages	58	31 (53.45)	27 (46.55)	
FTND scores (N=128)[c]				
very low 0-2 and low 3-4	61	18(29.51)	43(70.49)	0.07
medium 5-6	31	15 (48.39)	16(51.61)	
high (heavy) 7 and very high 8-10	36	18 (50.00)	18 (50.00)	
Time to smoking first cigarette of the day (N=134)				
immediately - with in 10 minutes	57	27 (47.37)	30 (52.63)	0.08
> 10 minutes - 2 hours	40	15 (37.50)	25 (62.50)	
more than 2 hours	37	9 (24.32)	28 (75.68)	

(a) Pearson Chi-square were used to determine differences between variables.

(b) Fisher's Exact test were used to determine differences between categorical variables.

(c) FTND scores = Fagerström Test for Nicotine Dependence scores

* Significant level at p-value ≤ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 41 Continuous abstinence rates at 24 weeks by selected smoking behavioral characteristics (N=249)

variable	N	N. of Abstinence		p-value[a]
		Yes	No	
Number of cigarettes per day				
1-10 cigarettes/day	132	13 (9.85)	119 (90.15)	<0.01[b]*[§]
11-20 cigarettes/day	94	29 (30.85)	65 (69.15)	
21-30 cigarettes/day	13	2 (15.38)	11 (84.62)	
> 30 cigarettes/day	10	4 (40.00)	6 (60.00)	
Number of years smoking				
≤ 10 years	135	16 (11.85)	119 (88.15)	<0.01*[§]
≥ 11-30 years	74	22 (29.73)	52 (70.27)	
≥ 31 years	40	10 (25.00)	30 (75.00)	
Number of previous quit attempts				
never attempted	159	17 (10.69)	142 (89.31)	<0.01*[§]
1 quit attempts	61	19 (31.15)	42 (68.85)	
≥ 2 quit attempts	29	12 (41.38)	17 (58.62)	
Stages of readiness to quit smoking (N=123)				
precontemplation or contemplation stages	65	16 (24.62)	49 (75.38)	0.11
preparation or action stages	58	23 (39.66)	35 (60.34)	
FTND scores (N=128)				
very low 0-2 and low 3-4	61	14 (22.95)	47 (77.05)	0.11
medium 5-6	31	12 (38.71)	19 (61.29)	
high (heavy) 7 and very high 8-10	36	15 (41.67)	21 (58.33)	
Time to smoking first cigarette of the day (N=131)				
immediately - with in 10 minutes	57	23 (40.35)	34 (59.65)	0.05*
> 10 minutes - 2 hours	40	12 (30.00)	28 (70.00)	
more than 2 hours	37	6 (16.22)	31 (83.78)	

(a) Pearson Chi-square were used to determine differences between variables.

(b) Fisher's Exact test were used to determine differences between categorical variables.

(c) FTND scores = Fagerström Test for Nicotine Dependence scores

* Significant level at p-value ≤ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 42 Seven-day point prevalence abstinence rates at 24 weeks by selected treatment and pharmacotherapy data. (N=249)

Variable	N	N. of Abstinence (%)		p-value [a]
		Yes	No	
Number of visiting the clinicians session				
3 sessions	154	42 (27.27)	112 (72.73)	0.03*[§]
4 -6 sessions	88	15 (17.05)	73 (82.95)	
≥ 7 sessions	7	4 (57.14)	3 (42.86)	
Types of pharmacotherapy				
not used pharmacotherapy	20	0 (0.00)	20 (100.00)	<0.01*[§]
used one first or second line pharmacotherapies as part of treatment	104	37 (35.58)	67 (64.42)	
used combination of first and/or second line pharmacotherapies as part of treatment	13	7 (53.85)	6 (46.15)	
used single or combination of other antidepressants as part of treatment	58	12 (20.69)	46 (79.31)	
used other drugs which were not classified as antidepressants	54	5 (9.26)	49 (90.74)	
Using first or second line pharmacotherapies				
not used first or second line pharmacotherapies	132	17 (12.88)	115 (87.12)	< 0.01*
used one first or second line pharmacotherapies as part of treatment	104	37 (35.58)	67 (64.42)	
used combination of first and/or second line pharmacotherapies as part of treatment	13	7 (53.85)	6 (46.15)	
Duration of using pharmacotherapy				
not used pharmacotherapy	20	0 (0.00)	20 (100.00)	0.02*[§]
used pharmacotherapy ≤ 7 weeks	196	50 (25.51)	146 (74.49)	
used pharmacotherapy > 7 weeks	33	11 (33.33)	22 (66.67)	
Duration of using first or second line pharmacotherapies				
not used first or second line pharmacotherapies	132	17 (12.88)	115 (87.12)	< 0.01*
used first or second line pharmacotherapies ≤ 7 weeks	93	36 (38.71)	57 (61.29)	
used first or second line pharmacotherapies > 7 weeks	24	8 (33.33)	16 (66.67)	

(a) Pearson Chi-square were used to determine differences between variables.

* Significant level at p-value ≤ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 43 Continuous abstinence rates at 24 weeks by selected treatment and pharmacotherapy data. (N=249)

Variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Number of visiting the clinicians session				
3 sessions	154	34 (22.08)	120 (77.92)	0.23[§]
4 -6 sessions	88	12 (13.64)	76 (86.36)	
≥ 7 sessions	7	2 (28.57)	5 (71.43)	
Types of pharmacotherapy				
not used pharmacotherapy	20	0 (0.00)	20 (100.00)	<0.01*[§]
used one of first or second line pharmacotherapies as part of treatment	104	28 (26.92)	76 (73.08)	
used combinations of first and/or second line pharmacotherapies as part of treatment	13	7 (53.85)	6 (46.15)	
used single or combinations of other antidepressants as part of treatment	58	9 (15.52)	49 (84.48)	
used other drugs which were not classified as antidepressants	54	4 (7.41)	50 (92.59)	
Using first or second line pharmacotherapy				
not used first or second line pharmacotherapy	132	13 (9.85)	119 (90.15)	<0.01*
used one of first or second line pharmacotherapies as part of treatment	104	28 (26.92)	76 (73.08)	
used combination of first and/or second line pharmacotherapies as part of treatment	13	7 (53.85)	6 (46.15)	
Duration of using pharmacotherapy				
not used pharmacotherapy	20	0 (0.00)	20 (100.00)	0.07[§]
used pharmacotherapy ≤ 7 weeks	196	42 (21.43)	154 (78.57)	
used pharmacotherapy > 7 weeks	33	6 (18.18)	27 (81.82)	
Duration of using first or second line pharmacotherapies				
not used first or second line pharmacotherapies	132	13 (9.85)	119 (90.15)	< 0.01*
used first or second line pharmacotherapies ≤ 7 weeks	93	30 (32.26)	63 (67.74)	
used first or second line pharmacotherapies > 7 weeks	24	5 (20.83)	19 (79.17)	

(a) Pearson Chi-square were used to determine differences between variables.

* Significant level at p-value ≤ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 44 Smoking abstinence of patients at follow-up visit assessment (N = 249)

Weeks after the quit date	N (%)		
	7-day point prevalence abstinence	Continuous abstinence	Patients who were 7-day point prevalence abstinence, but not classify as continuous abstinences
4 weeks	167 (67.07)	142 (57.03)	25 (14.97)
8 weeks	123 (49.40)	96 (38.55)	27 (21.95)
12 weeks	82 (32.93)	63 (25.30)	19 (23.17)
16 weeks	70 (28.11)	56 (22.49)	14 (20.00)
24 weeks	61 (24.50)	48 (19.28)	13 (21.31)

4.1 Multivariate predictors of 7-day point prevalence abstinence rates at 24 weeks

After performing a backward stepwise logistic regression model selection procedure on 249 patient data, the subset of predictors that resulted from the best model selection procedure included vocational graduated, bachelor's degree or higher graduated, one previous quit attempts, more than one previous quit attempts, the use of one first or second line pharmacotherapies as part of treatment, the use of combinations of first or second line pharmacotherapies as part of treatment and the use of single or combination of other antidepressant as part of treatment. The multivariate model showed that numbers of previous quit smoking attempts were significant predictors of successful 7-day point prevalence abstinence. Adjusted odds ratios (AOR) of 7-day point prevalence abstinence rates were 2.92 (95%CI = 1.41-6.06) in patients who had one previous quit attempt and 3.55 (95%CI =1.37-9.22) in those who had ≥ 2 previous quit attempts. In addition, types of pharmacotherapy could be used to predict 7-day point prevalence abstinence rates at 24 weeks. The using one first or second line pharmacotherapies and using combinations of first and/or second line pharmacotherapies as part of treatment increased abstinence rates significantly (AOR = 4.57, 95%CI = 1.55-13.47 and AOR = 6.41, 95%CI = 1.31-31.27, respectively).

Furthermore, patients who had bachelor's degree graduate or upper and had vocational graduate were important predictors of 7-day point prevalence abstinence rates (AOR = 2.10, 95%CI = 0.96-4.59 and AOR = 0.74, 95%CI = 0.28-1.91, respectively). However, education levels were not significant predictors in the model. The sensitivity of the model was 93.62%, the specificity was 29.51%, and overall accuracy was 77.91% in our sample. The Hosmer and Lemeshow Goodness-of-Fit statistic for this model was 0.75 (p-value = 1.00). Table 45 describes the results of backward stepwise logistic regression.

4.2 Multivariate predictors of continuous abstinence rates at 24 weeks

After performing a backward stepwise logistic regression model selection procedure on 249 patient data, the subset of predictors that resulted from the best model selection procedure included one previous quit attempts, more than one previous quit attempts, the use of one first or second line pharmacotherapies as part of treatment, the use of combinations of first or second line pharmacotherapies as part of treatment and the use of single or combinations of other antidepressant as part of treatment. Table 46 describes the results of backward stepwise logistic regression. Patients who used the one of first or second line pharmacotherapies or combinations of first and/or second line pharmacotherapies as a part of treatment had significantly higher continuous abstinence rates at 24 weeks (AOR = 4.83, 95% CI =1.57-14.85 and AOR =10.29, 95% CI = 2.06-51.45, respectively). In addition, patients who had one previous quit attempts and those who had more than one previous quit attempt had significantly higher continuous abstinence (AOR = 2.97, 95% CI = 1.38-6.39 and AOR =3.19, 95% CI =1.18-8.56, respectively). The sensitivity of the model was 97.51%, the specificity was 12.50%, and over all accuracy was 81.12% in our sample. The Hosmer and Lemeshow Goodness-of-Fit statistic for this model was 0.74 (p-value = 0.98).

Table 45 Multivariate predictors/models of 7-day point prevalence abstinence rates
at 24 weeks. (N = 249)[a]

Variable	β	S.E.	Wald	AOR (95%CI)	p-value
(1) vocational educate	-0.31	0.49	0.40	0.74 (0.28-1.91)	0.53
(2) bachelor's degree or higher	0.74	0.40	3.47	2.10 (0.96-4.59)	0.06
(3) 1 previous quit attempt	1.07	0.37	8.34	2.92 (1.41-6.06)	< 0.01*
(4) ≥ 2 previous quit attempts	1.27	0.49	6.80	3.55 (1.37-9.22)	<0.01*
(5) used one first or second line pharmacotherapies as part of treatment	1.52	0.55	7.58	4.57 (1.55-13.47)	0.01*
(6) used combinations of first and/or second line pharmacotherapies as part of treatment	1.86	0.81	5.27	6.41 (1.31-31.27)	0.02*
(7) used single or combinations of other antidepressants as part of treatment	1.04	0.58	3.19	2.84 (0.90-8.93)	0.07
constant	-2.91	0.49	36.00	0.05 (-)	<0.01*

(a) Backward stepwise logistic regression was used to explore the important predictors and to calculate the adjusted
odds ratios (AOR) with 95% confidence intervals for 7-day point prevalence abstinence rates at 24 weeks after the
quit date.

-2 Log Likelihood   =   231.26

Model Chi-square   =   46.00 (p-value < 0.01)

overall accuracy   =   77.91%

Nagelkerke R Square   =   0.25

Hosmer-lemeshow test =   0.75 (p-value =1.00)

*p-value ≤ 0.05

β: regression coefficient   S.E.: standard error

Table 46 Multivariate predictors/models of continuous abstinence rates at 24 weeks
after the quit date (N = 249)[a]

Variable	β	S.E.	Wald	AOR (95%CI)	p-value
(1) 1 previous quit attempt	1.09	0.39	7.76	2.97 (1.38-6.39)	0.01*
(2) ≥ 2 previous quit attempts	1.16	0.50	5.27	3.19 (1.18-8.56)	0.02*
(3) used one first or second line pharmacotherapies as part of treatment	1.58	0.57	7.56	4.83 (1.57-14.85)	0.01*
(4) used combinations of first and/or second line pharmacotherapies as part of treatment	2.33	0.82	8.05	10.29 (2.06-51.45)	< 0.01*
(5) used single or combinations of other antidepressants as part of treatment	0.99	0.64	2.39	2.69 (0.77-9.45)	0.12
constant	-3.15	0.53	34.60	0.04 (-)	<0.01*

(a) Backward stepwise logistic regression was used to explore important predictors and to calculate the adjusted
odds ratios (AOR) with 95% confidence interval for continuous abstinence rates at 24 weeks after the quit date.

-2 Log Likelihood   =   210.53

Model Chi-square   =   33.60 (p-value < 0.01)

overall accuracy   =   81.12%

Nagelkerke R Square   =   0.20

Hosmer-lemeshow test =   0.74 (p-value =0.98)

*p-value ≤ 0.05

β: regression coefficient

S.E.: standard error

Discussions

Results from our study showed that the use of one first or second line pharmacotherapies or the use of combinations of first and/or second line pharmacotherapies for treating smoking cessation associated with higher odds of abstinence rates at 24 weeks for both 7-day point prevalence abstinence and continuous abstinence rates (Table 45 and Table 46). These indicated that both of the use of one first or second line pharmacotherapies and the use of combinations of first and/or second line pharmacotherapies could help patients to stop smoking at the quit date and patients were still abstinence from smoking for 24 weeks after the quit date. Our results demonstrated that the use of other antidepressants did not significantly increase abstinence from smoking. Furthermore, the previous study of Steinberg, *et al.* (2006) reported that increasing number of medications was the strongest predictor of abstinence when compared with not using medication. However, they did not present any numbers of first or second line pharmacotherapies in regimens **[36]**.

Duration of using pharmacotherapy was not a significant predictor of abstinence in our study. The mean ($\pm$ SD) of the duration of the used pharmacotherapy > 7 weeks group was 11.29 ($\pm$ 4.65) weeks, the median was 9 weeks (Kolmogorov-Smirnov test: p–value < 0.01, range = 8-25 weeks). The mean ($\pm$ SD) of the duration of the used pharmacotherapy $\leq$ 7 weeks group was 3.57 ($\pm$ 1.90) weeks, the median was 3 weeks (Kolmogorov-Smirnov test: p–value < 0.01, range = 1-7 weeks). Seven-day point prevalence abstinence and continuous abstinence rates among the duration of using pharmacotherapy at each follow-up visit were depicted as Figure 5a and Figure 5b, respectively. The trend of abstinence rates seemed to be higher in the patients who were still with using pharmacotherapy > 7 weeks than those who had used pharmacotherapy $\leq$ 7 weeks and did not use pharmacotherapy for both 7-day point prevalence abstinence and continuous abstinence rates. These results implied that if the pharmacotherapy was extended for longer period of time, the patients may remain

abstinence from smoking. However, extended-pharamacotherpy may increase cost of the treatment. The study of Hays JT, *et al.* in 2001 **[48]** reported that patients who stopped smoking with 7 weeks of sustained-release bupropion treatment, sustained-release bupropion for 12 month delayed smoking relapse and resulted in less weight gain.
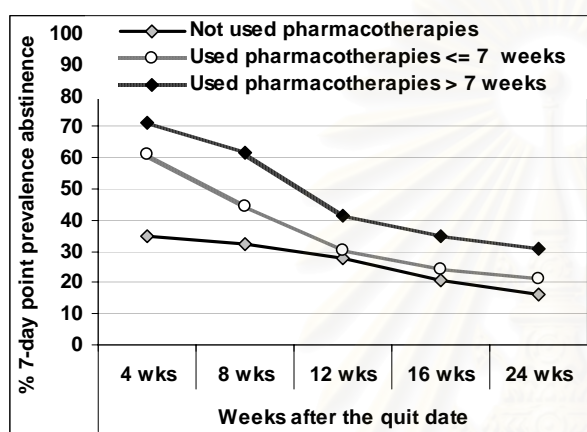

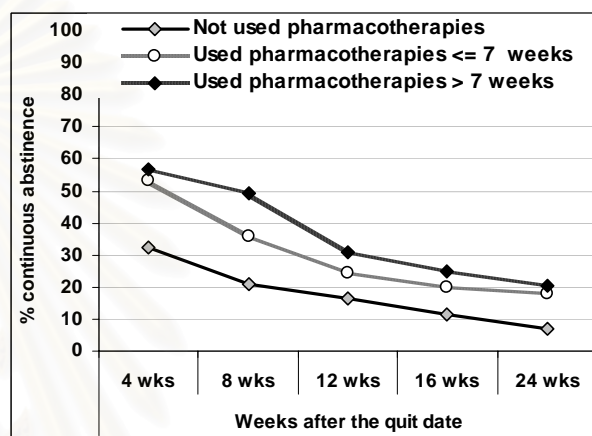**Figure 5a** Seven-day point prevalence abstinence rates based on duration of using pharmacotherapy at each follow-up visit.

Figure 5b Continuous abstinence rates based on duration of using pharmacotherapy at each follow-up visit.

Our study showed that a significant predictor of successful cessation at 24 weeks after the quit was found in patients with at least once attempt to quit smoking (Table 45 and Table 46). The results corresponded to the study of MacKenzie, Pereira and Mehler 2004 **[28]** conducted in adults smoker who admitted to the medicine service. They argued over the number of previous quit attempts associated significantly with future abstinence (OR = 1.3 per attempt, 95%CI = 1.0–1.5). The study conducted by Lee C, Kahende J. in 2007 **[37]** reported that elderly smokers who had more quit attempts in their lifetime had significantly low abstinence rates when compared with those who had one quit attempts in their lifetime. Our results did not consider the length of past quit attempts. The study of Ferguson, *et al*. in 2003 **[19]** reported that patients who had the longest duration of previous abstinence from

tobacco more than 30 days had higher abstinence rates than those who had quitted for 1-29 days. The study of Senore, *et al.* in 1998 **[23]** reported that smokers who had maintained abstinence for at least one month in the past had higher abstinence rates when compared with those who had maintained abstinence for less than one month. Moreover, this study also showed that patients who had no previous quit attempt had more likely to be abstinence from smoking than those who maintained abstinence for less than one month. Zhu, *et al.* in 1999 **[25]** conducted the study in adolescent smokers aged 12-19 years. Their results showed that the longest duration of previous quit attempts $\geq$ 14 days and non quit attempt were significant predictors of successful abstinence from smoking when compared to the duration of previous quit attempts < 14 days. Interestingly, smokers who had never tried to quit in the past were also more likely to succeed than those who tried to quit smoking, but the quit attempt failed. Our study did not consider the duration of previous quit attempts, therefore, duration of previous abstinence should be considered in the future.

According to our study, multivariate logistic regression models of 7-day point prevalence abstinence rates, education levels were not significant predictors but bachelor's degree graduate or upper was an important predictor (AOR = 2.10, 95% CI = 0.96-4.59, *p*-value = 0.06). Univariate logistic regression analysis indicated that patients who had bachelor's degree or upper had significantly higher abstinence for both 7-day point prevalence and continuous abstinence rates when compared with those who graduated in high school or lower (Table 29 and Table 30). The study of Steinberg, *et al.* in 2006 **[36]** reported that increasing level of education (i.e., high achool graduate, some college, college graduate and graduate degree) was a significant predictor of higher abstinence rates when compared with no high school degree. Lee and Kahende in 2007 conducted a study in former smoker by using data from the 2000 National Health Interview Survey. They reported that smokers who had college graduate or higher were a significantly predictor of successful quitting smoking **[37]**.

In multivariate analysis, age groups were not predictors of smoking cessation. However, almost of patients who were ≤ 18 years old had never attempted to quit smoking (82.24%) and did not use first or second line pharmacotherapies (86.92%). Most of them had graduated high school level or lower. Those factors were predictors of unsuccessful abstinence from smoking in our study. The results from univariate logistic analysis indicated that patients who had ≥ 46 years of age had significantly higher abstinence when compared with adolescents (≤ 18 years) (Table 29 and Table 30). Previous studies as: the study of Nollen, *et al*. in 2006 **[21]**, the study of Grandes, *et al*. in 2003 **[31]**, the study of Steinberg, *et al*. in 2006 **[36]** and the study of Lee and Kahende in 2007 **[37]** reported that older age was a predictor of successful abstinence. In our study, patients who had ≥ 46 years of age were: 48.68 % used to attempt to quit smoking in the past, 69.87% used the one of first or second line pharmacotherapies as part of treatment, 6.41% used the combinations of first and/or second line pharmacotherapies as part of treatment and 36.67% had bachelor's degree or upper.

Not only patients who were married/living with their partner but also those who were widowed/separated/divorced had significantly higher abstinence for both 7-day point prevalence and continuous abstinence rates in univariate logistic regression analysis (Table 29 and Table 30). However, marital statuses were not predictors in the multivariate models. Senore, *et al.*'s study in 1998 **[23]**, Chen, White and Pandina's study in 2001 **[24]**, Bak, *et al.*'s study in 2002 **[30]** and Lee and Kahende's study in 2007 **[37]** reported that marital statuses were significant predictors of smoking abstinence. The investigator considered previous quit attempts in each marital status: 33.78% of single patients, 53.27% of married/living with partner patients, and 53.85% of widowed/separated/divorced patients had at least one attempts to quit. There was the significant difference in number of previous quit attempts among the groups of marital status (chi-square test: *p*-value < 0.01). Several studies found that smokers who were living under a partial or total home smoking ban positively associated with

successful cessation **[37]**. The study of Lee C, Kahende J. in 2007 **[37]** reported that smoker-free home were significant predictor of successful abstinence. Senore, *et al.* in 1998 **[23]** reported that living with other smoker in household were predictors of unsuccessful abstinence. Tucker, *et al.* in 2005 **[35]** reported that surrounding by smoking people was a significant predictor of unsuccessful abstinence. The study of Chen, White and Pandina in 2001 **[24]** reported that decreasing the proportion of smoking friends increased abstinence significantly. The study of Zhu, *et al.* 1999 **[25]** reported that adolescent smokers who had their non smoking mother had significantly higher abstinence rates. Our study did not consider the number of smokers at home and number of smoking friends. The number of smokers at home and number of smoking friends should be taken into consideration in the future.

Alcohol drinking was not a predictor of abstinence at 24 weeks in our study. The study of Simon, Browner and Mangano in 1992 **[32]** was conducted in smokers who were admitted for major non-cardiac surgery and survived. They reported that patients with history of alcohol abuse were significant predictors of smoking relapse at 12 month. There are many previous studies in which alcohol drinking variable included in multivariate logistic regression analysis, but it was not a significant predictor. Whitson, Heflin and Burchett in 2006 **[18]** conducted the study in 573 elderly smokers. They reported that the number of alcoholic drinks per day did not predict smoking cessation (AOR = 1.05, 95%CI = 0.76-1.45, *p*-value = 0.76). Murray, *et al.* in 2000 **[17]** conducted the study in patients in the Lung Health Study. They reported that the number of drinks per weeks (7-drink increments) was not a predictor of abstinence at one year (OR = 1.01, 95%CI = 0.93-1.11, *p*-value = 0.78). As well, the study of Godtfredsen, *et al.* in 2001 **[26]** conducted in 3,791 moderate and heavy smokers (15 g tobacco/day or more) showed that there were no significant difference in 5 years abstinence rates among smokers who drank alcohol (i.e., 1-6 drinks per week, 7-13 drinks per week and $\geq$ 14 drink per week) when compared with those who

were abstinent from alcohol. In addition, the study of Chen, White and Pandina in 2001 [24] reported that alcohol abuse was not a significant predictor of abstinence in smokers who were admitted with primary cardiac and respiratory conditions. Steinberg, *et al.* (2006) [36] conducted the study in 790 smokers who were treated at Tobacco Dependence Clinic-New jersey. Their result presented that the smokers who had previous treatment for alcohol or other drug problem were not significant predictors of abstinence in multivariate analysis. The investigator plotted 7-day point prevalence abstinence and continuous abstinence rates based on alcohol drinking at each follow-up visit to consider the trend of abstinence rates among alcohol drinking groups in Figure 6a and Figure 6b, respectively.
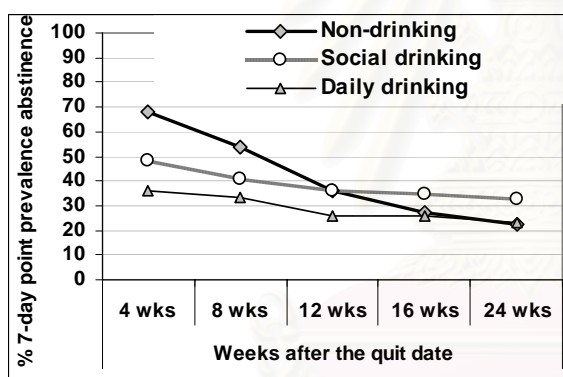

Figure 6a Seven-day point prevalence abstinence rates based on alcohol drinking at each follow-up visit.

Figure 6b Continuous abstinence rates based on alcohol drinking at each follow-up visit.

The trend of abstinence rate showed that patients who drank alcohol daily had lower smoking abstinence rate since 4 weeks when compared with those who were non drinking or social drinking. The difference in smoking abstinence rates among daily drinking, non drinking and social drinking patients was smaller and smaller when follow-up time increased. At 24 weeks after the quit date, the difference of abstinence rates among alcohol drinking group seemed to be a little difference. The trend line also presented that patients who were non drinking may have higher change of quitting than those who drank alcohol daily and who were social drinking. The investigator

considered the number of previous attempts among alcohol drinking group. Patients who had never attempted to quit smoking were 64.98% of non drinking alcohol patients, 33.33% of social drinking patients, and 39.47% of daily drinking. Generally, while alcoholic patients received tobacco dependence treatment at smoking cessation clinic, they received alcohol dependence treatment in the same time. Thus, alcohol drinking at baseline may be not a predictor of successful abstinence in future.

Concurrent chronic illness was not a significant predictor in multivariate logistic regression analysis. In univariate logistic regression analysis, the patients who had concurrent chronic illnesses had significantly higher abstinence rates (Table 29 and Table 30). The study of Chaaya, MehioSibai and ElChemaly in 2006 [34] reported that elderly smokers (aged > 60 years) who had concurrent chronic illnesses were a predictor of successful abstinence. The investigator considered the concurrent illnesses in patients who were over 45 years of age. Seven-day point prevalence abstinence rates at 24 weeks in patients who had concurrent chronic illnesses were 42.68% and 24.32% in those who had not. Continuous abstinence rates at 24 weeks were 29.27% in patients who had concurrent chronic illnesses and 20.27% in those who had not. Seven-day point prevalence and continuous abstinence rates based on concurrent illnesses by the groups of age at each follow-up visit were depicted in Figure 7a and Figure 7b, respectively. The trend line of 7-day point prevalence abstinences rates in patients who had at least 46 years of age with concurrent illnesses had higher than those who without concurrent illnesses from 8 weeks to 24 weeks after the quit date. Abstinence rates in the patients who had at least 46 years of age with concurrent illnesses were also higher than those who had ≤ 18 years and 19-45 years with/without concurrent illnesses. The difference of abstinence rates at 24 weeks between patients who had concurrent chronic illnesses and had not within each group of ages (i.e., ≤ 18 years and 19-45 years) seemed to be similar. These imply that concurrent illnesses in patients may associate with successful abstinence in patients who had ≥ 46 years of age.
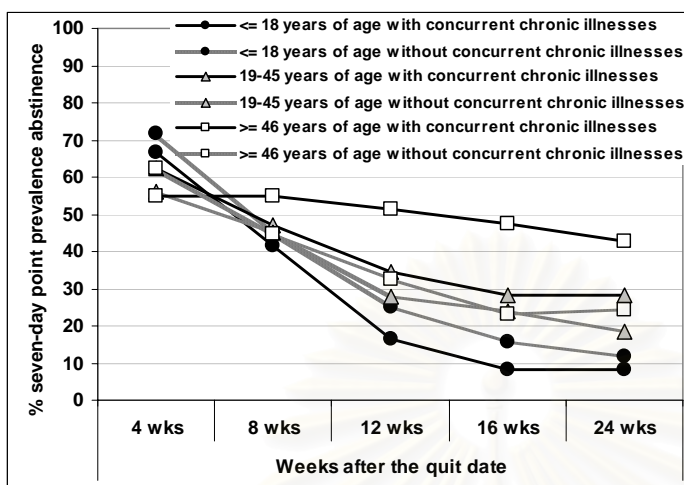
Figure 7a Seven-day point prevalence abstinence rates based on concurrent illnesses and age at each follow-up visit.
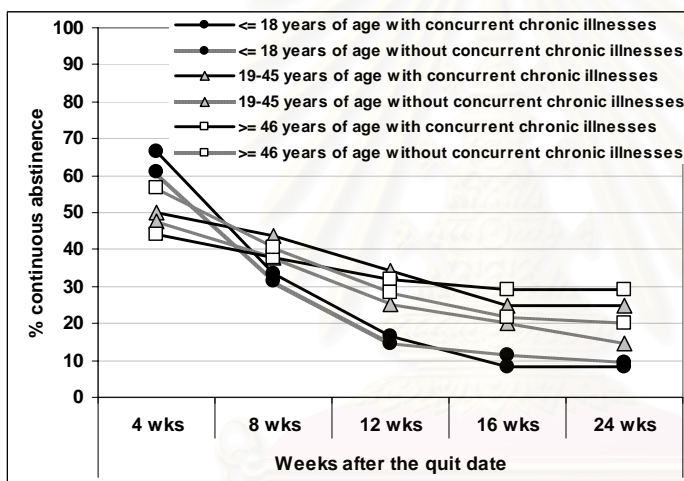
Figure 7b Continuous abstinence rates based on concurrent illnesses and age at each follow-up visit.

The number of cigarettes per day was not a predictor of both 7-day point prevalence abstinence and continuous abstinence at 24 weeks. Previous studies showed that smoking abstinence rates decreased when number of cigarettes per day increased. The study of McGee and Williams in 2006 conducted with women smokers, reported that the increasing number of cigarettes daily (compared with <10 cigarettes daily) decreased abstinence rates significantly [20]. Senore, *et al.* in 1998 reported that smokers who smoked > 20 cigarettes per day had lower abstinence rates than those who smoked ≤ 20 cigarettes per day [23]. The study of Godtfredsen, *et al.* in 2001 conducted with smokers who smoked ≥ 15 grams tobacco per day reported that tobacco consumption of 15-24 grams per day was significantly higher abstinence

rates when compared with $\geq$ 25 grams per day **[26]**. Dale, *et al.* in 2001 **[29]** conducted the study in smokers who were smoking > 15 cigarettes per day. They reported that lower number of cigarettes smoked per day was a significant predictor of successful abstinence. However, many previous studies showed that the number of cigarettes smoked per day was not a predictor of smoking cessation in multivariate logistic regression analysis, e.g., study of Whitson, Heflin and Burchett in 2006 **[18]**, study of Murray, et al. in 2000 **[17]**, and study of Ong, *et al.* in 2005 **[33]**. In addition, the study of Steinberg, *et al.* in 2006 **[36]** conducted with patients who were treated in Tobacco Dependence Clinic-New jersey reported that number of cigarettes per day did not correlate with abstinence rates at 6 months.

The investigator plotted abstinence rates based on number of cigarettes per day at each follow-up visit to consider the trend of 7-day point prevalence abstinence and continuous abstinence rates among number of cigarettes per day groups in Figure 8a and Figure 8b, respectively. The trend line showed that patients who smoked 1-10 and 11-20 cigarettes per day had higher abstinence rates than those who smoked 21-30 and $\geq$ 31 cigarettes per day at 4 weeks after the quit date. At 24 weeks after the quit date, the difference of smoking abstinence rates among the number of cigarettes per day groups seemed to be a little difference. The investigator considered the using of first or second line pharmacotherapies within the groups of number of cigarettes per day. Patients who did not use first or second line pharmacotherapies were 59.69% of patients who smoked 1-10 cigarettes per day, 19.37% of those who smoked 11-20 cigarettes per day, 20.00% of those who smoked 21-30 cigarettes per day and 9.38% of those who smoked $\geq$ 31 cigarettes per day. These may imply that patients who smoked more cigarettes per day could be successful in quitting smoking if they received first or second line pharmacotherapies for smoking cessation.
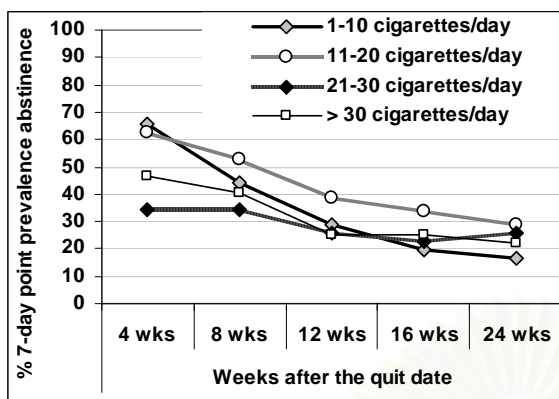
Figure 8a Seven-day point prevalence abstinence rates based on number of cigarettes per day at each follow-up visit.
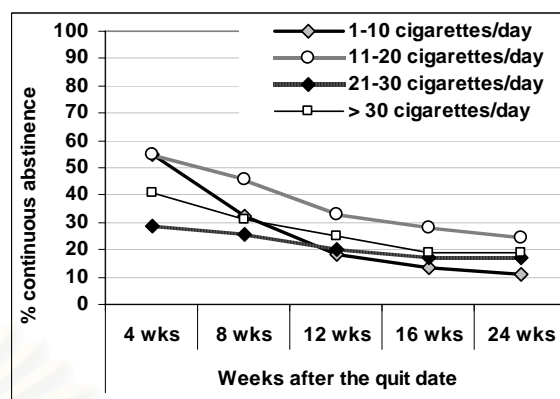
Figure 8b Continuous abstinence rates based on number of cigarettes per day at each follow-up visit.

The number of years smoking was not a predictor in multivariate logistic regression model. The investigator plotted 7-day point prevalence and continuous abstinence rates based on number of years smoking at each follow-up visit in Figure 9a and Figure 9b, respectively. The trend line of abstinence rates in patients who smoked more than 30 years seemed to be higher. The mean$\pm$ SD (median, range) of cigarettes per day were 9.09 $\pm$8.51 (median = 6, range = 1-50), 18.64 $\pm$9.68 (median = 20, range = 2-50) and 20.58 $\pm$9.64 (median = 20, range = 3-50) in who smoked 1-10 years, 11-30 years and $\geq$ 31 years, respectively. Although, number of cigarettes per day in patients who smoked $\geq$ 31 years was higher than in those who smoked 1-10 years, abstinence from smoking seem to be more successful. Thus, the number of quit attempts and the used of first and second line pharmacotherapies were considered. Patients who had at least one quit attempt were 26.88% of patients who smoked 1-10 years, 54.87% of those who smoked 11-30 years and 48.42% of patients who smoked $\geq$ 31 years. Patients who did not use first or second line pharmacotherapies were 67.50%, 17.26% and 22.68% of who smoked 1-10 years, 11-30 years and $\geq$ 31 years, respectively. These may imply that patients who smoked for longer time could be successful quitting if they received first or second line pharmacotherapies for smoking cessation, like to patients who smoked more cigarettes per day.
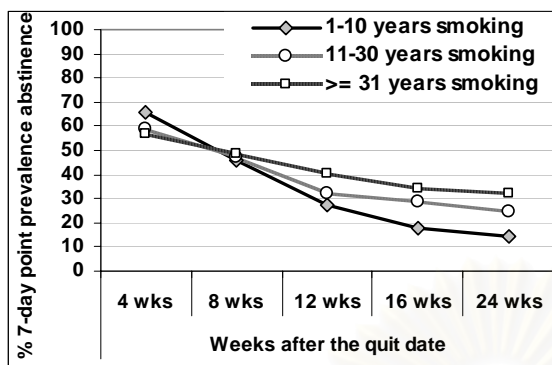
Figure 9a Seven-day point prevalence abstinence rates based on number of years smoking at each follow-up visit.
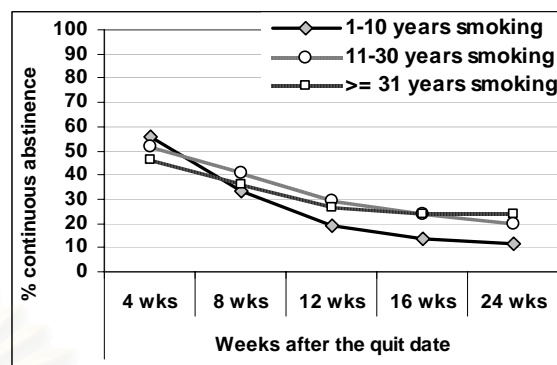
Figure 9b Continuous abstinence rates based on number of years smoking at each follow-up visit.

FTND scores was not a predictor of abstinence from smoking in our study. Many previous studies showed that patients who had higher nicotine dependence level had lower abstinence rates, i.e., the study of Ferguson, *et al.* (2003) **[19]**, the study of Grandes, *et al.* in 2003 **[31]**, the study of Ong, *et al.* in 2005 **[33]**. Seven-day point prevalence abstinence and continuous abstinence rates were plotted each follow-up visit based on nicotine dependence levels in Figure 10a and Figure 10b, respectively. The trend of abstinence rates indicated that patients who had low nicotine dependence levels had higher 7-day point prevalence abstinence at 4 weeks and 8 weeks after the quit date more than those who had medium or high and very high nicotine dependence. Abstinence rates of patients who had low and very low nicotine dependence level were lower than those who had medium and high/very high nicotine dependence level since 12 to 24 weeks after the quit date. This trend may imply that smokers who had lower nicotine dependence level may stop smoking easier but not longer.
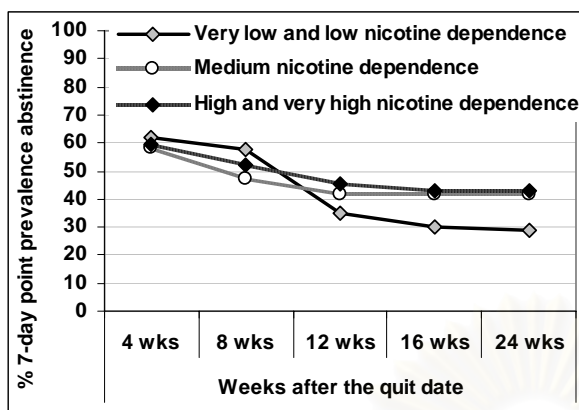
Figure 10a Seven-day point prevalence abstinence rates based on Fagerström Test for Nicotine Dependence scores at each follow-up visit.
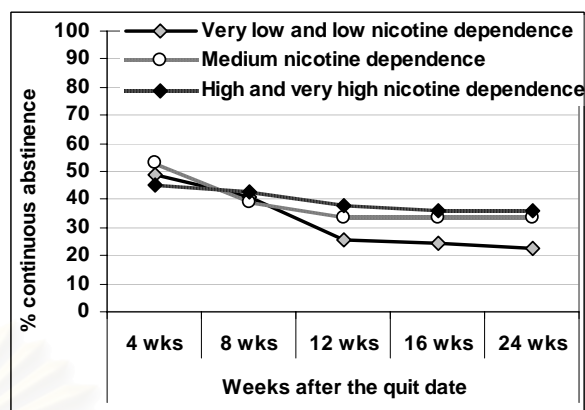
Figure 10b Continuous abstinence rates based on Fagerström Test for Nicotine Dependence scores at each follow-up visit.

The using of first or second pharmacotherapies and the previous quit attempts from smoking was considered in each nicotine dependence level. Patients who did not use first or second line pharmacotherapies were 60.61% of patients who had low or very low nicotine dependence level, 27.78% of those who had medium nicotine dependence level and 14.29% of those who had high or very high nicotine dependence level (chi-square test p-value < 0.01). Patients who had at least one quit attempt were 50.00% of low or very low nicotine dependence level group, 55.56% of medium nicotine dependence level group and 50.00% of high or very high nicotine dependence level group (chi-square test p-value =0.85). There was no difference for the mean of duration of using pharmacotherapy among nicotine dependence groups (ANOVA, p-value = 0.28, mean $\pm$ (SD) = 3.15 ($\pm$ 2.59), 4.33 ($\pm$5.01) and 3.55 ($\pm$ 3.31), respectively). These may imply that patients who had high/very high nicotine dependence could be successful in quitting smoking more than patients who had low or very low nicotine dependence if they used first or second line pharmacotherapies for smoking cessation.

Figure 11a Seven-day point prevalence abstinence rates based on time to smoking first cigarette of the day at each follow-up visit.
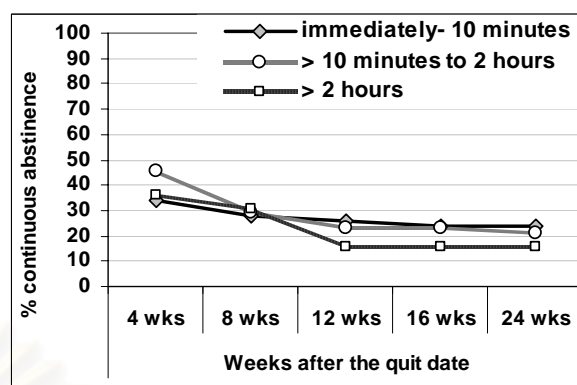
Figure 11b Continuous abstinence rates based on time to smoking first cigarette of the day at each follow-up visit.

The investigator also considered the time to smoking first cigarette of the day. The time to smoking first cigarette of the day could indicate nicotine dependence level. Figure 11a and Figure 11b depict 7-day point prevalence abstinence and continuous abstinence rates based on the time to smoking first cigarette of the day at each follow-up visit. The trend line seemed to be similar with the trend line based on nicotine dependence levels. Patients who smoked first cigarette of the day within 10 minutes were 90.00%, 50.00% and 8.47% of high or very high, medium and low or very low nicotine dependence groups, respectively. Percentage of patients who smoked first cigarette of the day during 10 minutes to 2 hours were 10.00%, 43.75% and 32.20% in high/very high, medium and low/very low nicotine dependence groups, respectively. Patients who smoked first cigarette of the day more than 2 hours were 6.25% of medium nicotine dependence patients and 59.32% of low/very low nicotine dependence patients. Nobody in high/very high nicotine dependence patients were patients who smoked first cigarette of the day more than 2 hours.

Patients who did not use first or second line pharmacotherapies were 17.09% of patients who had smoked the first cigarette of the day within 10 minute, 27.87% of those who had smoked during 10 minutes to 2 hours and 76.92% of those who had

smoked more than 2 hours (chi-square test *p*-value < 0.01). Some previous studies reported that later smoking first cigarette of the day was a predictors of successful abstinence, i.e., the study of Ong, *et al*. in 2005 **[33]**, the study of Steinberg, *et al* .in 2006 **[36]**. In our study, there were no correlations between the time to smoking first cigarette of the day and abstinence rates (both 7-day point prevalence abstinence and continuous abstinence rates). Likewise, patients who had high/higher nicotine dependence level, patients who smoked the first cigarette of the day within 10 minute could be more successful in quitting smoking than patients who smoked later than 2 hours if they used first or second line pharmacotherapies for smoking cessation.

Stages of readiness to quit smoking were not predictors of abstinence at 24 weeks in multivariate analysis. The study of Ferguson, *et al*. in 2003 **[19]** reported that smokers who were in action stage, preparation stage or contemplation stage of readiness to quit smoking had significantly higher abstinence rates when compared with those who were in precontemplation stage. The study of Ong, *et al.* in 2005 **[33]** included stages of readiness to quit in multivariate logistic regression analysis. They reported that stages of readiness to quit smoking were not significant predictors of smoking cessation in smokers who were admitted with primary cardiac and respiratory conditions. The investigator plotted abstinence rates based on stages of readiness to quit at each follow-up visit to consider the trend of 7-day point prevalence abstinence and continuous abstinence rates among stages of readiness to quit smoking in Figure 12a and Figure 12b, respectively. The trend of abstinence rate seemed that patients who were in preparation or action stages had higher smoking abstinence rate since 4 weeks until 24 weeks after the quit date when compared with those who were in precontemplation or contemplation stages. Patients who had at least one quit attempt were 98.39% of patients who were in preparation or action stages and 13.04% of those who were in precontemplation or contemplation stages.
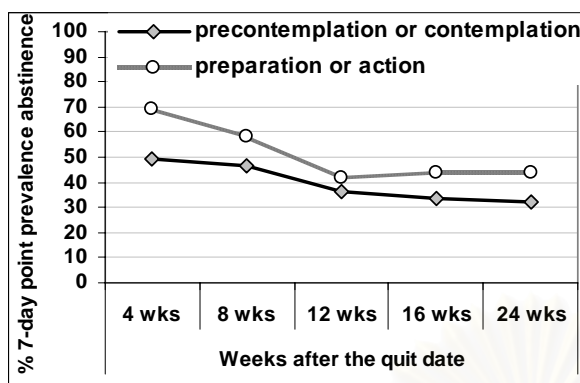
Figure 12a Seven-day point prevalence abstinence rates based on stages of readiness to quit at each follow-up visit.
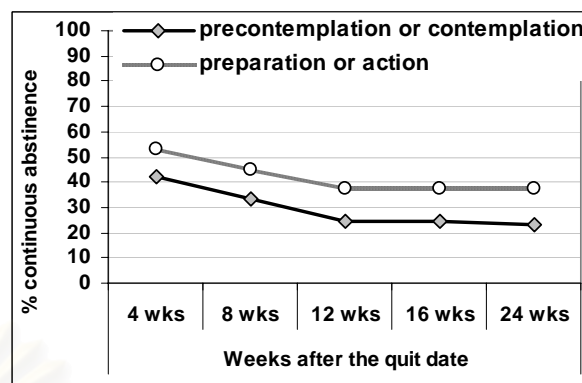
Figure 12b Continuous abstinence rates based on stages of readiness to quit at each follow-up visit.

The sessions of visiting clinician were not predictors of successful 7-day point prevalence abstinence and continuous abstinence rates. Results from univariate logistic regression analysis indicated that patients who participated in at least 7 sessions of visiting had significantly higher 7-day point prevalence abstinence rate when compared with those who participated in 3 sessions, but there was no significant difference for continuous abstinence rates (Table 33 and Table 34). Fiore, *et al*. in 2000 **[4]** conducted meta-analysis from reviewed 4 studies for the analysis addressing the impact of number of treatment sessions. They suggests a dose-response relation between number of sessions and treatment efficacy, with treatments lasting more than 8 sessions significantly more effective than interventions lasting either zero to one or two to three sessions. The study of Steinberg, *et al*. in 2006 **[36]** reported that patients who had > 7 clinical contacts had significantly higher abstinence at 6 month. Seven-day point prevalence and continuous abstinence rates which based on the session of visiting the clinician in each follow-up visit were plotted in Figure 13a and Figure 13b, respectively. The trend of abstinence rate seemed prominent that patients who participated in at least 7 sessions of visiting had higher 7-day point prevalence abstinence from smoking, but continuous abstinence rates at 24 weeks after the quit date seemed to similar. These may imply that patients who were not successful in

continuous smoking abstinence have a chance to be successful for 7-day point prevalence abstinence when participating at least 7 sessions of visiting. In our study, patients who had to contact at 4 weeks after the quit date had at least 3 sessions of visiting clinicians. These indicated that if patients who could not stop smoking at the quit date or within 3-6 sessions of visiting clinicians had still contacted with clinicians, they could be successful quitting from smoking at 7th session. Thus, at least 7 sessions of visiting clinicians should be the optimal plan for smoking cessation intervention in Thai smoker patients.
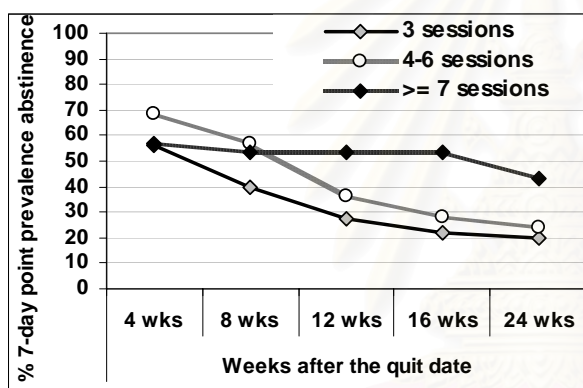
Figure 13a Seven-day point prevalence abstinence rates based on number of visiting the clinician session at each follow-up visit.
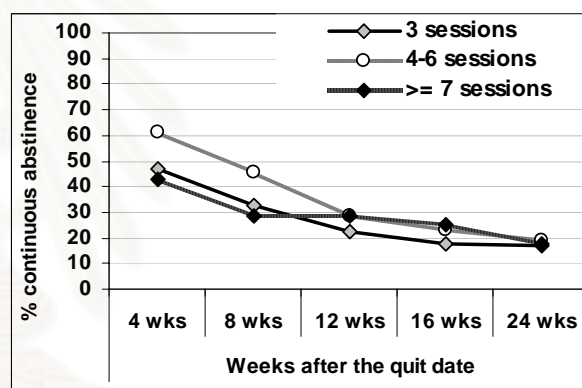
Figure 13b Continuous abstinence rates based on number of visiting the clinician session at each follow-up visit.

There were no significant differences for both 7-day point prevalence abstinence and continuous abstinence rates between genders in univariate logistic analysis. Seven-day point prevalence and continuous abstinence rates based on gender at each follow-up visit were depicted in Figure 14a and Figure 14b, respectively. The trend of abstinence rates of both genders seemed to be equal since 4 weeks until 24 weeks after the quit date. The study of Whitson, Heflin and Burchett **[18]** reported that female gender was a predictor of successful abstinence in elderly smokers. Thus, the investigator considered abstinence rates of both genders among $\geq$ 46 years patients years of age (N = 156). There were no significant differences for both 7-day point

prevalence abstinence rates (chi-square test: *p*-value = 0.73, 34.75% and 26.67% of male and female, respectively) and continuous abstinence rates (chi-square test: *p*-value = 0.36, 26.24% and 13.33% of male and female, respectively) between genders in these patients. Male gender which was a predictor of successful abstinence was reported in many previous studies, i.e., the study of Ferguson, *et al.* conducted with smokers who were treated for nicotine dependence **[19]**, the study of Nollen, *et al.* conducted with African American light smokers (smoked <10 cigarettes per day) **[21]**, the study of Senore, *et al.* in 1998 **[23]**, the study of Dale, *et al.* conducted with healthy men and women (> 18 years of age) who were smoking > 15 cigarettes per day **[29]**, the study of Bak, *et al.* conducted in patients with a first-ever stroke **[30]**.
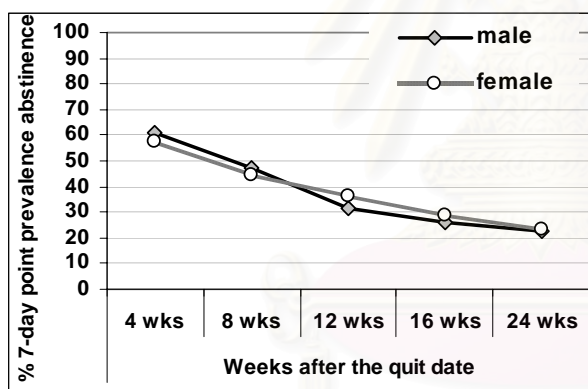
Figure 14a Seven-day point prevalence abstinence rates based on gender at each follow-up visit.

Figure 14b Continuous abstinence rates based on gender at each follow-up visit.

There were no significant differences for both 7-day point prevalence abstinence rates between patients who used and did not use other additive substances in univariate analysis. The study of Steinberg, *et al.* in 2006 **[36]** reported that there were significant difference between patients who had previous treatment for alcohol and other drug problem and had not for 7-day point prevalence abstinence at 6 month in univariate analysis. However, previous treatment for alcohol and other drug problem was not a predictor of smoking cessation in their study. The study of Tucker, *et al.* in

2005 **[35]** reports that smokers who used other additive substances were not predictors of 6 month abstinence or longer. Seven-day point prevalence and continuous abstinence rates based on using any other additive substances at each follow-up visit were depicted in Figure 15a and Figure 15b, respectively. The trend of 7-day point prevalence abstinence rates in patients who used other additive substances dependence and those who did not use seemed to be similar. For the trend of continuous abstinence rates, patients who used other additive substances dependence had higher abstinence than those who did not at 4 weeks after the quit date, but at 24 weeks seemed to be no difference. These may imply that patients who used other additive substances could not continuously quit from smoking. However, they may have a chance to successfully quit smoking for 7-day point prevalence abstinence as same as those who did not. Generally, patients who used other additive substances and patients who were tobacco dependence patients were treated together at smoking cessation clinic. Thus, this may indicated that using any other additive substances at baseline were not predictor of successful abstinence in future.
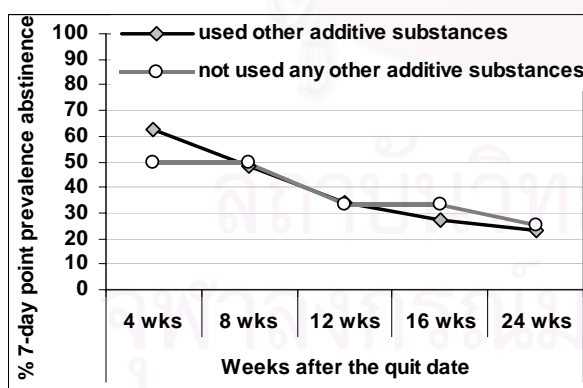
Figure 15a Seven-day point prevalence abstinence rates based on using any other additive substances at each follow-up visit.
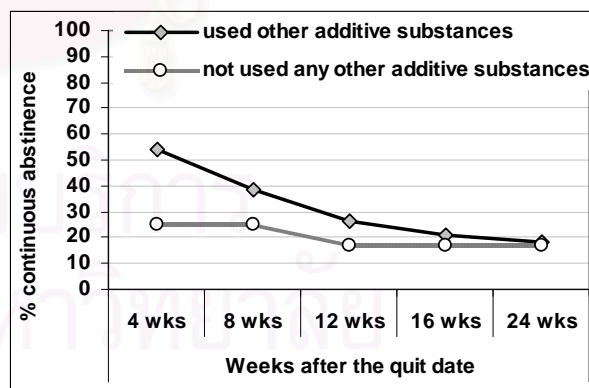
Figure 15b Continuous abstinence rates based on using any other additive substances at each follow-up visit.

The investigator compared demographic and smoking behavioral characteristics of patients who were included in this study with demographic and smoking behavioral characteristics of Thai smoking population. Thai National Statistic Organization surveyed 9,627,685 Thai smokers who had at least 15 years of age in 2004. The ratio of male: female from Thai smokers were 17:1. Thai smokers were; 48.42% in ≥ 40 years of age, 48.45% in 20-39 years of age and 3.13% in 12-19 years of age. Most age started smoking was 15-24 years of age (84.06%). Most number of cigarettes per day was 1-10 cigarettes/day (72.90%). Data of 454 patients who received tobacco dependence treatment in hospital in our study, most gender was male (88.55%), the male: female ratios were about 8:1. Ages were 46.48% ≥ 40 years of age, 28.85% 20-39 years of age and 24.67% 12-19 years of age. Most age started smoking was 15-24 years of age (63.22%). Most number of cigarettes per day was 1-10 cigarettes/day (43.17%). For 249 patients who were used to build multivariate logistic regression model, the ratios of male: female were 13:1. Most age was 12-19 years of age (43.37%). Most age started smoking was 15-24 years of age (52.61%). Most number of cigarettes per day was 1-10 cigarettes/day (53.01%). Goodness-of-fit statistics were analyzed by Pearson chi-square test. There was significant difference of gender, age, age started smoking and number of cigarettes per day between data of 454 outpatients who received tobacco dependence treatment at hospital from our study and data of Thai smokers from Thai National Statistic Organization 2004. There was significant difference of age, age started smoking and number of cigarette per day between data from 249 patients who used to build the multivariate logistic regression model and data of Thai smokers. Thus, the study results may represent only smokers who received tobacco dependence treatment in smoking cessation clinic at hospital. Table 47 presents demographic and smoking behavioral characteristics of Thai smokers from Thai National Statistic Organization in 2004 and smokers who received tobacco dependence treatment at hospital in our study.

Table 47 Demographic and smoking behavioral characteristics of Thai smokers from Thai National Statistic Organization in 2004 and smokers who received tobacco dependence treatment at hospital in our study.

Variable	Number (%)						
	N = 9,627,685[ß]		N = 454[£]		p-value[a]	N = 249[œ]		p-value[a]
Gender								
male	9,101,991	(94.55)	402	(88.55)	< 0.01*	231	(92.77)	0.22
female	525,695	(5.46)	52	(11.45)		18	(7.23)	
Age; years								
12-19 years of age	301,119	(3.13)	112	(24.67)	< 0.01*	108	(43.37)	< 0.01*
20-39 years of age	4,664,365	(48.45)	131	(28.85)		58	(23.29)	
≥ 40 years of age	4,662,201	(48.42)	211	(46.48)		83	(33.33)	
Age started smoking								
≤ 10 years of age	30,243	(0.31)	7	(1.54)	< 0.01*	4	(1.61)	< 0.01*
10-14 years of age	748,507	(7.77)	108	(23.79)		92	(36.95)	
15-24 years of age	8,093,061	(84.06)	287	(63.22)		131	(52.61)	
25-39 years of age	693,513	(7.20)	48	(10.57)		20	(8.03)	
≥ 40 years of age	62,359	(0.65)	4	(0.88)		2	(0.80)	
Number of cigarettes/day								
1-10 cigarettes/day	7,018,582	(72.90)	196	(43.17)	< 0.01*	132	(53.01)	< 0.01*
11-20 cigarettes/day	2,387,666	(24.80)	191	(42.07)		94	(37.75)	
≥ 21 cigarettes/day	221,437	(2.30)	67	(14.76)		23	(9.24)	

a) Goodness-of-fit statistics were analyzed by Pearson chi-square test. Expected values were calculated by using data of 9,627,685 Thai smokers from the survey of Thai National Statistic Organization in 2004.

[ß] Statistic of smoking in Thai population in 2004 were surveyed in 9,627,685 Thai smokers.

[£] Data of 454 patients who received tobacco dependence treatment in study.

[œ] Data of 249 patients who received tobacco dependence treatment were used to analyze multivariate logistic regression model in study.

* Significant level at p-value ≤ 0.05

CHAPTER V

CONCLUSIONS LIMITATIONS AND RECOMMENDATIONS

This study was conducted to determine variables associated with smoking cessation at 24 weeks after the quit date. First, all variables were assessed on their relationship with abstinence rates at 24 weeks by chi-square test. Second, unadjusted odds ratios were calculated with 95% confidence for abstinence rates at 24 weeks for each variable by univariate logistic regression analysis. Third, only variables that showed a relationship (p-value $\leq$ 0.25 by chi-square tests) were included in a multivariate logistic regression model. The set of variables were further reduced using backward stepwise logistic regression models. Subsequently, variables that did not remain independent predictors of smoking abstinences were removed. The predictive variables from the model that led to the best fit with the data were determined based on the -2 log likelihood and over all accuracy.

Conclusions

1. Univariate logistic regression

1.1. Seven-day point prevalence abstinence rates at 24 weeks

Results from univariate logistic regression analysis, significant demographic predictors of successful 7-day point prevalence abstinence at 24 weeks were found among patients as follows: (1) who had at least 45 years of age, (2) who were married or living with partner, (3) who were widowed, separated, or divorced, (4) who graduated bachelor's degree or upper and (5) who had concurrent chronic illnesses. Significant smoking behavioral predictors of higher 7-day point prevalence abstinence rates were as follows: (1) smoked 11-20 cigarettes per day, (2) smoked 11-30 years, (3) smoked at lease 31 years, (4) one quit attempt, (5) $\geq$ 2 quit attempts. Patients who

contacted the clinician ≥ 7 session and used the combinations of first and/or second line pharmacotherapies as part of treatment were predictors of higher 7-day point prevalence abstinence rates.

1.2. Continuous abstinence rates at 24 weeks

Results for univariate logistic regression analyses, significant demographic predictors of successful continuous abstinence were found in patients: (1) who had at least 45 years of age, (2) who were married or living with partner, (3) who were widowed, separated, or divorced, (4) who graduated bachelor's degree or upper and (5) who had concurrent chronic illnesses. Significant smoking behavioral predictors of higher continuous abstinence rates were: (1) smoked 11-20 cigarettes per day, (2) smoked at least 11 years, (3) one quit attempt, (4) ≥ 2 quit attempts. Patients who used the one of first or second line pharmacotherapies or use the combinations of them as part of treatment were predictors of higher continuous abstinence rates.

2. Multivariate logistic regression

2.1. Seven-day point prevalence abstinence rates

The multivariate logistic regression model showed that patients who had at least one previous quit attempt predicted of successful 7-day point prevalence abstinence. In addition, types of pharmacotherapy predicted 7-day point prevalence abstinence from smoking. The use of one first or second line pharmacotherapies and the use of combinations of first and/or second line pharmacotherapies as part of treatment could increase 7-day point prevalence abstinence from smoking at 24 weeks. Educational levels were important predictors of 7-day point prevalence abstinence in the model, but they were not significant predictors.

2.2. Continuous abstinence rates

The multivariate logistic regression model showed that patients who had at least one previous quit attempt were predictors of higher continuous abstinence at 24 weeks. In addition, types of pharmacotherapy predicted 7-day point prevalence

abstinence at 24 weeks. The use of one first or second line pharmacotherapies and the use of combinations of first and/or second line pharmacotherapies as part of treatment could increase continuous abstinence from smoking.

Limitations

This study has some limitations. Study was not randomized, controlled trial. This design limits the conclusions that can be casually attributed to the findings. All factors of three hospitals were assumed that there were no differences. Abstinence rates were obtained via self-report, and thus rely on patient accuracy and genuine report. However, self-report of smoking was likely to be true **[46]**. This could potentially bias the findings. Another limitation is the loss of follow-up at each follow-up visit. Our abstinence rates may be underestimated because all patients who were lost during follow-up visit were considered as still smoking. However, this study does give a ''real-world'' perspective of the treatment of dependent smokers, including those with medical and illness who are usually excluded from clinical trials. There are several possible unmeasured or uncontrolled variables that could influence abstinence from smoking such as duration of past quit attempts, living with other smokers, depression scores, and smoking policy at work, hospitalization and confidence to quit.

Recommendations

1. Clinical implications:

1.1. Using one or combinations of first or second line pharmacotherapies should be used to help patients quit smoking. However, our study did not evaluate any side effects when use the combinations of pharmacotherapies because the package labels advise smokers not use the combination of these medications. It is important to discuss with patients the concept of combining first and/or second line drugs.

1.2. Smokers who had never attempted to quit had stronger abstinence from smoking. Clinicians should pay more attention to these patients because of their higher predictor of unsuccessful abstinence. In addition, most of adolescents were included in this group of patient. Thus, clinician should pay attention to this group of patients.

1.3. Follow-up to treatments was an important predictor. Clinicians should explain why patients need to visit the clinicians at least 7 sessions. Additionally, health care providers should find the method to encourage patients to continue follow-up treatment.

1.4. Duration of using pharmacotherapy in patients who stopped smoking within 7 weeks of using first or second line pharmacotherapies should be extended to maintain smoking abstinence.

2. *Future studies should include:*

2.1. More research is needed to explore the appropriate time to extend use first or second line pharmacotherapies for smoking cessation.

2.2. Conducting study to confirm the effectiveness and safety of the using combinations of first and/or second line pharmacotherapies for treating tobacco dependence compared with the using single of first or second line pharmacotherapies.

2.3. Pharmacoeconomics should be conducted in patients who use combinations of first and/or second line pharmacotherapies for treating tobacco dependence. Cost-benefit should be conducted when compared with patients who use single of first or second line pharmacotherapies.

2.4. Environmental factors (e.g., number of smokers in household, number of friends who are smokers, no-smoking policy in work place) and duration of previous abstinence should be included in the study of the predictors of smoking cessation.

2.5. Using cotinine level or expired carbon monoxide to measure abstinence from smoking instead of using self-report to increase accuracy of abstinence rates.

2.6. Conducting study to find predictors and causes of recurrent/ relapsed smoking in patients who were abstinence from smoking before 6-month.

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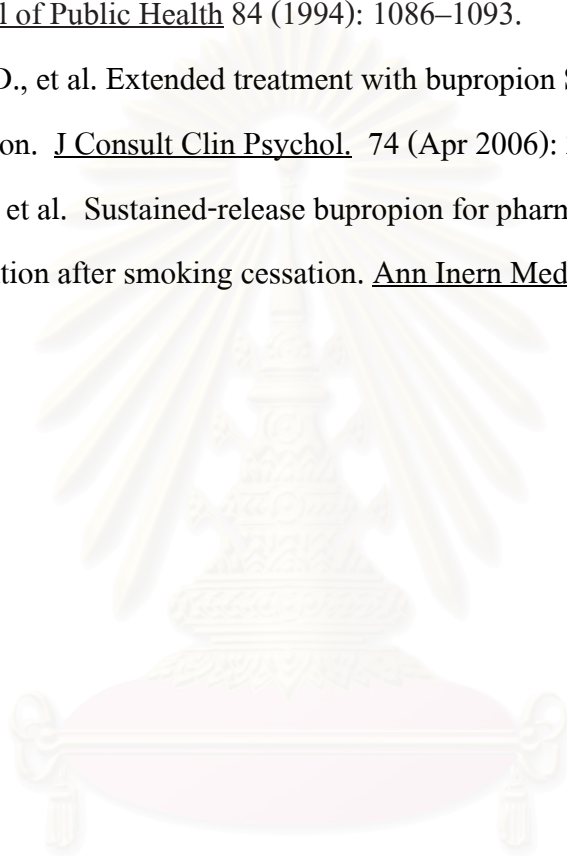
Appendices

Appendix A

Table 48 Health status of the participating patients

Disease	N. of Patients	Percent
Asthma with hypertension with dyslipidemia with aortic valve regurgitation	1	0.79
Cancer : erosive gastroenteritis cancer	1	0.79
Cancer base of tongue	1	0.79
Cancer of gall bladder	1	0.79
Cerebrovascular stenosis	1	0.79
Chronic dyspepsia	1	0.79
Chronic peritonsillar abscess	1	0.79
Chronic sinusitis	3	2.38
COPD or Asthma	25	19.84
COPD with hypertension	1	0.79
COPD with hypertension with dyslipidemia	1	0.79
Coronary artery disease	7	5.56
Coronary artery disease with chronic hepatitis C	1	0.79
Coronary artery disease with diabetic mellitus	1	0.79
Coronary artery disease with diabetic mellitus with dyslipidemia	1	0.79
Coronary artery disease with dyslipidemia with alcoholic hepatitis	1	0.79
Coronary artery disease with hypertension	4	3.17
Coronary artery disease with hypertension with dyslipidemia	1	0.79
Diabetic mellitus	6	4.76
Diabetic mellitus with dyslipidemia	1	0.79
Diabetic mellitus with dyslipidemia with duodenal ulcer	1	0.79
Diabetic mellitus with tuberculosis	1	0.79
Dyslipidemia	7	5.56
Dyslipidemia with allergic rhinitis	1	0.79
Dyslipidemia with chronic pharyngitis	1	0.79
Dyslipidemia with renal stone	1	0.79
Emphysema with cancer of bladder with gastric ulcer	1	0.79
Epilepsy	2	1.59
Gastric ulcer or duodenal ulcer or gastroesophageal reflux disease	9	7.14

Table 48 Health status of the participating patients (continue)

Disease	N. of Patients	%
Gout	1	0.79
Hepatitis	3	2.38
Human immunosuppressive virus infection	1	0.79
Hypertension	12	9.52
Hypertension with aortic valve regurgitation with allergic rhinitis	1	0.79
Hypertension with atrail fibrillation with hyperuricemia	1	0.79
Hypertension with cerebrovascular accident with tuberculosis	1	0.79
Hypertension with chronic hepatitis	1	0.79
Hypertension with diabetic mellitus	2	1.59
Hypertension with diabetic mellitus with dyslipidemia	2	1.59
Hypertension with diabetic mellitus with dyslipidemia with cancer of larynx	2	1.59
Hypertension with diabetic mellitus with gouty arthritis	1	0.79
Hypertension with diabetic mellitus with renal disease	1	0.79
Hypertension with diabetic mellitus with severe mitral valve regurgitation S/P MVR	1	0.79
Hypertension with dyslipidemia	5	3.96
Hypertension with gout	1	0.79
Nephrotic syndrome	1	0.79
Parkinson	1	0.79
Thallasemia	3	2.38
Tuberculosis	1	0.79
Total	126	100.00

Appendix B

Table 49 Drug regimens for tobacco dependence treatment using in patients

Drug regimen	N = 454		N = 249		N = 123	
	N	%	N	%	N	%
Not used pharmacotherapy						
Non-pharmacological treatment	43	(9.47)	20	(8.03)	2	(1.63)
Used pharmacotherapy						
Used one first or second line pharmacotherapies as part of treatment						
Bupropion	149	(32.82)	31	(12.45)	13	(10.57)
Bupropion + Amitriptyline	7	(1.54)	3	(1.20)		
Bupropion + Amitriptyline + Lorazepam	2	(0.44)	2	(0.80)	2	(1.63)
Bupropion + Amitriptyline + Lorazepam + Sodium nitrate mouth wash	1	(0.22)	1	(0.40)	1	(0.81)
Bupropion + Amitriptyline + Sodium nitrate mouth wash	3	(0.66)	3	(1.20)	3	(2.44)
Bupropion + Dipotassium chlorazepate	1	(0.22)	1	(0.40)	1	(0.81)
Bupropion + Fluoxetine	1	(0.22)	1	(0.40)		
Bupropion + Fluoxetine + Amitriptyline + Lorazepam	1	(0.22)	1	(0.40)	1	(0.81)
Bupropion + Fluoxetine + Lorazepam	1	(0.22)	1	(0.40)	1	(0.81)
Bupropion + Fluoxetine + Sodium nitrate mouth wash	4	(0.88)	3	(1.20)	1	(0.81)
Bupropion + Fluoxetine+ Amitriptyline + Sodium nitrate mouth wash	4	(0.88)	4	(1.61)		
Bupropion + Lorazepam	4	(0.88)	4	(1.61)	2	(1.63)
Bupropion + Lorazepam + Sodium nitrate mouth wash	9	(1.98)	8	(3.21)	6	(4.88)
Bupropion + Melitracen/flupentixol + Lorazepam	3	(0.66)	1	(0.40)	1	(0.81)
Bupropion + Melitracen/flupentixol + Sodium nitrate mouth wash	1	(0.22)				
Bupropion + Sodium nitrate mouth wash	32	(7.05)	30	(12.05)	25	(20.33)
Bupropion + Trazodone+ Bromazepam+ Sodium nitrate mouth wash	1	(0.22)	1	(0.40)	1	(0.81)
Nicotine gum	3	(0.66)	2	(0.80)		
Nicotine patch	40	(8.81)	5	(2.01)	1	(0.81)
Nicotine patch + Temazepam	1	(0.22)				
Nortriptyline + Bromazepam	1	(0.22)	1	(0.40)	1	(0.81)
Nortriptyline + Fluoxetine + Alprazolam	1	(0.22)	1	(0.40)	1	(0.81)
Subtotal	270	(59.47)	104	(41.77)	61	(49.59)

Table 49 Drug regimens for tobacco dependence treatment using in patients (continue)

Drug regimen	N = 454		N = 249		N = 123	
	N	%	N	%	N	%
Used combinations of first and/or second line pharmacotherapies as part of treatment						
Bupropion + Nortriptyline	10	(2.20)	10	(4.02)	10	(8.13)
Bupropion + Nicotine gum	2	(0.44)	1	(0.40)		
Bupropion + Nicotine patch	7	(1.54)	2	(0.80)		
Nicotine patch + Nortriptyline + Alprazolam	1	(0.22)				
Subtotal	20	(4.41)	13	(5.22)	10	(8.13)
Used single or combinations of other antidepressants as part of treatment						
Fluoxetine + Alprazolam	2	(0.44)	1	(0.40)	1	(0.81)
Fluoxetine + Amitriptyline	2	(0.44)	2	(0.80)		
Fluoxetine + Amitriptyline + Lorazepam + Sodium nitrate mouth wash	5	(1.10)	4	(1.61)	2	(1.63)
Fluoxetine + Amitriptyline + Sodium nitrate mouth wash	10	(2.20)	9	(3.61)	7	(5.69)
Fluoxetine + Lorazepam	1	(0.22)	1	(0.40)	1	(0.81)
Fluoxetine + Sodium nitrate mouth wash	14	(3.08)	14	(5.62)	11	(8.94)
Fluoxetine + Ascorbic acid	1	(0.22)	1	(0.40)	1	(0.81)
Amitriptyline + Dipotassium chlorazepate	1	(0.22)	1	(0.40)		
Amitriptyline + Lorazepam	1	(0.22)	1	(0.40)		
Amitriptyline + Lorazepam + Sodium nitrate mouth wash	4	(0.88)	3	(1.20)	1	(0.81)
Amitriptyline + Sodium nitrate mouth wash	11	(2.42)	10	(4.02)	6	(4.88)
Melitracen/flupentixol + Lorazepam + Sodium nitrate mouth wash	2	(0.44)	2	(0.80)	1	(0.81)
Melitracen/flupentixol + Sodium nitrate mouth wash	9	(1.98)	9	(3.61)	2	(1.63)
Mirtazapine + Clonazepam	1	(0.22)				
Subtotal	64	(14.10)	58	(23.29)	33	(26.83)
Used other drugs which were not classified as antidepressants						
Alprazolam	1	(0.22)				
Lorazepam + Sodium nitrate mouth wash	24	(5.29)	23	(9.24)	9	(7.32)
Sodium nitrate mouth wash	29	(6.39)	28	(11.24)	5	(4.07)
Sodium nitrate mouth wash + Ascorbic acid	1	(0.22)	1	(0.40)	1	(0.81)
Ascorbic acid	2	(0.44)	2	(0.80)	2	(1.63)
Subtotal	57	(12.56)	54	(21.69)	17	(13.82)
Total	**454**	**(100)**	**249**	**(100)**	**123**	**(100)**

Appendix C

Patient baseline characteristics and abstinence rates (N=123)

Table 50 Demographic characteristics (N=123)

Variable		Mean (± SD) /Number (%)	
Gender	male	114	(92.68)
	female	9	(7.32)
Age; years [a]			
	≤ 18 years of age	32	(26.02)
	19 – 45 years of age	56	(45.53)
	more than 45 years of age	35	(28.46)
Marital status	single	59	(47.97)
	married or living with partner	56	(45.53)
	widowed, separated, or divorced	8	(6.50)
Educational level	high school or lower	69	(56.10)
	vocational level	27	(21.95)
	bachelor's degree or upper	27	(21.95)
Alcohol drinking	daily drinking	13	(10.57)
	social drinking	36	(29.27)
	non drinking	74	(60.16)
Concurrent illnesses (psychiatric disorders were excluded)			
	present	35	(28.46)
	not present	88	(71.54)
Concurrent psychiatric disorders			
	present	0	(0.00)
	not present	123	(100.00)
Using any other additive substances			
	use	4	(3.25)
	not use	119	(96.75)

(a) Test normality: K-S Test <0.01, mean ± SD = 34.93 ± 15.46, median of age = 37.00 years (range 13-68)

Table 51 Smoking behavioral characteristics (N=123)

	Variable	Number (%)	
Number of cigarettes/day	1-10 cigarettes/day	47	38.21%
	11-20 cigarettes/day	61	49.59%
	21-30 cigarettes/day	9	7.32%
	$\geq$ 31 cigarettes/day	6	4.88%
Number of years smoking	$\leq$ 10 years	51	41.46%
	> 11-30 years	49	39.84%
	$\geq$ 31 years	23	18.70%
Number of previous quit attempts	never attempted	57	46.34%
	1 quit attempt	45	36.59%
	$\geq$ 2 quit attempts	21	17.07%
Fagerström test for nicotine dependence scores	very low 0-2	38	30.89%
	low 3-4	20	16.26%
	medium 5-6	29	23.58%
	high (heavy) 7	13	10.57%
	very high 8-10	23	18.70%
Stages of readiness to quit smoking[a]	precontemplation or contemplation stages	65	52.85%
	preparation or action stages	58	47.15%
Time to smoking first cigarette of the day	immediately - with in 10 minutes	52	42.28%
	> 10 minutes - 2 hours	34	27.64%
	more than 2 hour	37	30.08%
Why do you smoke?	most of cause from nicotine dependence	27	21.95%
	most of cause from psychological dependence	27	21.95%
	most of cause from socio-cultural dependence	18	14.63%
	cause of nicotine and psychological dependence equally	11	8.94%
	cause of nicotine and socio-cultural dependence equally	6	4.88%
	cause of psychological and socio-cultural dependence equally	20	16.26%
	all dimensions are equal.	14	11.38%

(a) Stages of readiness to quit smoking were evaluated by using Transtheoretical Model

Table 52 Treatment and pharmacotherapy data (N=123)

Variable	Mean ($\pm$ SD) /Number (%)	
Number of visiting the clinician session		
3 sessions	105	(85.37)
4 -6 sessions	15	(12.20)
$\geq$ 7 sessions	3	(2.44)
Treatment choice		
not used pharmacotherapy	2	(1.63)
used pharmacotherapy	121	(98.37
Types of pharmacotherapy [ß]		
not used pharmacotherapy	2	(1.63)
used one first or second line pharmacotherapies as part of treatment [b]	61	(49.59)
used combinations of first and/or second line pharmacotherapies as part of treatment [b]	10	(8.13)
used single or combinations of other antidepressants as part of treatment [c]	33	(26.83)
used other drugs which were not classified as antidepressants [d]	17	(13.82)
Using first or second line pharmacotherapies		
not used first or second line pharmacotherapies	52	(42.28)
used one first or second line pharmacotherapies as part of treatment	61	(49.59)
used combination of first and/or second line pharmacotherapies as part of treatment	10	(8.13)
Duration of using pharmacotherapy		
not used pharmacotherapy	2	(1.63)
used pharmacotherapy $\leq$ 7 weeks	109	(88.62)
used pharmacotherapy > 7 weeks	12	(9.76)
Duration of using first or second line pharmacotherapies		
not used first or second line pharmacotherapies	52	(42.28)
used first or second line pharmacotherapies $\leq$ 7 weeks	62	(50.41)
used first or second line pharmacotherapies > 7 weeks	9	(7.32)

(a) Test normality: K-S < 0.01 , mean $\pm$ SD = 3.30 $\pm$ 0.96 median = 3.00 sessions (range 3-9 sessions)

(b) First line pharmacotherapy i.e., bupropion, all formulations of nicotine replacement therapy and second line

    pharmacotherapy i.e., nortriptyline and clonidine

(c) Using single or combinations of other antidepressants which were not classified as first or second line pharmacotherapy as

    part of treatment

(d) Using other drugs which were not classified as first or second line pharmacotherapies or any antidepressants in regimen.

[ß] See also Appendix B: Table 49 presents the various drug regimens used in the tobacco dependence treatment in patients

Abstinence and non abstinence patients by selected characteristics (N=123)

Table 53 Seven-day point prevalence abstinence rates at 24 weeks by selected demographic characteristics (N=123).

variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Gender				
Male	114	46 (40.35)	68 (59.65)	1.00[b]
Female	9	3 (33.33)	6 (66.67)	
Age; years				
≤ 18 years of age	32	8 (25.00)	24 (75.00)	0.02*[§]
19 – 45 years of age	56	21 (37.50)	35 (62.50)	
≥ 46 years of age	35	20 (57.14)	15 (42.86)	
Marital status				
Single	59	16 (27.12)	43 (72.88)	< 0.01[b]*[§]
Married or living with partner	56	31 (55.36)	25 (44.64)	
Widowed, separated, or divorced	8	2 (25.00)	6 (75.00)	
Educational Level				
High school or lower	69	21 (30.43)	48 (69.57)	< 0.01*[§]
Vocational level	27	9 (33.33)	18 (66.67)	
Bachelor's degree or upper	27	19 (70.37)	8 (29.63)	
Alcohol drinking				
non drinking	74	27 (36.49)	47 (63.51)	0.56[§]
social drinking	36	17 (47.22)	19 (52.78)	
daily drinking	13	5 (38.46)	8 (61.54)	
Concurrent chronic illnesses (psychiatric disorders were excluded)				
present	35	17 (48.57)	18 (51.43)	0.30[§]
not present	88	32 (36.36)	56 (63.64)	
Concurrent psychiatric disorders				
present	-	-	-	-
not present	123	49 (39.84)	74 (60.16)	
Using any other additive substances				
present	4	3 (75.00)	1 (25.00)	0.30[b]
not present	119	46 (38.66)	73 (61.34)	

(a) Pearson Chi-Square were used to determine differences between variables. (b) Fisher's Exact Test were used to determine differences between categorical variables. * Significant level at *p*-value ≤ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 54 Continuous abstinence rates at 24 weeks by selected demographic characteristics (N=123).

variable	N	N. of Abstinence (%)		p-value [a]
		Yes	No	
Gender				
Male	114	37 (32.46)	77 (67.54)	0.72[b]
Female	9	2 (22.22)	7 (77.78)	
Age; years				
≤ 18 years of age	32	6 (18.75)	26 (81.25)	0.06[§]
19 – 45 years of age	56	17 (30.36)	39 (69.64)	
≥ 46 years of age	35	16 (45.71)	19 (54.29)	
Marital status				
single	59	12 (20.34)	47 (79.66)	0.02*[§]
married or living with partner	56	25 (44.64)	31 (55.36)	
widowed, separated, or divorced	8	2 (25.00)	6 (75.00)	
Educational Level				
high school or lower	69	19 (27.54)	50 (72.46)	0.11[§]
vocational level	27	7 (25.93)	20 (74.07)	
bachelor's degree or upper	27	13 (48.15)	14 (51.85)	
Alcohol drinking				
non drinking	74	21 (28.38)	53 (71.62)	0.29[§]
social drinking	36	15 (41.67)	21 (58.33)	
daily drinking	13	3 (23.08)	10 (76.92)	
Concurrent chronic illnesses (psychiatric disorders were excluded)				
present	35	13 (37.14%	22 (62.86%	0.55[§]
not present	88	26 (29.55%	62 (70.45%	
Concurrent psychiatric disorders				
present	-	-	-	-
not present	123	39 (31.71%	84 (68.29%	
Using any other additive substances				
use	4	2 (50.00%	82 (68.91%	0.59[b]
not use	119	37 (31.09%	2 (50.00%	

(a) Pearson Chi-square were used to determine differences between variables. (b) Fisher's Exact test were used to determine differences between categorical variables. * Significant level at p-value ≤ 0.05 [§] Variables were included in multivariate logistic regression model.

Table 55 Seven-day point prevalence abstinence rates at 24 weeks by selected

smoking behavioral characteristics (N=123).

variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Number of cigarettes per day				
1-10 cigarettes/day	47	14 (29.79)	33 (70.21)	0.19[b§]
11-20 cigarettes/day	61	28 (45.90)	33 (54.10)	
21-30 cigarettes/day	9	3 (33.33)	6 (66.67)	
$\geq$ 31 cigarettes/day	6	4 (66.67)	2 (33.33)	
Number of years smoking				
$\leq$ 10 years	51	14 (27.45)	37 (72.55)	0.06[§]
$\geq$ 11-30 years	49	24 (48.98)	25 (51.02)	
$\geq$ 31 years	23	11 (47.83)	12 (52.17)	
Number of previous quit attempts				
never attempted	57	16 (28.07)	41 (71.93)	0.02*[§]
1 quit attempts	45	20 (44.44)	25 (55.56)	
$\geq$ 2 quit attempts	21	13 (61.90)	8 (38.10)	
Stages of readiness to quit smoking				
precontemplation or contemplation stages	65	22 (33.85)	43 (66.15)	0.21*[§]
preparation or action stages	58	27 (46.55)	31 (53.45)	
FTND scores[c]				
very low 0-2 and low 3-4	58	16 (27.59)	42 (72.41)	0.03*[§]
medium 5-6	29	15 (51.72)	14 (48.28)	
high (heavy) 7 and very high 8-10	36	18 (50.00)	18 (50.00)	
Time to smoking first cigarette of the day				
immediately - with in 10 minutes	52	25 (48.08)	27 (51.92)	0.07
> 10 minutes - 2 hours	34	15 (44.12)	19 (55.88)	
more than 2 hours	37	9 (24.32)	28 (75.68)	

(a) Pearson Chi-square were used to determine differences between variables.

(b) Fisher's Exact test were used to determine differences between categorical variables.

(c) FTND scores = Fagerström Test for Nicotine Dependence scores

* Significant level at p-value $\leq$ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 56 Continuous abstinence rates at 24 weeks by selected smoking behavioral characteristics (N=123).

| variable | N | N. of Abstinence | | p-value[a] |
		Yes	No	
Number of cigarettes/day				
1-10 cigarettes/day	47	9 (19.15)	38 (80.85)	0.03[b]*[§]
11-20 cigarettes/day	61	24 (39.34)	37 (60.66)	
21-30 cigarettes/day	9	2 (22.22)	7 (77.78)	
> 30 cigarettes/day	6	4 (66.67)	2 (33.33)	
Number of years smoking				
≤ 10 years	51	11 (21.57)	40 (78.43)	0.13[§]
≥ 11-30 years	49	19 (38.78)	30 (61.22)	
≥ 31 years	23	9 (39.13)	14 (60.87)	
Number of previous quit attempts				
never attempted	57	12 (21.05)	45 (78.95)	0.04*[§]
1 quit attempts	45	17 (37.78)	28 (62.22)	
≥ 2 quit attempts	21	10 (47.62)	11 (52.38)	
Stages of readiness to quit smoking				
precontemplation or contemplation stages	65	16 (24.62)	49 (75.38)	0.11[§]
preparation or action stages	58	23 (39.66)	35 (60.34)	
FTND scores				
very low 0-2 and low 3-4	58	12 (20.69)	46 (79.31)	0.05*[§]
medium 5-6	29	12 (41.38)	17 (58.62)	
high (heavy) 7 and very high 8-10	36	15 (41.67)	21 (58.33)	
Time to smoking first cigarette of the day				
immediately - with in 10 minutes	52	21 (40.38)	31 (59.62)	0.05*
> 10 minutes - 2 hours	34	12 (35.29)	22 (64.71)	
more than 2 hours	37	6 (16.22)	31 (83.78)	

(a) Pearson Chi-square were used to determine differences between variables.

(b) Fisher's Exact test were used to determine differences between categorical variables.

(c) FTND scores = Fagerström Test for Nicotine Dependence scores

* Significant level at p-value ≤ 0.05 [§] Variables were included in multivariate logistic regression model.

Table 57 Seven-day point prevalence abstinence rates at 24 weeks by selected

treatment and pharmacotherapy data. (N=123)

Variable	N	N. of Abstinence (%)		p-value[a]
		Yes	No	
Number of visiting the clinician session				
3 sessions	105	38(36.19)	67 (63.81)	0.15[b§]
4 -6 sessions	15	9 (60.00)	6 (40.00)	
≥ 7 sessions	3	2 (66.67)	1 (33.33)	
Types of pharmacotherapy				
not used pharmacotherapy	2	0 (0.00)	2 (100)	<0.01[b*§]
used one first or second line pharmacotherapies as part of treatment	61	29 (47.54)	32 (52.46)	
used combinations of first and/or second line pharmacotherapies as part of treatment	10	7 (70.00)	3 (30.00)	
used single or combinations of other antidepressants as part of treatment	33	12 (36.36)	21 (63.64)	
used other drugs which were not classified as antidepressants	17	1 (5.88)	16 (94.12)	
Using first or second line pharmacotherapies				
not used first or second line pharmacotherapies	52	13 (25.00)	39 (75.00)	0.01*
used one of first or second line pharmacotherapies as part of treatment	61	29 (47.54)	32 (52.46)	
used combinations of first and/or second line pharmacotherapies as part of treatment	10	7 (70.00)	3 (30.00)	
Duration of using pharmacotherapy				
not used pharmacotherapy	2	0 (0.00)	2 (100)	0.29[b§]
used pharmacotherapy ≤ 7 weeks	109	42 (38.53)	67 (61.47)	
used pharmacotherapy > 7 weeks	12	7 (58.33)	5 (41.67)	
Duration of using first or second line pharmacotherapies				
not used first or second line pharmacotherapies	52	13 (25.00)	39 (75.00)	0.01*
used first or second line pharmacotherapies ≤ 7 weeks	62	30 (48.39)	32 (51.61)	
used first or second line pharmacotherapies > 7 weeks	9	6 (66.67)	3 (33.33)	

(a) Pearson Chi-square were used to determine differences between variables.

(b) Fisher's Exact test were used to determine differences between categorical variables.

* Significant level at *p*-value ≤ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 58 Continuous abstinence rates at 24 weeks by selected treatment and pharmacotherapy data. (N=123)

Variable	N	N. of Abstinence (%)		*p*-value[a]
		Yes	No	
Number of visiting the clinician session				
3 sessions	105	30 (28.57)	75 (71.43)	0.13[b§]
4 -6 sessions	15	7 (46.67)	8 (53.33)	
≥ 7 sessions	3	2 (66.67)	1 (33.33)	
Types of pharmacotherapy				
not used pharmacotherapy	2	0 (0.00)	2 (100)	0.01[b*§]
used one of first or second line pharmacotherapies as part of treatment	61	22 (36.07)	39 (63.93)	
used combinations of first and/or second line pharmacotherapies as part of treatment	10	7 (70.00)	3 (30.00)	
used single or combinations of other antidepressants as part of treatment	33	9 (27.27)	24 (72.73)	
used other drugs which were not classified as antidepressants	17	1 (5.88)	16 (94.12)	
Using first or second line pharmacotherapies				
not used first or second line pharmacotherapies	52	10 (19.23)	42 (80.77)	<0.01*
used one first or second line pharmacotherapies as part of treatment	61	22 (36.07)	39 (63.93)	
used combination of first and/or second line pharmacotherapies as part of treatment	10	7 (70.00)	3 (30.00)	
Duration of using pharmacotherapy				
not used pharmacotherapy	2	0 (0.00)	2 (100)	0.56[b§]
used pharmacotherapy ≤ 7 weeks	109	34 (31.19)	75 (68.81)	
used pharmacotherapy > 7 weeks	12	5 (41.67)	7 (58.33)	
Duration of using first or second line pharmacotherapies				
not used first or second line pharmacotherapies	52	10 (19.23)	42 (80.77)	0.02*
used first or second line pharmacotherapies ≤ 7 weeks	62	24 (38.71)	38 (61.29)	
used first or second line pharmacotherapies > 7 weeks	9	5 (55.56)	4 (44.44)	

(a) Pearson Chi-square were used to determine differences between variables.

(b) Fisher's Exact test were used to determine differences between categorical variables.

* Significant level at *p*-value ≤ 0.05   [§] Variables were included in multivariate logistic regression model.

Table 59 Smoking abstinence of patients at follow-up visit assessment (N = 123)

Weeks after the quit date	N (%)		
	7-day point prevalence abstinence	Continuous abstinence	Patients who were 7-day point prevalence abstinence, but not classify as continuous abstinences
4 weeks	76 (61.79)	62 (50.41)	14 (18.42)
8 weeks	67 (54.47)	51 (41.46)	16 (23.88)
12 weeks	51 (41.46)	40 (32.52)	11 (21.57)
16 weeks	50 (40.65)	40 (32.52)	10 (20.00)
24 weeks	49 (39.84)	39 (31.71)	10 (20.41)

Table 60 Multivariate predictors/models of 7-day point prevalence abstinence rates at 24 weeks. (N=123)[a]

Variable	β	S.E.	Wald	AOR (95%CI)	*p*-value
(1) vocational educate	-.28	0.56	.25	0.76 (0.25-2.27)	0.62
(2) bachelor's degree or higher	1.53	0.55	7.65	4.63 (1.56-13.73)	0.01*
(3) 1 quit attempts	2.08	0.84	6.16	8.04 (1.55-41.73)	0.01*
(4) ≥ 2 quit attempts	2.18	0.96	5.11	8.83 (1.34-58.41)	0.02*
(5) preparation or action stages	-1.61	0.85	3.63	0.20 (0.04-1.05)	0.06
(6) used one first or second line pharmacotherapies as part of treatment	2.60	1.11	5.50	13.45 (1.53-118.07)	0.02*
(7) used combinations of first and/or second line pharmacotherapies as part of treatment	3.69	1.36	7.35	40.18 (2.78-580.40)	0.01*
(8) used single or combinations of other antidepressants as part of treatment	2.22	1.14	3.79	9.18 (0.99-85.47)	0.05
constant	-3.46	1.11	9.77		< 0.01*

(a) Backward stepwise logistic regression was used to explore the important predictors and to calculate the adjusted odds ratios (AOR) with 95% confidence intervals for 7-day point prevalence abstinence rated at 24 weeks after the quit date.

-2 Log Likelihood = 129.97, Model Chi-square = 35.43 (*p*-value < 0.01), overall accuracy = 73.17%

Nagelkerke R Square = 0.34, Hosmer-lemeshow test = 3.28 (*p*-value = 0.92) * *p*-value ≤ 0.05,

β: regression coefficient, S.E.: standard error

Table 61 Multivariate predictors/models of continuous abstinence rates at 24 weeks.

(N = 123)

Variable	β	S.E.	Wald	AOR (95%CI)	*p*-value
(1) used one first or second line pharmacotherapies as part of treatment	2.32	1.06	4.77	10.15 (1.27-81.31)	0.03
(2) used combination of first and/or second line pharmacotherapies as part of treatment	3.74	1.24	9.12	42.00 (3.71 -475.04)	< 0.01*
(3) used single or combination of other antidepressants as part of treatment	1.91	1.10	3.02	6.75 (0.78-58.21)	0.08
constant	-2.89	1.03	7.91	0.06 (-)	< 0.01*

(a) Backward stepwise logistic regression was used to explore the important predictors and to calculate the adjusted odds ratios (AOR) with 95% confidence interval for continuous abstinence rates at 24 weeks after quit date.

-2 Log Likelihood   =   138.49

Model Chi-square   =   15.17 (*p*-value < 0.01)

overall accuracy   =   71.54

Nagelkerke R Square   =   0.16

Hosmer-lemeshow test =   0.00 (*p*-value = 1.00)

*p-value $\leq$ 0.05, β: regression coefficient , S.E.: standard error

Appendix D

แบบบันทึกประวัติทั่วไปและประวัติการสูบบุหรี่

โรงพยาบาล   ☐ 1 ☐ 2 ☐ 3   **HN** …………………..

                                              CODE …………………..

	CODE
ชื่อ /สกุล..	
เพศ ☐ ชาย ☐ หญิง **วันเกิด** ..../........../…………. **อายุ**...................ปี **ที่อยู่ที่สามารถติดต่อได้** …………………………………………………………………… …………………………………………………… **โทรศัพท์ 1***	
โทรศัพท์ 2** .... **บุคคลที่สามารถติดต่อท่านได้ ความสัมพันธ์เป็น**...................	
อาชีพ.. **รายได้เฉลี่ยต่อเดือน**…………………บาท	
สิทธิในการรักษา ☐ 30 บาท/เด็ก/ผู้สูงอายุ ☐ ประกันสังคม ☐ ข้าราชการ ☐ สวัสดิการโรงพยาบาล ☐ จ่ายเอง ☐ อื่นๆ ระบุ.....................	
สถานภาพ ☐ โสด ☐ สมรส ☐ หม้าย ☐ หย่าหรือแยกกันอยู่	
ระดับการศึกษา ☐ ต่ำกว่าประถมศึกษา ☐ ประถมศึกษา ☐ มัธยมศึกษาตอนต้น **(ถ้ามี)** ☐ มัธยมศึกษาตอนปลาย ☐ ปวช.-ปวส. ☐ ปริญญาตรี ☐ ปริญญาโท ☐ ปริญญาเอก ☐ อื่นๆ ระบุ...............	
โรคประจำตัว ☐ ความดันโลหิตสูง ☐ หัวใจขาดเลือด ☐ เบาหวาน ☐ ลมชัก ☐ โรคหืด ☐ โรคหลอดเลือดสมอง ☐ โรคตับ ☐ โรคไตวาย ☐ อื่นๆ ระบุ ……………………	
ยาที่ใช้ประจำระหว่างการรักษาภาวะเสพติดบุหรี่ …………………………………………………………………………………………….. ……………………………………………………………………………………………	
ประวัติการแพ้ยา ………………………….. **ประวัติการแพ้อาหาร**..............................	
ประวัติการใช้สารเสพติด ☐ เคย แต่ไม่ใช้แล้ว………….☐ ยังใช้อยู่ ☐ ไม่เคย	
ประวัติการดื่มสุรา ☐ เคยดื่ม ปริมาณที่ดื่ม ☐ ยังดื่มอยู่ ปริมาณที่ดื่ม ☐ ไม่ดื่ม	
ภาวะเจ็บป่วยทางอารมณ์และจิต ☐ เคยเป็น แต่หายแล้ว……………. ☐ ยังมีอาการหรืออยู่ระหว่างการรักษา ☐ ไม่เคย	
การดื่มชา/กาแฟ ☐ ดื่ม จำนวน………………………. ถ้วย/วัน ☐ ไม่ดื่ม	

1* เบอร์โทรศัพท์ของผู้ป่วยเอง 2**บุคคลที่สามารถติดต่อผู้เข้าร่วมการวิจัยได้

ข้อมูลทั่วไปเกี่ยวกับการสูบบุหรี่

จำนวนบุหรี่ที่สูบ.............มวน/วัน	
เริ่มสูบบุหรี่อายุ..............ปี	
ระยะเวลาที่สูบ................ปี*	
เวลาเริ่มสูบบุหรี่มวนแรกลังตื่นนอน...............นาที	
จำนวนครั้งของความพยายามในการเลิกบุหรี่ก่อนหน้านี้..........................ครั้ง	
ระดับความตั้งใจในการเลิกสูบบุหรี่ (TTM) ☐ Precontemplation Stage ☐ Contemplation Stage ☐ Preparation Stage ☐ Action Stage ☐ Maintenance Stage หรือ Termination	
ทดสอบระดับการติดสารนิโคติน (Fagerström Test for Nicotine Dependence).........คะแนน	
☐ 0-2 = very low ☐ 3-4 = low ☐ 5-6 = medium ☐ 7 = high (heavy) ☐ 8-10 = very high	
ผลแบบทดสอบ "ทำไมคุณยังสูบบุหรี่อยู่" ☐ ภาวะเสพติดนิโคติน ☐......... ☐ ภาวะเสพติดทางจิตใจ○......... ☐ ภาวะเสพติดทางสังคมหรือนิสัยความเคยชิน △...................	

Appendix E

แบบบันทึกการใช้ยา/ผลิตภัณฑ์ช่วยเลิกบุหรี่และติดตามการเลิกบุหรี่

วันเริ่มต้นรักษา...................................	
วันกำหนดเลิกบุหรี่...........................	**CODE**
วิธีในการเลิกสูบบุหรี่	

☐ เลิกสูบบุหรี่ทันที (หักดิบ)	☐ หมากฝรั่งเคี้ยวนิโคติน
☐ ค่อยๆลดลง จนเลิก	☐ หมากฝรั่งเคี้ยว + แผ่นปิดผิวหนังนิโคติน
☐ น้ำยาอมอดบุหรี่	☐ หมากฝรั่งเคี้ยวนิโคติน + Bupropion
☐ น้ำยาอมอดบุหรี่ + ชาหญ้าดอกขาว	☐ หมากฝรั่งเคี้ยวนิโคติน + Nortriptyline
☐ น้ำยาอมอดบุหรี่ + หมากฝรั่งเคี้ยวนิโคติน	☐ หมากฝรั่งเคี้ยวนิโคติน + Clonidine
☐ น้ำยาอมอดบุหรี่ + แผ่นปิดผิวหนังนิโคติน	☐ แผ่นปิดผิวหนังนิโคติน
☐ น้ำยาอมอดบุหรี่ + Bupropion	☐ แผ่นปิดผิวหนังนิโคติน + Bupropion
☐ น้ำยาอมอดบุหรี่ + Nortriptyline	☐ แผ่นปิดผิวหนังนิโคติน + Nortriptyline
☐ น้ำยาอมอดบุหรี่ + Clonidine	☐ แผ่นปิดผิวหนังนิโคติน + Clonidine
☐ ชาหญ้าดอกขาว	☐ Bupropion
☐ ชาหญ้าดอกขาว +หมากฝรั่งเคี้ยวนิโคติน	☐ Bupropion + Nortriptyline
☐ ชาหญ้าดอกขาว +แผ่นปิดผิวหนังนิโคติน	☐ Nortriptyline
☐ ชาหญ้าดอกขาว + Bupropion	☐ Nortriptyline + Clonidine
☐ ชาหญ้าดอกขาว + Nortriptyline	☐ Clonidine
☐ ชาหญ้าดอกขาว + Clonidine	☐ อื่นๆ ระบุ…………………………………

จำนวนชนิดของยาช่วยเลิกบุหรี่ .... ชนิด	**CODE**
ระยะเวลาในการใช้ยาช่วยเลิกบุหรี่ ....สัปดาห์	
จำนวนครั้งที่ผู้ป่วยมาพบแพทย์	
ในระยะเวลาที่ 4 สัปดาห์หลังวันกำหนดเลิกบุหรี่.................................. ครั้ง	
ในระยะเวลาที่ 8 สัปดาห์หลังวันกำหนดเลิกบุหรี่.................................. ครั้ง	
ในระยะเวลาที่ 12 สัปดาห์หลังวันกำหนดเลิกบุหรี่.................................ครั้ง	
ในระยะเวลาที่ 16 สัปดาห์หลังวันกำหนดเลิกบุหรี่.................................ครั้ง	
ในระยะเวลาที่ 24 สัปดาห์หลังวันกำหนดเลิกบุหรี่.................................ครั้ง	

ผลการรักษาการเสพติดบุหรี่ที่ระยะเวลาต่างๆ

			CODE
ที่ระยะเวลาที่ 4 สัปดาห์หลังวันกำหนดเลิกบุหรี่ วันที่			
ติดตามการรักษาได้	☐ ใช่	☐ ไม่ใช่	
หยุดสูบ 7 วันก่อน	☐ ใช่	☐ ไม่ใช่	
หยุดสูบต่อเนื่อง	☐ ใช่	☐ ไม่ใช่	
ที่ระยะเวลาที่ 8 สัปดาห์หลังวันกำหนดเลิกบุหรี่ วันที่			
ติดตามการรักษาได้	☐ ใช่	☐ ไม่ใช่	
หยุดสูบ 7 วันก่อน	☐ ใช่	☐ ไม่ใช่	
หยุดสูบต่อเนื่อง	☐ ใช่	☐ ไม่ใช่	
ที่ระยะเวลาที่ 12 สัปดาห์หลังวันกำหนดเลิกบุหรี่ วันที่			
ติดตามการรักษาได้	☐ ใช่	☐ ไม่ใช่	
หยุดสูบ 7 วันก่อน	☐ ใช่	☐ ไม่ใช่	
หยุดสูบต่อเนื่อง	☐ ใช่	☐ ไม่ใช่	
ที่ที่ระยะเวลาที่ 16 สัปดาห์หลังวันกำหนดเลิกบุหรี่ วันที่			
ติดตามการรักษาได้	☐ ใช่	☐ ไม่ใช่	
หยุดสูบ 7 วันก่อน	☐ ใช่	☐ ไม่ใช่	
หยุดสูบต่อเนื่อง	☐ ใช่	☐ ไม่ใช่	
ที่ระยะเวลาที่ 24 สัปดาห์หลังวันกำหนดเลิกบุหรี่ วันที่			
ติดตามการรักษาได้	☐ ใช่	☐ ไม่ใช่	
หยุดสูบ 7 วันก่อน	☐ ใช่	☐ ไม่ใช่	
หยุดสูบต่อเนื่อง	☐ ใช่	☐ ไม่ใช่	

Appendix F

แบบประเมินระดับความต้องการการเลิกบุหรี่ตามแบบจำลอง Transtheoretical Model

ท่านตั้งใจที่จะเลิกบุหรี่ใน 6 เดือน ข้างหน้า	ในปัจจุบัน ท่านสูบบุหรี่หรือไม่	ท่านเลิกบุหรี่มานานเท่าไร

ใช่   ไม่ใช่

ใช่

ท่านตั้งใจจะเลิกบุหรี่ภายใน 1 เดือนข้างหน้าหรือไม่

1 วัน - <6เดือน

ไม่ใช่   ไม่ใช่   ใช่

ใน 1 ปีที่ผ่านมาท่านเคยพยายามเลิกบุหรี่หรือลดจำนวนบุหรี่ที่สูบลงบ้างหรือไม่

≥ 6เดือน

ไม่ใช่   ใช่

Maintenance or Termination 5

Precontemplation 1   Contemplation 2   Preparation 3   Action 4
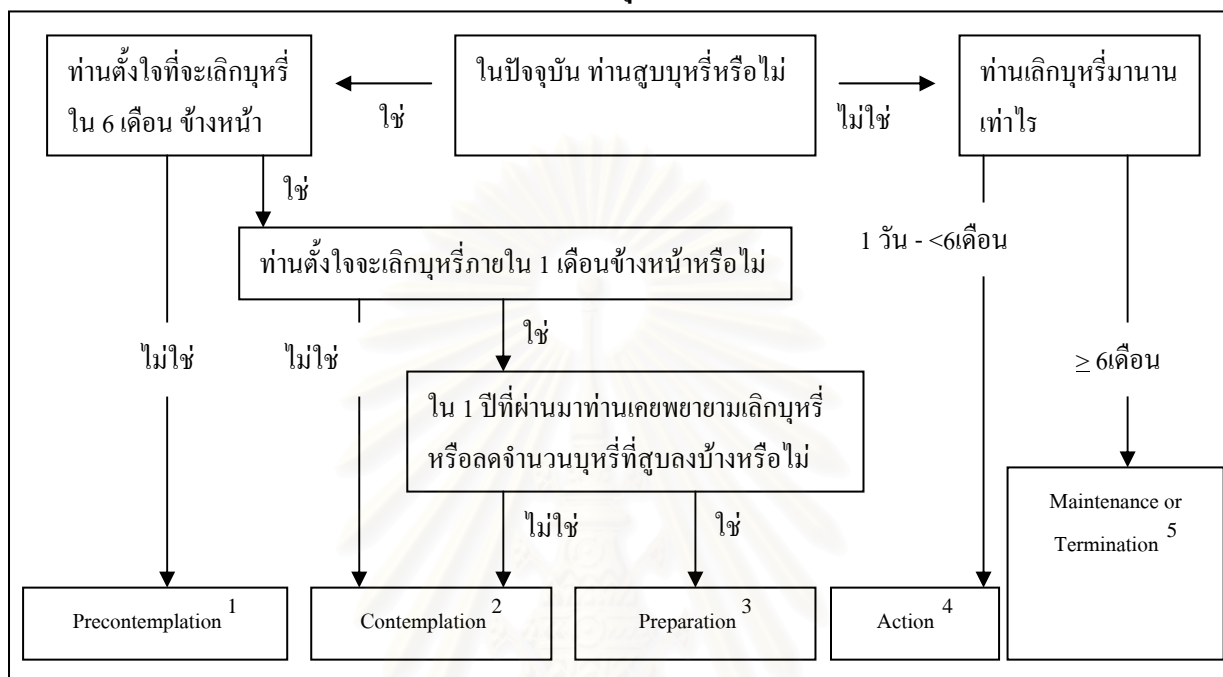
ลำดับขั้นของความต้องการเลิกบุหรี่ใน The Transtheoretical Model (TTM) ประกอบด้วย 5 ลำดับ

1. Precontemplation Stage คือ ภาวะที่ผู้ป่วยไม่มีความตั้งใจจะเลิกบุหรี่ใน 6 เดือนข้างหน้า

2. Contemplation Stage คือ ภาวะที่ผู้ป่วยยังสูบบุหรี่อยู่ แต่มีความตั้งใจจะเลิกบุหรี่ใน 6 เดือน ข้างหน้า โดยยังไม่มีการวางแผนที่แน่นอน ผู้ป่วยแสดงความลังเลในการเลิกบุหรี่และยัง ไม่พร้อมต่อการเปลี่ยนแปลงนี้

3. Preparation Stage คือ ภาวะที่ผู้ป่วยยังสูบบุหรี่อยู่ แต่มีความตั้งใจเลิกบุหรี่ใน 30 วัน และ ในอดีต 1 ปีที่ผ่านมา เคยมีความพยายามเลิกบุหรี่อย่างน้อย 1 ครั้ง ได้อย่างน้อย 24 ชั่วโมง

4. Action Stage คือ ภาวะที่ผู้ป่วยเริ่มหยุดสูบบุหรี่แล้วเป็นเวลา 1 วัน ถึง 6 เดือน

5. Maintenance Stage หรือ Termination คือ ภาวะที่ผู้ป่วยสามารถหยุดบุหรี่ได้อย่างน้อยเป็น เวลา 6 เดือน

Appendix G

แบบทดสอบระดับการติดสารนิโคติน (Fagerström Test for Nicotine Dependence)

เลขที่................
วันที่บันทึก........................
แบบทดสอบระดับการติดสารนิโคติน (Fagerström Test for Nicotine Dependence)
1. โดยปกติท่านสูบบุหรี่กี่มวนต่อวัน ☐ 10 มวนหรือน้อยกว่า (0) ☐ 11 – 20 มวน (1) ☐ 21 – 30 มวน (2) ☐ 31 มวนขึ้นไป (3)
2. หลังตื่นนอนตอนเช้าท่านสูบบุหรี่มวนแรกเมื่อไร ☐ ภายใน 5 นาทีหลังตื่นนอน (3) ☐ 6 -10 นาที หลังตื่นนอน (2) ☐ 31 – 60 นาที หลังตื่นนอน (1) ☐ มากกว่า 60 นาที หลังตื่นนอน (0)
3. ท่านสูบบุหรี่จัดในชั่วโมงแรกหลังตื่นนอน (สูบมากกว่าเวลาอื่นของวัน) ☐ ใช่ (1) ☐ ไม่ใช่ (0)
4. บุหรี่มวนไหนที่ท่านคิดว่าเลิกยากที่สุด ☐ มวนแรกในตอนเช้า (1) ☐ มวนอื่น ๆระหว่างวัน (0)
5. ท่านรู้สึกอึดอัด กระวนกระวาย หรือลำบากใจไหม ที่ต้องอยู่ในเขตปลอดบุหรี่ เช่น โรงภาพยนตร์ รถโดยสาร ☐ รู้สึก (1) ☐ ไม่รู้สึก (0)
6. ท่านคิดว่าท่านยังต้องสูบบุหรี่ แม้จะป่วยนอนพักตลอดในโรงพยาบาล ☐ ใช่ (1) ☐ ไม่ใช่ (0)
รวมคะแนน.......................
ระดับคะแนน ☐ 0-2 = very low ☐ 3-4 = low ☐ 5-6 = medium ☐ 7 = high (heavy) ☐ 8-10 = very high

Appendix H

<table>
<tr><td colspan="2">แบบทดสอบ " ทำไมคุณยังสูบบุหรี่อยู่"</td><td>เลขที่................</td></tr>
<tr><td></td><td></td><td>วันที่บันทึก........................</td></tr>
</table>

ข้อความใดที่ตรงกับคุณบ้าง (ทำเครื่องหมาย ☑ หน้าข้อที่เลือก)

☐ ☐ ฉันไม่สามารถอยู่ได้ถึงครึ่งวันโดยไม่สูบบุหรี่

☐ △ บางครั้งฉันพบว่าตัวเองกำลังสูบบุหรี่อยู่โดยจำไม่ได้ว่าฉันได้จุดมันตั้งแต่เมื่อไร

☐ ◯ ฉันสูบบุหรี่เพราะมันช่วยให้ฉันคิดได้ดีขึ้น มีชีวิตชีวาขึ้น

☐ △ ฉันชอบที่จะมองควันบุหรี่เมื่อเวลาที่ฉันพ่นออกมา

☐ ☐ ฉันรู้สึกอยากสูบบุหรี่อย่างมากถ้าไม่ได้สูบมันมาประมาณ 2-3 ชั่วโมง

☐ ◯ การสูบบุหรี่เป็นหนึ่งในสิ่งที่ทำให้ฉันพอใจในชีวิต

☐ △ ฉันมีความสุขในขั้นตอนการจุดบุหรี่ขึ้นมาสูบ เช่น การสัมผัสบุหรี่ และการได้จุดไฟแช็ค

☐ ☐ ฉันต้องการสูบบุหรี่ทันทีหลังจากที่ฉันตื่นนอนในตอนเช้า

☐ ◯ เวลาที่ฉันรู้สึกสบาย ผ่อนคลายเป็นช่วงเสลาที่ฉันต้องการบุหรี่มากที่สุด

☐ △ ฉันชอบสูบบุหรี่ระหว่างช่วงพักของฉัน หรือหลังอาหาร

☐ ◯ ฉันสูบบุหรี่เมื่อฉันโกรธ หรือทุกข์ใจ

☐ ☐ ถ้าฉันไม่ได้สูบบุหรี่ ฉันรู้สึกอ่อนเพลีย ดังนั้นฉันจึงต้องสูบมันอีก

☐ ◯ การสูบบุหรี่ช่วยให้ฉันรู้สึกผ่อนคลายในเวลาที่ฉันตึงเครียด

☐ △ ฉันรู้สึกสบายและอุ่นใจมกกว่าเมื่อมีบุหรี่อยู่ในมือ

☐ ☐ เมื่อบุหรี่หมดมวน มันทำให้ฉันเกือบจะทนไม่ได้จนกว่าจะได้มันเพิ่ม

คะแนนรวม   ☐...................   ◯....................   △....................

สัญลักษณ์สี่เหลี่ยม แสดงถึง ผู้ป่วยติดสารนิโคตินในบุหรี่ ดังนั้นเมื่อผู้ป่วยหยุดสูบบุหรี่ทำให้เกิด
อาการถอนยา เช่น ปวดศีรษะ หงุดหงิด กระวนกระวาย เป็นต้น

สัญลักษณ์วงกลม แสดงถึง ผู้ป่วยมีภาวะจิตใจต้องพึ่งพาการสูบบุหรี่ เนื่องจากรู้สึกเครียดเป็นทุกข์
หรือกระวนกระวายใจ เมื่อสูบบุหรี่แล้วทำให้รู้สึกสบายใจมีชีวิตชีวาขึ้น

สัญลักษณ์สามเหลี่ยม แสดงถึง ผู้ป่วยสูบบุหรี่เพราะความเคยชิน หรือมีการสร้างความสัมพันธ์
ระหว่างกิจกรรมประจำวันกับการสูบบุหรี่ เช่นต้องสูบบุหรี่หลังรับประทานอาหารเสร็จหรือ
ภายหลังดื่มกาแฟตอนเช้า หรือระหว่างโทรศัพท์

Appendix I

เอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย (Research Subject Information Sheet)

ชื่อโครงการวิจัย   ปัจจัยทำนายการเลิกบุหรี่ ในผู้ป่วยชาวไทย

วันที่ชี้แจง   ..../................./................

ชื่อผู้วิจัย   ภญ. ตรีชฎา บุญจันทร์

           นิสิตระดับปริญญาโท สาขาเภสัชกรรมคลินิก คณะเภสัชศาสตร์

           จุฬาลงกรณ์มหาวิทยาลัย โทร 08-1547-0170

   ท่านได้รับการเชิญชวนให้เข้าร่วมการวิจัยเรื่องนี้ แต่ก่อนที่ท่านจะตกลงใจเข้าร่วมโครงการวิจัย หรือไม่ โปรดอ่านข้อความในเอกสารนี้ทั้งหมด เพื่อให้ทราบว่า เหตุใดท่านจึงได้รับการเชิญให้เข้าร่วม โครงการวิจัยนี้ โครงการวิจัยนี้ทำเพื่ออะไร หากท่านเข้าร่วมโครงการวิจัยนี้ท่านจะต้องทำอะไรบ้าง รวมทั้งข้อดีและข้อเสียที่อาจเกิดขึ้นในระหว่างโครงการวิจัยนี้

   ในเอกสารนี้ อาจมีข้อความที่ท่านอ่านแล้วไม่เข้าใจ โปรดสอบถามหัวหน้าโครงการหรือผู้ช่วยที่ ทำโครงการวิจัยนี้ ให้ช่วยอธิบายจนกว่าจะเข้าใจตลอด ท่านอาจขอเอกสารนี้กลับไปอ่านที่บ้านเพื่อ ปรึกษาหารือกับญาติพี่น้อง เพื่อน หรือแพทย์ที่ท่านรู้จัก ให้ช่วยคิดว่าควรจะเข้าร่วมโครงการวิจัยครั้งนี้ หรือไม่ การเข้าร่วมโครงการวิจัยครั้งนี้จะต้องเป็นความสมัครใจของท่าน ไม่มีการบังคับหรือชักจูง ถึงแม้ ท่านจะไม่เข้าร่วมในโครงการวิจัยท่านก็จะได้รับการรักษาพยาบาลตามปกติ การไม่เข้าร่วมหรือถอนตัว จากโครงการวิจัยจะไม่มีผลกระทบต่อการได้รับบริการ การรักษาพยาบาล หรือผลประโยชน์ที่พึงจะได้รับ ของท่านแต่อย่างใด

   โปรดอย่าลงลายมือชื่อของท่านในเอกสารนี้ จนกว่าท่านจะแน่ใจว่ามีความประสงค์จะเข้าร่วม โครงการวิจัยนี้จริง คำว่า "ท่าน" ในเอกสารนี้ หมายถึงผู้เข้าร่วมโครงการวิจัยในฐานะเป็นอาสาสมัครใน โครงการวิจัยนี้

โครงการวิจัยนี้มีที่มาอย่างไร และวัตถุประสงค์ของโครงการ

   เนื่องจากการสูบบุหรี่เป็นปัญหาสำคัญทางสาธารณสุข และเป็นปัจจัยเสี่ยงรวมทั้งสาเหตุของการ เกิดโรคชนิดเฉียบพลันและเรื้อรังมากมาย ทำให้ประเทศชาติขาดทรัพยากรบุคคลที่สำคัญจากการเสียชีวิต ด้วยโรคที่เกิดจากการสูบบุหรี่ นอกจากนี้ยังเกิดการสูญเสียทางเศรษฐกิจจากค่าใช้จ่ายในการดูแลผู้ป่วย โรคที่เกิดจากการสูบบุหรี่ การรักษาผู้ป่วยที่ต้องการเลิกบุหรี่พบว่าผู้ป่วยบางส่วนไม่สามารถเลิกบุหรี่ได้ โดยการใช้ยาเพียงชนิดเดียว ปัจจุบันมีการศึกษาสนับสนุนการใช้ยาหลายชนิดร่วมกันว่ามีประสิทธิผลที่ เหนือกว่าการใช้ยาเพียงชนิดเดียว นอกจากนี้ระยะเวลาในการใช้ยาช่วยเลิกบุหรี่ที่นานกว่านั้นก็มีการศึกษา สนับสนุนถึงประสิทธิผลที่เหนือกว่าการใช้ยาในระยะที่สั้นกว่าในการเลิกสูบบุหรี่ระยะยาว นอกจากนี้ยัง มีปัจจัยที่มีผลต่อโอกาสเลิกบุหรี่สำเร็จต่างกัน เช่น อายุ ระดับการศึกษา ระยะเวลาในการสูบบุหรี่มวนแรก หลังตื่นนอน จำนวนครั้งที่ผู้ป่วยมาพบแพทย์ ภาวะเจ็บป่วยทางอารมณ์และจิต ประวัติดื่มแอลกอฮอล์หรือ

ใช้สารเสพติด สถานภาพสมรส จำนวนครั้งของความพยายามในการเลิกบุหรี่ ระดับแรงจูงใจในการเลิก
บุหรี่ แต่ยังไม่มีแนวทางที่ชัดเจนว่าผู้ป่วยรายใดควรใช้ยาช่วยเลิกบุหรี่เพียงชนิดเดียวหรือใช้ยาหลายชนิด
ร่วมกัน ผู้ป่วยรายใดควรใช้ระยะเวลาในการใช้ยาช่วยเลิกบุหรี่นานขึ้น หรือผู้ป่วยลักษณะใดที่มีโอกาสใน
การเลิกบุหรี่ได้น้อยเพื่อพิจารณาการใช้ยาช่วยเลิกบุหรี่ การให้คำแนะนำและการติดตามที่เหมาะสม ดังนั้น
การศึกษามีวัตถุประสงค์เพื่อศึกษาปัจจัยต่างๆ ที่มีผลต่อการเลิกบุหรี่และสร้างแบบจำลองหลายvariable
เพื่อทำนายอัตราการเลิกบุหรี่ ซึ่งผลการศึกษาสามารถนำมาพัฒนาเป็นแนวทางในการรักษาภาวะเสพติด
บุหรี่สำหรับผู้ป่วยนอกชาวไทยในทางปฏิบัติ และใช้เป็นแนวทางในการสร้างสมมุติฐานการศึกษาทาง
คลินิกในผู้เสพติดบุหรี่ต่อไป

ท่านได้รับเชิญให้เข้าร่วมโครงการวิจัยนี้เพราะคุณสมบัติที่เหมาะสมดังต่อไปนี้

     ผู้ป่วยนอกที่เข้ารับรักษาการเสพติดบุหรี่ตั้งแต่ 1 ตุลาคม 2549 ถึง 31 มกราคม 2450

สถานที่ทำโครงการวิจัย และจำนวนผู้เข้าร่วมโครงการวิจัย

     สถานที่ทำโครงการวิจัยนี้คือ สถาบันธัญญารักษ์ โรงพยาบาลราชวิถี โรงพยาบาลรามาธิบดี โดย
มีผู้เข้าร่วมโครงการวิจัยทั้งสิ้นอย่างน้อย 100 คน

ระยะเวลาที่ท่านจะต้องร่วมโครงการวิจัยและจำนวนครั้ง

     ระยะเวลาที่ท่านต้องเข้าร่วมโครงการวิจัยคือ 25 สัปดาห์ ซึ่งจะต้องพบผู้วิจัยจำนวน 2 ครั้ง คือ
ครั้งแรกเมื่อเริ่มต้นการวิจัย ครั้งที่ 2 คือที่ระยะเวลา 5 สัปดาห์หลังวันเริ่มต้นรักษา ผู้วิจัยจะโทรศัพท์ถึงท่าน
เพื่อประเมินผลการเลิกบุหรี่และสอบถามถึงปัญหาต่างๆที่อาจเกิดขึ้นกับท่าน จำนวน 4 ครั้ง คือ ที่ระยะเวลา
9 สัปดาห์ 13 สัปดาห์ 17 และที่ 25 สัปดาห์หลังวันเริ่มต้นรักษา

หากท่านเข้าร่วมโครงการวิจัยครั้งนี้ ท่านจะต้องปฏิบัติตามขั้นตอน หรือได้รับการปฏิบัติอย่างไรบ้าง

     เมื่อท่านเข้าร่วมโครงการวิจัยท่านจะได้รับการตรวจร่างกายทั่วไป ประกอบด้วย การชั่งน้ำหนัก
วัดส่วนสูง วัดความดันโลหิต อัตราการเต้นของหัวใจ และท่านจะได้รับการบริการตามปกติ คือ จะได้รับ
ความรู้เรื่องวิธีการเลิกบุหรี่ พิษภัยจากบุหรี่ การปฏิบัติตัวเพื่อเลิกบุหรี่ให้สำเร็จ การปรับเปลี่ยนพฤติกรรม
ทักษะต่าง ๆ ในการหลีกเลี่ยงสิ่งยั่วยุและเบี่ยงเบนความสนใจ ผู้วิจัยจะให้ท่านทำแบบประเมินระดับการ
ติดสารนิโคติน ประเมินระดับความต้องการการเลิกบุหรี่ แบบทดสอบ "ทำไมคุณยังสูบบุหรี่อยู่" จากนั้น
ท่านจะได้รับการรักษาการเสพติดบุหรี่ตามปกติ

     ผู้เข้าร่วมโครงการวิจัยจะได้รับเอกสารชี้แจงและหนังสือยินยอมที่มีข้อความเดียวกันกับที่นักวิจัย
เก็บไว้และได้ลงลายมือชื่อของผู้เข้าร่วมโครงการวิจัย ผู้ให้คำอธิบายเพื่อขอความร่วมมือให้เข้าร่วม
โครงการวิจัยและวันที่ที่ลงชื่อเก็บไว้เป็นส่วนตัว 1 ชุด

ความไม่สุขสบาย หรือความเสี่ยงต่ออันตรายที่อาจได้รับจากกรรมวิธีการวิจัย และการป้องกัน/แก้ไขที่
หัวหน้าโครงการวิจัยเตรียมไว้หากมีเหตุการณ์ดังกล่าวเกิดขึ้น

เนื่องจากการวิจัยนี้เป็นการเก็บข้อมูลจากเวชระเบียนหรือติดตามการรักษาการเสพติดบุหรี่ของ
ผู้ป่วยตามปกติ จึงไม่มีผลต่อการปฏิบัติตนของผู้ป่วยในการเข้ารับการรักษาแต่อย่างใด ในกรณีที่ในเวช
ระเบียนไม่ได้ระบุรายละเอียดที่ต้องการไว้ ผู้ดำเนินการวิจัยอาจมีความจำเป็นต้องขอสอบถามข้อมูล
เพิ่มเติมจากท่าน และข้อมูลส่วนบุคคลของท่านจะถูกปกปิดเป็นความลับโดยเปิดเผยในรูปผลสรุปการวิจัย
เท่านั้น

ประโยชน์ที่อาจจะได้รับจากการวิจัย

ประโยชน์ที่อาจจะได้รับจากการวิจัยต่อส่วนรวมคือ ได้ข้อมูลการใช้ยา/ผลิตภัณฑ์ช่วยเลิกบุหรี่
ในประเทศไทย เพื่อใช้เป็นข้อมูลในการทำวิจัย สร้างสมมติฐานทางคลินิกต่อไป ได้ข้อมูลของปัจจัยที่มีผล
ต่อการเลิกบุหรี่ในผู้ป่วยนอกไทยให้บุคลากรทางสาธารณสุขใช้เป็นแนวทางพิจารณาการรักษาผู้เสพติด
บุหรี่และใช้พิจารณากลุ่มเป้าหมายที่ควรกำหนดให้มีการรณรงค์การเลิกบุหรี่มากขึ้น ได้แบบจำลองหลาย
variableเพื่อใช้ทำนายอัตราการเลิกบุหรี่ในผู้ป่วยนอกชาวไทย

ค่าใช้จ่ายที่ท่านจะต้องรับผิดชอบระหว่างโครงการวิจัย

ค่าใช้จ่ายที่ท่านจะต้องรับผิดชอบ คือ ค่าใช้จ่ายด้านการรักษาอื่นๆที่ท่านรักษาตามปกติ

หากท่านมีคำถามที่เกี่ยวข้องกับโครงการวิจัย จะสอบถามได้จากใคร

ภญ. ตรีชฎา บุญจันทร์ โครงการจัดตั้งภาควิชาเภสัชกรรมคลินิก
คณะเภสัชศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ผู้วิจัย โทร 08-1547-0170

ข้อมูลส่วนตัวของท่านที่ได้จากโครงการวิจัยครั้งนี้จะถูกนำไปใช้ดังต่อไปนี้

ผู้วิจัยจะนำเสนอข้อมูลจากโครงการวิจัยนี้ในรูปที่เป็นสรุปผลการวิจัยโดยรวม เพื่อประโยชน์ทาง
วิชาการ โดยไม่เปิดเผย ชื่อ นามสกุล ที่อยู่ ของผู้เข้าร่วมโครงการวิจัยเป็นรายบุคคล และมีมาตรการในการ
เก็บรักษาข้อมูลทั้งส่วนตัวและข้อมูลที่ได้จากโครงการวิจัย โดยการเปิดเผยข้อมูลต่อหน่วยงานต่างๆที่
เกี่ยวข้อง กระทำได้เฉพาะกรณีจำเป็นด้วยเหตุผลทางวิชาการเท่านั้น

ท่านจะถอนตัวออกจากโครงการวิจัยหลังจากได้ลงนามเข้าร่วมโครงการวิจัยแล้วได้หรือไม่

ท่านสามารถถอนตัวออกจากโครงการวิจัยได้ตลอดเวลา โดยไม่เกิดผลเสียใดๆตามมา

หากมีข้อมูลใหม่ที่เกี่ยวข้องกับโครงการวิจัย ท่านจะได้รับแจ้งข้อมูลนั้นโดยหัวหน้าโครงการวิจัยหรือผู้
ร่วมวิจัยทันที

หากผู้วิจัยมีข้อมูลเพิ่มเติมทั้งด้านประโยชน์และโทษที่เกี่ยวข้องกับการวิจัยนี้ ผู้วิจัยจะแจ้งให้ท่าน
ทราบทันทีโดยไม่ปิดบัง

หนังสือแสดงเจตนายินยอมเข้าร่วมการวิจัย (Consent form)

วันที่ลงนาม..

ข้าพเจ้า...อายุ...........ปี อยู่บ้านเลขที่............

ถนน......................... ตำบล/แขวง...........................อำเภอ/เขต..........................จังหวัด...................

ก่อนที่จะลงนามในใบยินยอมให้ทำการวิจัยเรื่อง "ปัจจัยทำนายการเลิกบุหรี่ ในผู้ป่วยชาวไทย" ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึงวัตถุประสงค์ของการวิจัย วิธีวิจัย อันตรายหรืออาการที่อาจเกิดขึ้นจากการวิจัย รวมทั้งประโยชน์ที่จะเกิดขึ้นจากการวิจัยอย่างละเอียด และมีความเข้าใจดีแล้ว

ผู้วิจัยรับรองว่าจะตอบคำถามต่างๆที่ข้าพเจ้าสงสัยด้วยความเต็มใจไม่ปิดบังซ่อนเร้น จนข้าพเจ้าพอใจ

ข้าพเจ้ามีสิทธิบอกเลิกเข้าร่วมในโครงการวิจัยเมื่อใดก็ได้ และเข้าร่วมโครงการวิจัยนี้โดยสมัครใจและการบอกเลิกการเข้าร่วมการวิจัยนี้จะไม่มีผลต่อการรักษาโรคที่ข้าพเจ้าพึงจะได้รับต่อไป

ผู้วิจัยรับรองว่าจะเก็บข้อมูลเฉพาะตัวข้าพเจ้าเป็นความลับและจะเปิดเผยได้เฉพาะในรูปที่เป็นผลสรุปผลการวิจัย การเปิดเผยข้อมูลเกี่ยวกับตัวข้าพเจ้าต่อหน่วยงานต่างๆที่เกี่ยวข้องกระทำได้เฉพาะกรณีจำเป็นด้วยเหตุผลทางวิชาการเท่านั้น

ข้าพเจ้าได้อ่านข้อความข้างต้นแล้ว และมีความเข้าใจดีทุกประการ และได้ลงนามในใบยินยอมนี้ด้วยความเต็มใจ

ลงชื่อ...ผู้เข้าร่วมโครงการวิจัย

(...ชื่อ-นามสกุล ตัวบรรจง)

ลงชื่อ...ผู้ดำเนินการ โครงการวิจัย

(...ชื่อ-นามสกุล ตัวบรรจง)

ลงชื่อ...พยาน

(...ชื่อ-นามสกุล ตัวบรรจง)

ลงชื่อ...พยาน

(...ชื่อ-นามสกุล ตัวบรรจง)

ในกรณีที่ผู้เข้าร่วมโครงการวิจัยไม่สามารถลงลายมือชื่อด้วยตนเองได้ ให้ผู้แทนโดยชอบ
ตามกฎหมายซึ่งมีส่วนเกี่ยวข้องเป็น.....................................ของผู้เข้าร่วมโครงการวิจัย เป็นผู้ลงนามแทน

ลงชื่อ...ผู้แทนโดยชอบธรรม
(...ชื่อ-นามสกุล ตัวบรรจง)

ในกรณีที่ผู้เข้าร่วมโครงการวิจัยยังไม่บรรลุนิติภาวะ (อายุน้อยกว่า 18 ปี) จะต้องได้รับการ
ยินยอมจากผู้ปกครองหรือผู้อุปการะโดยชอบด้วยกฎหมายลงนาม

ลงชื่อ...ผู้ปกครอง/ผู้อุปการะโดยชอบด้วยกฎหมาย
(...ชื่อ-นามสกุล ตัวบรรจง)

ในกรณีที่ผู้เข้าร่วมโครงการวิจัยไม่สามารถตัดสินใจได้ (โรคจิต-หมดสติ) ให้ผู้แทนโดย
ชอบด้วยกฎหมายหรือผู้ปกครองหรือญาติที่ใกล้ชิดที่สุดเป็นผู้ลงนามยินยอม

ลงชื่อ...ผู้แทน/ผู้ปกครอง/ญาติ
(...ชื่อ-นามสกุล ตัวบรรจง)

ลงชื่อ...พยาน
(...ชื่อ-นามสกุล ตัวบรรจง)

ลงชื่อ...พยาน
(...ชื่อ-นามสกุล ตัวบรรจง)

VITAE

Ms. Threechada Boonchan was born on February 21, 1981 in Nakorn Ratchasima province. She earned Bachelor's Degree in Pharmacy from Khon Kean University in 2003. She worked as a clinical pharmacist at Chaiyabhumi hospital, Muang district, Chaiyabhumi province for two years. She received outstanding award on her presentation titled "The Assessment of the Warfarin Administration when Pharmacists Participated in the Team of Cardiovascular Disease Clinic at Chaiyabhumi Hospital" from the Ministry of Public Health, Area 5th. She also served as a teaching assistant at Division of Clinical Pharmacy, Department of Pharmacy, Faculty of Pharmaceutical Sciences, Chulalongkorn University during 2005-2006.